R 243-2014
91-2014

CONSTRUCTION CONTRACT
WOOD CONSTRUCTION

CONTRACT DOCUMENTS
SPECIFICATIONS

Lexington Fire Department
Division of Fire and Emergency Services
Facilities Maintenance Bureau

FOR

Rest Room Construction
Fire Stations: #11, #14 & #15

Bid No. 57-2014

PART VI

CONTRACT AGREEMENT

INDEX

PART VI

CONTRACT AGREEMENT

THIS AGREEMENT, made on the _**Tenth** __ day of ___**June**____, 20_**14**___, by and between **Lexington-Fayette Urban County Government**, acting herein called "OWNER" and ____**Wood Connection LLC**____, doing business as a corporation located in the City of _**Nicholasville**_____, County of __**Jessamine**_____, and State of ___**Kentucky**_____, hereinafter called "CONTRACTOR."

WITNESSETH: That the CONTRACTOR and the OWNER in consideration of __**Fifty Seven Thousand, One Hundred, Ninety Two** _____ Dollars and ____**Zero**_____ Cents ($____**57,192.00**_____) quoted in the proposal by the CONTRACTOR, dated ___**April 14, 2014**__, hereby agree to commence and complete the construction described as follows:

1. SCOPE OF WORK

The CONTRACTOR shall furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the Proposal, the General Conditions, and the Special Conditions of the Contract, the Specifications and Contract Documents therefore as prepared by __**Fitzsimons Office of Architecture**__for the __**Rest Room Construction Fire Stations #11, #14, #15**__ project.

2. TIME OF COMPLETION

The time period estimated and authorized by the OWNER for the proper execution of the Work by the Contract, in full, is hereby fixed as ninety (90) calendar days. The time shall begin ten (10) days after the CONTRACTOR is given the Notice to Proceed with the Work.

3. ISSUANCE OF WORK ORDERS

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

4. THE CONTRACT SUM

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

5. PROGRESS PAYMENTS

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

6. ACCEPTANCE AND FINAL PAYMENT

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

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

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

7. THE CONTRACT DOCUMENTS

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

8. EXTRA WORK

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

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

Fire Station #11, #14, #15 Technical Specifications Table of Contents

Division 26 – Electrical

260500	COMMON WORK RESULTS FOR ELECTRICAL	4
260510	ELECTRIC DEMOLITION	2
260526	GROUNDING AND BONDING OF ELECTRICAL SYSTEMS	2
260533	GENERAL MATERIALS AND INSTALLATION	4
262700	WIRING DEVICES	1
265000	LIGHTING SYSTEMS AND FIXTURES	2

APPENDIX A Standard Drawings

Fire Station #11, #14, #15 Standard Drawings Table of Contents

C0 – Cover Sheet
A1 – Existing and Renovation Plan
MEP – Existing and Renovation Plan

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

(Seal)

ATTEST:

Clerk of the Urban County Council

(Witness)

(Seal)

(Secretary)*

(Witness)

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

BY: MAYOR

(Title)

Wood Connection
(Contractor)

BY:

(Title)

PO Box 809 Nicholasville Ky 40340
(Address and Zip Code)

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

Western Surety Company

PAYMENT BOND

Bond Number: 71539643

KNOW ALL PERSONS BY THESE PRESENTS, That we Wood Connection of 1399 Hoover Pike, Nicholasville, KY 40340, hereinafter referred to as the Principal, and Western Surety Company, as Surety, are held and firmly bound unto Lexington-Fayette Urban County Government of 200 E. Main St. , 3rd Fl. Rm 338, Lexington, KY 40507, hereinafter referred to as the Obligee, in the sum of Fifty-Seven Thousand One Hundred Seventy-Five and 00/100 Dollars ($57,175.00), for the payment of which we bind ourselves, our legal representatives, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has entered into a contract with Obligee, dated _____ day of _____, _____, for Ada Restroom & Bath, Firehouse #11, #14, #15

copy of which contract is by reference made a part hereof.

NOW, THEREFORE, if Principal shall, in accordance with applicable Statutes, promptly make payment to all persons supplying labor and material in the prosecution of the work provided for in said contract, and any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to Surety being waived, then this obligation to be void; otherwise to remain in full force and effect.

No suit or action shall be commenced hereunder

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

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

The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder.

SIGNED, SEALED AND DATED this 29th day of April, 2014.

Wood Connection (Principal)

By Scott Lence (Seal)

Western Surety Company (Surety)

By _____ (Seal)

SUZANNE TABB KOEHNE Attorney-in-Fact

WESTERN SURETY COMPANY CORPORATE SEAL SOUTH DAKOTA

Western Surety Company

PERFORMANCE BOND

Bond Number: 71539643

KNOW ALL PERSONS BY THESE PRESENTS, That we Wood Connection of 1399 Hoover Pike, Nicholasville, KY 40340, hereinafter referred to as the Principal, and Western Surety Company, as Surety, are held and firmly bound unto Lexington-Fayette Urban County Government of 200 E. Main St. , 3rd Fl. Rm 338, Lexington, KY 40507, hereinafter referred to as the Obligee, in the sum of Fifty-Seven Thousand One Hundred Seventy-Five and 00/100 Dollars ($ 57,175.00), for the payment of which we bind ourselves, our legal representatives, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has entered into a contract with Obligee, dated the _____ day of _____, _____, for Ada Restroom & Bath, Firehouse #11, #14, #15.

NOW, THEREFORE, if the Principal shall faithfully perform such contract or shall indemnify and save harmless the Obligee from all cost and damage by reason of Principal's failure so to do, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

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

NO RIGHT OF ACTION shall accrue on this Bond to or for the use of any person or corporation other than the Obligee named herein or the heirs, executors, administrators or successors of the Obligee.

SIGNED, SEALED AND DATED this 29th day of April, 2014.

Wood Connection (Principal)

By _____ (Seal)

WESTERN SURETY COMPANY CORPORATE SEAL SOUTH DAKOTA

Western Surety Company (Surety)

By _____ (Seal)
SUZANNE TABB KOEHNE Attorney-in-Fact

Form F4597

ACKNOWLEDGMENT OF SURETY
(Attorney-in-Fact)

STATE OF Kentucky }
COUNTY OF Jefferson } ss

Bond No. 71539643

On this _____ day of _____, _____, before me, a notary public in and for said County, personally appeared SUZANNE TABB KOEHNE to me personally known and being by me duly sworn, did say, that he/she is the Attorney-in-Fact of WESTERN SURETY COMPANY, a corporation of Sioux Falls, South Dakota, created, organized and existing under and by virtue of the laws of the State of South Dakota, that the said instrument was executed on behalf of the said corporation by authority of its Board of Directors and that the said SUZANNE TABB KOEHNE acknowledges said instrument to be the free act and deed of said corporation and that he/she has authority to sign said instrument without affixing the corporate seal of said corporation.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my official seal at Louisville, Kentucky, the day and year last above written.

My commission expires

_____, _____

_____
Notary Public

Form 106-8-2013

Western Surety Company

POWER OF ATTORNEY - CERTIFIED COPY

Bond No. 71539643

Know All Men By These Presents, that WESTERN SURETY COMPANY, a corporation duly organized and existing under the laws of the State of South Dakota, and having its principal office in Sioux Falls, South Dakota (the "Company"), does by these presents make, constitute and appoint SUZANNE TABB KOEHNE

its true and lawful attorney(s)-in-fact, with full power and authority hereby conferred, to execute, acknowledge and deliver for and on its behalf as Surety, bonds for:

Principal: Wood Connection

Obligee: Lexington-Fayette Urban County Government

Amount: $500,000.00

and to bind the Company thereby as fully and to the same extent as if such bonds were signed by the Senior Vice President, sealed with the corporate seal of the Company and duly attested by its Secretary, hereby ratifying and confirming all that the said attorney(s)-in-fact may do within the above stated limitations. Said appointment is made under and by authority of the following bylaw of Western Surety Company which remains in full force and effect.

"Section 7. All bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation shall be executed in the corporate name of the Company by the President, Secretary, any Assistant Secretary, Treasurer, or any Vice President or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or agents who shall have authority to issue bonds, policies, or undertakings in the name of the Company. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation. The signature of any such officer and the corporate seal may be printed by facsimile."

All authority hereby conferred shall expire and terminate, without notice, unless used before midnight of November 20, 2014, but until such time shall be irrevocable and in full force and effect.

In Witness Whereof, Western Surety Company has caused these presents to be signed by its Vice President, Paul T. Bruflat, and its corporate seal to be affixed this 29th day of April, 2014.

WESTERN SURETY COMPANY

Paul T. Bruflat

Paul T. Bruflat, Vice President

WESTERN SURETY COMPANY CORPORATE SEAL SOUTH DAKOTA

STATE OF SOUTH DAKOTA } ss
COUNTY OF MINNEHAHA }

On this 29th day of April, in the year 2014, before me, a notary public, personally appeared Paul T. Bruflat, who being to me duly sworn, acknowledged that he signed the above Power of Attorney as the aforesaid officer of WESTERN SURETY COMPANY and acknowledged said instrument to be the voluntary act and deed of said corporation.

S. PETRIK NOTARY PUBLIC SOUTH DAKOTA SEAL SEAL

My Commission Expires August 11, 2016

S. Petrik

Notary Public - South Dakota

I the undersigned officer of Western Surety Company, a stock corporation of the State of South Dakota, do hereby certify that the attached Power of Attorney is in full force and effect and is irrevocable, and furthermore, that Section 7 of the bylaws of the Company as set forth in the Power of Attorney is now in force.

In testimony whereof, I have hereunto set my hand and seal of Western Surety Company this 29th day of April, 2014.

WESTERN SURETY COMPANY

Paul T. Bruflat

Paul T. Bruflat, Vice President

Form F5306-8-2012

WOOD CONNECTION LLC
PH. 859-621-1692
PO BOX 809
NICHOLASVILLE, KY 40340

73-14/421

2011

DATE 5/22/14

PAY TO THE ORDER OF L.F.U.G.G

$ 2917 00

Twenty nine hundred & seventeen dollars DOLLARS

Central Bank
Central Bank & Trust Co.
Nicholasville, Kentucky 40356
www.centralbank.com

Perf. Bond

MEMO #11. #14 #15 F.Station

Scott Pence

⑆042100146⑆ 2011 10546584⑈

CONTRACT DOCUMENTS
AND
SPECIFICATIONS

Lexington Fire Department
Division of Fire and Emergency Services
Facilities Maintenance Bureau

FOR

Rest Room Construction
Fire Stations: #11, #14 & #15

Bid No. 57-2014

Set # _____

PREPARED BY:

Fitzsimons Office of Architecture
112 West Third St.
Lexington, KY 40508
859-243-0838

KTA Consulting Engineers
1708 Jaggie Fox Way
Lexington, KY 40511
(859) 253-2459

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CONTRACT DOCUMENTS

Bid Number: 57-2014

Rest Room Construction Fire Stations #11, #14 and #15

PART 1

ADVERTISEMENT FOR BIDS

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ADVERTISEMENT FOR BIDS

1. INVITATION

Sealed proposals for the following work will be received by the Lexington-Fayette Urban County Government (LFUCG) until 2:00 p.m., local time, _April 17, 2014_, for furnishing all labor and/or materials and performing all work as set forth by this advertisement, conditions (general and special), specifications, and/or the drawings prepared by and for Lexington-Fayette Urban County Government, Division of Fire and Emergency Services, Lexington Fire Department. Immediately following the scheduled closing time for reception of bids, all proposals which have been submitted in accordance with the above will be publicly opened and read aloud.

2. DESCRIPTION OF WORK

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

Construction of new restrooms, single with shower, inside existing buildings for Fire Station #11, #14 and #15. The construction and floor plan of the three stations are similar but each building is different.

Fire Station #11, 1226 Harrodsburg Road, floor is a poured concrete slab on grade. The concrete slab will need to cut and patched for the new plumbing connections. The new rest room is to attach to existing utilities. Existing utilities are to be extended to the new location for piping, electric and HVAC.

Fire Station #14, 530 Roanoke Road, has a concrete slab floor cast over pre-cast concrete T sections, over a crawl space. The new rest room is to attach to existing utilities. Existing utilities are to be extended to the new location for piping, electric and HVAC.

Fire Station #15, 3308 Shillito Park, has a concrete slab floor cast over pre-cast concrete T sections, over a crawl space. The new rest room is to attach on to existing utilities. Existing utilities are to be extended to the new location for piping, electric and HVAC.

3. OBTAINING PLANS, SPECIFICATIONS, AND BID DOCUMENTS

Plans, Specifications, and Contract Documents may be obtained from the official bid document distributor, LYNN IMAGING, 328 Old Vine Street, Lexington, KY 40507, (859) 255-1021 or (www.lynnimaging.com) and click on plan room for a non-refundable price of reproduction for each full set of plans and documents.

Specifications, Plans, and Bid Documents may be examined at the following places:

LFUCG
Division of Central Purchasing
200 East Main Street, Third Floor, Rm 338
Lexington, Kentucky 40507
(859) 258-3320

Builders Exchange
1035 Strader Drive, Ste 100
Lexington, Kentucky, 40505

LFUCG
Division of Fire and Emergency Services, Lexington Fire Department.
Facilities Maintenance Bureau
219 E. Third St.
Lexington, KY 40508

McGraw-Hill Co./F. W. Dodge
2321 Fortune Drive, Ste 112-A
Lexington, Kentucky 40509

4. METHOD OF RECEIVING BIDS

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

Sealed bids shall be clearly marked on the outside of the container as follows: Company Name and Address, Bid Invitation Number, and the Project Name. Bids are to remain sealed until official Bid closure time.

Mailed bids/proposals should be sent to the Director, Division of Central Purchasing, 200 East Main Street, Lexington, KY 40507.

5. METHOD OF AWARD

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

6. BID WITHDRAWAL

No bidder may withdraw his bid for a period of sixty (60) calendar days after the closing date for receipt of bids. Errors and omissions will not be cause for withdrawal of bid without forfeit of bid bond. Bids may be withdrawn in person prior to the closing date of receipt of bids.

7. BID SECURITY

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

8. SUBMISSION OF BIDS

CONTRACTORS shall submit their bids to the Lexington-Fayette Urban County Government, Division of Purchasing, Third Floor, 200 East Main Street, Lexington, Kentucky 40507. Bids shall be submitted in a sealed envelope not later than 2:00 p.m. local time, _ April 17, 2014_. Sealed proposals shall be clearly marked on the outside of the container as follows: Company Name and Address, Bid Invitation Number, and Project Name to be opened at 2:00 p.m. local time _ April 17, 2014__. Bids are to remain sealed until official Bid closure time. Bids received after the scheduled closing time for receipt of bids will not be considered and will be returned unopened.

9. RIGHT TO REJECT

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

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

The successful bidder must submit with their bid the following items to the Lexington-Fayette Urban County Government:

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

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

All submissions should be directed to:

Lexington-Fayette Urban County Government
Division of Purchasing
200 East Main Street, 3rd Floor, Room 338
Lexington, Kentucky 40507

11. NOTICE CONCERNING MWDBE GOAL

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

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

For assistance in locating Disadvantaged Business Enterprises Subcontractors contact:

Marilyn Clark, Division of Central Purchasing
Lexington-Fayette Urban County Government
200 East Main Street, 3rd Floor, Room 338
Lexington, Kentucky 40507

12. PRE-BID MEETING

A non-mandatory pre-bid meeting will be held at __3:00__ PM local time on ___
April 7, 2014_____ at __ Station #15, 3308 Shillito Park, Lexington, KY __.
(date) (location)

A non-mandatory pre-bid meeting will be held at __2:00__ PM local time on ___
April 9, 2014_____ at __ Station #11, 1226 Harrodsburg Road,, Lexington, KY __.
(date) (location)

A non-mandatory pre-bid meeting will be held at __3:00__ PM local time on ___
April 7, 2014_____ at __ Station #14, 530 Roanoke Road, Lexington, KY __.
(date) (location)

END OF SECTION

PART II

INFORMATION FOR BIDDERS

INDEX

PART II

INFORMATION FOR BIDDERS

1. RECEIPT AND OPENING OF BIDS

The Lexington-Fayette Urban County Government (herein called the OWNER) invites bids from firms on the project described in the Advertisement for Bids. The OWNER will receive bids at the Division of Purchasing, at the time and in the manner set forth in the Advertisement for Bids, and the Bids will then be publicly opened and read aloud. The OWNER may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn prior to the scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within 60 days after the actual time and date of the bid opening, but OWNER may, in its sole discretion, release any bid and return the Bid Security prior to that date.

The Lexington-Fayette Urban County Government assumes no responsibility for bids that are not addressed and delivered as indicated above. Bids that are not delivered to the Division of Central Purchasing by the stated time and date will be rejected.

2. PREPARATION OF BID

Each bid must be submitted on the prescribed Form of Proposal. All blank spaces for the bid prices must be filled in, either in ink or typewritten, for both unit prices and extensions. Totals for each bid item must be added to show the total amount of the bid. Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, their address, the name of the project, the invitation number and time and date for which the bid is submitted. Bids must be addressed to the Director of Purchasing, Lexington-Fayette Urban County Government, Third Floor, 200 East Main Street, Lexington, Kentucky 40507. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified above.

3. SUBCONTRACTS

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

4. QUALIFICATION OF BIDDER

The OWNER may make such investigations as the OWNER deems necessary to determine the ability of the bidder to perform the Work, and the bidder shall furnish to the OWNER all such information and data for this purpose as the OWNER may request. The OWNER reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the OWNER that such bidder is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein. Conditional bids will not be accepted.

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

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

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

B. Corporate firms are required to be registered and in good standing with the requirements and provisions of the Office of the Secretary of State, Commonwealth of Kentucky.

C. Good standing with Public Works Act - any CONTRACTOR and/or subcontractors in violation of any wage or work act provisions (KRS 337.510 to KRS 337.550) are prohibited by Statutory Act (KRS 337.990) from bidding on or working on any and all public works contracts, either in their name or in the name of any other company, firm or other entity in which he might be interested. No bid from a prime contractor in violation of the Act can be considered, nor will any subcontractor in violation of the Act be approved and/or accepted. The responsibility for the qualifications of the subcontractor is solely that of the prime contractor.

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

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

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

5. BID SECURITY

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

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

6. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT

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

7. TIME OF COMPLETION AND LIQUIDATED DAMAGES

Bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" from the OWNER and to fully complete the Project within the time as specified in the Contract. Bidder must agree also to pay $___250.00____per day as liquidated damages, or the sum as specified in the Contract for each consecutive calendar day thereafter as hereinafter provided in the General Conditions.

8. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

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

B. Bidders should examine the requirements of section 4 of the General Conditions for information pertaining to subsurface conditions, underground structures, underground facilities, and availability of lands, easements, and rights-of-way. The completeness of data, presented in the Contract Documents, pertaining to subsurface conditions, underground structures, and underground facilities for the purposes of bidding or construction is not assured. The Bidder will, at Bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the physical conditions (surface and subsurface) which may affect cost, progress, performance or furnishing of the Work and which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price, and other terms and conditions of the Contract Documents. On request in advance, OWNER will provide access to the site to conduct such explorations and tests as each Bidder deems necessary for submission of a bid. Bidder shall fill all holes, clean up and restore the site to its former condition upon completion of such explorations.

C. The submission of a Bid will constitute an incontrovertible representation by the Bidder that Bidder has complied with every requirement of this paragraph 8; that without exception the Bid is premised upon furnishing and performing the Work required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents; and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

9. ADDENDA AND INTERPRETATIONS

No interpretation of the meaning of the Contract Documents will be made to any bidder orally. Every request for such interpretation should be in writing addressed to the Director of Central Purchasing, who in turn will have an Addendum issued for the Lexington-Fayette Urban County Government, and to be given consideration must be received prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications. Acknowledgement of the receipt of addenda must be included with all submitted bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the Contract Documents.

10. SECURITY FOR FAITHFUL PERFORMANCE

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

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

C. **Contractor shall use standard Performance and Payment Bond forms such as documents provided with this contract book or AIA form A312-1984 (or later). Each document will be for 100% of the Contract Bid Amount.**

11. POWER OF ATTORNEY

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

12. TAXES AND WORKMEN'S COMPENSATION

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

13. LAWS AND REGULATIONS

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

14. EROSION AND SEDIMENT CONTROL AND PERMITS

The CONTRACTOR and Subcontractors performing work on projects on behalf of the OWNER shall also comply with all applicable federal, state, and local environmental

regulations and all requirements and conditions set forth in "special" permits including but not limited to Corp of Engineers 404 permits, 401 Water Quality Certifications, Stream Crossing and Floodplain Encroachment Permits as described in Part 4 General Conditions Paragraph 5.17.

15. PREVAILING WAGE LAW AND MINIMUM HOURLY RATES

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

16. AFFIRMATIVE ACTION PLAN

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

1. Affirmative Action Plan of the firm
2. Current Work Force Analysis Form
3. Good Faith Effort Documentation
4. List of Disadvantaged Business Enterprise Subcontractors and the Dollar Value of each Subcontract

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

All submissions should be directed to:

Director, Division of Central Purchasing
Lexington-Fayette Urban County Government
200 East Main Street, Third Floor
Lexington, KY 40507

17. CONTRACT TIME

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

18. SUBSTITUTE OR "OR-EQUAL" ITEMS

The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or-equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or-equal" item of material or equipment may be furnished or used by the CONTRACTOR if acceptable to the ENGINEER and OWNER,

application for such acceptance will not be considered by the ENGINEER and OWNER until after the effective date of the Agreement. The procedure for submission of any such application by the CONTRACTOR and consideration by the ENGINEER and OWNER is set forth in the General Conditions.

19. ALTERNATE BIDS

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

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

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

20. SIGNING OF AGREEMENT

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

21. ASSISTANCE TO BE OFFERED TO DISADVANTAGED BUSINESS ENTERPRISE (MWDBE) CONTRACTORS

A. Outreach for MWDBE(s)

The Lexington-Fayette Urban County Government (LFUCG) maintains a database of MWDBE contractors and organizations. When a LFUCG construction project is advertised for bidding, notices are sent to companies registered at https://lfucg.economicengine.com. The notices describe the project and indicate the deadline for submitting bids.

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

Marilyn Clark, Division of Central Purchasing
Lexington-Fayette Urban County Government

200 East Main Street, Room 338
Lexington, Kentucky 40507
mclark@lexingtonky.gov

B. Bid Bond Assistance for MWDBE(s)

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

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

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

Marilyn Clark, Division of Central Purchasing
Lexington-Fayette Urban County Government
200 East Main Street, Room 338
Lexington, Kentucky 40507
mclark@lexingtonky.gov

D. MWDBE Subcontractors

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

For a list of eligible subcontractors, please contact:

Marilyn Clark, Division of Central Purchasing
Lexington-Fayette Urban County Government
200 East Main Street, Room 338
Lexington, Kentucky 40507
mclark@lexingtonky.gov

22. LFUCG NON-APPROPRIATION CLAUSE

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

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

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

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PART IV

GENERAL CONDITIONS

1. DEFINITIONS

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

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

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

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

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

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

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

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

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

1.9 Contract Documents

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

1.10 Contract Unit Price

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

1.11 Contract Time

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

1.12 CONTRACTOR

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

1.13 Defective

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

1.13 Drawings

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

1.15 Effective Date of the Agreement

The date indicated in the Agreement on which it becomes effective.

1.16 ENGINEER

The Lexington-Fayette Urban County Government Division of Water Quality or its authorized representative.

1.17 Field Order

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

1.18 Giving Notice

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

1.19 Laws and Regulations

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

1.20 Notice of Award

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

1.21 Notice to Proceed

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

1.22 OWNER

The Lexington-Fayette Urban County Government.

1.23 Partial Utilization

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

1.24 Project

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

1.25 Inspector

The authorized representative of the ENGINEER who is assigned to the site or any part thereof.

1.26 Shop Drawings

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

1.27 Specifications

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

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

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

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

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

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

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

1.33 Unit Price Work
Not applicable

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

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

2. PRELIMINARY MATTERS

2.1 Delivery of Bonds

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

2.2 Copies of Documents

Owner shall furnish to CONTRACTOR up to three copies (unless otherwise specified in the Special Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

2.3 Commencement of Contract Time; Notice to Proceed

The Contract Time will commence to run on the day specified in the Notice to Proceed.

2.4 Starting the Project

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

2.5 Before Starting Construction

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

2.6 Submittal of Schedules

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

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

2.6.2 a preliminary schedule of Shop Drawing submissions; and

2.6.3 a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the

basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work which will be confirmed in writing by CONTRACTOR at the time of submission.

2.7 Preconstruction Conference

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

2.8 Finalizing Schedules

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

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

3.1 General

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

3.2 Intent

It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe Work, materials or equipment such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any

technical society, organization or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or laws or regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to ENGINEER, or any of ENGINEER'S consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 8.12.3 or 8.12.4. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in paragraph 8.4.

3.3 Conflicts

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

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

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

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

3.4 Amending and Supplementing Contract Documents

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

3.5 Reuse of Documents

Neither CONTRACTOR nor any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER shall have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER; and they shall not reuse any of them on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER.

4. AVAILABILITY OF LANDS; PHYSICAL CONDITIONS, REFERENCE POINTS

4.1 Availability of Lands

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

4.2 Physical Conditions

4.2.1 Explorations and Reports

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

4.2.2 Existing Structures

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

4.2.3 Report of Differing Conditions
If CONTRACTOR believes that:

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

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

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

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

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

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

4.3 Physical Conditions-Underground Facilities

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

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

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

the Work with the owners of such underground facilities during construction; and for the safety and protection thereof and repairing any damage thereto resulting from the Work, the cost of all of which will be considered as having been included in the Contract Price.

4.3.2 Not Shown or Indicated

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

4.4 Reference Points

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

5. CONTRACTOR'S RESPONSIBILITIES

5.1 Supervision

CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall assure that all CONTRACTOR personnel (including subcontractors, etc.) conduct themselves in a courteous and respectful manner toward the ENGINEER and the general public. Failure to comply with this condition of the Contract will result in immediate suspension of the Work. Following a review by the Commissioner of Public Works, the Contract may be terminated (see GC section 14). CONTRACTOR shall be solely responsible for the

means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.

5.2 Superintendence

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

5.3 Labor

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

5.4 Start-Up and Completion of Work

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

5.5 Materials and Equipment

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

5.5.1 Not Clearly Specified or Indicated

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

5.5.2 Coordination of Work

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

5.6 Adjusting Progress Schedule

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

5.7 Substitutes or "Or-Equal" Items

5.7.1 General

Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular supplier, the naming of the item is intended to establish the type, function, and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by OWNER/ENGINEER if sufficient information is submitted by CONTRACTOR to allow OWNER/ENGINEER to determine that the material or equipment proposed is equivalent or equal to that named. The procedure for review by OWNER/ENGINEER will include the following. Requests for review of substitute items of material and equipment will not be accepted by OWNER/ENGINEER from anyone, other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall make written application to OWNER/ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will

state that the evaluation and acceptance of the proposed substitute will not prejudice CONTRACTOR'S achievement of completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by OWNER/ENGINEER in evaluating the proposed substitute. OWNER/ENGINEER may require CONTRACTOR to furnish at CONTRACTOR'S expense additional data about the proposed substitute.

5.7.2 Substitutes

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

5.7.3 OWNER/ENGINEER'S Approval

OWNER/ENGINEER will be allowed a reasonable time within which to evaluate each proposed substitute. OWNER/ENGINEER will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without OWNER/ENGINEER'S prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR'S expense a special performance guarantee or other surety with respect to any substitute. OWNER/ENGINEER will record time required by OWNER/ENGINEER and OWNER/ENGINEER'S consultants in evaluating substitutions proposed by CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not OWNER/ENGINEER accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of OWNER/ENGINEER and OWNER/ENGINEER'S consultants for evaluating each proposed substitute.

5.8 Subcontractors, Suppliers, and Others

5.8.1 Acceptable to ENGINEER

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

5.8.2 Objection After Due Investigation

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

5.8.3 Contractor Responsible for Acts of Subcontractors

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

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

CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR'S own acts and omissions. Nothing in the

Contract Documents shall create any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

5.8.4 Division of Specifications

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

5.8.5 Agreement Between Contractor and Subcontractors

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

5.8.6 Statements and Comments by CONTRACTOR

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

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

Should there be any change from the original intent of the project as a result of any statement or comment by the contractor, his employees or subcontractors, contractor shall be held liable for any change in the scope, nature, design, or construction method and shall bear the full cost for the previously mentioned changes.

5.9 Patent Fees and Royalties

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

5.10 Permits

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

5.11 Laws and Regulations

5.11.1 CONTRACTOR to Comply

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

5.11.2 Specifications and Drawings at Variance

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

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

5.12 Taxes

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

5.13 Use of Premises

5.13.1 Project Site

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

5.13.2 Clean UP

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

5.13.1 Loading of Structures

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

5.14 Record Drawings

CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Change Orders, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record

documents together with all approved samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, samples and Shop Drawings will be delivered to ENGINEER for OWNER.

5.15 Shop Drawings and Samples

5.15.1 Shop Drawing Submittals

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

5.15.2 Sample Submittals

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

5.15.3 Review by CONTRACTOR

Before submission of each Shop Drawing or sample CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.

5.15.4 Notice of Variation

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

5.15.5 ENGINEER'S Approval

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

5.15.6 Responsibility for Errors and Omissions

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

5.15.7 Cost of Related Work

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

5.16 Continuing the Work

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

5.17 Erosion and Sediment Control

5.17.1 General Environmental Requirements

The CONTRACTOR and Subcontractors performing work on projects on behalf of the OWNER shall comply with all applicable federal, state, and

local environmental regulations and all requirements and conditions set forth in "special" permits including but not limited to Corp of Engineers 404 permits, 401 Water Quality Certifications, Stream Crossing and Floodplain Encroachment Permits.

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

5.17.2 Stormwater Pollution Prevention

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

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

a. That the Stormwater Pollution Prevention Plan (SWPPP) or erosion control plan is current and available for review on site;
b. That any and all stormwater inspection reports required by the permit are conducted by qualified personnel and are available for review onsite; and
c. That all best management practices (BMPs) are adequately maintained and effective at controlling erosion and preventing sediment from leaving the site.

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

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

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

6. OTHER WORK

6.1 Related Work at Site

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

6.2 Other Contractors or Utility Owners

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

6.3 Delays Caused by Others

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

6.4 Coordination

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

7. OWNER'S RESPONSIBILITIES

7.1 Communications

OWNER shall issue all communications to CONTRACTOR through ENGINEER.

7.2 Data and Payments

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

7.3 Lands, Easements, and Surveys

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

7.4 Change Orders

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

7.5 Inspections, Tests and Approvals

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

7.6 Stop or Suspend Work

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

8. ENGINEER'S STATUS DURING CONSTRUCTION

8.1 OWNER'S Representative

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

8.2 Visits to Site

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

8.3 Project Representation

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

8.4 Clarifications and Interpretations

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

8.5 Authorized Variations in Work

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

8.6 Rejecting Defective Work

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

8.7 Shop Drawings

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

8.8 Change Orders

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

8.9 Payments

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

8.10 Determinations for Unit Prices

ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR.

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

8.11 Decision on Disputes

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

8.12 Limitations on Engineer's Responsibilities

8.12.1 CONTRACTOR, Supplier, or Surety

Neither ENGINEERS authority to act under this Article 8 or elsewhere in the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority shall give rise to any duty or

responsibility of ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization performing any of the Work, or to any surety for any of them.

8.12.2 To Evaluate the Work

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

8.12.3 CONTRACTOR'S Means, Methods, Etc.

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

8.12.4 Acts of Omissions of CONTRACTOR

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

9. CHANGES IN THE WORK

9.1 OWNER May Order Change

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

9.2 Claims

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

9.3 Work Not in Contract Documents

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

9.4 Change Orders

OWNER and CONTRACTOR shall execute appropriate Change Orders covering:

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

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

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

9.5 Notice of Change

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

10. CHANGE OF CONTRACT PRICE

10.1 Total Compensation

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

10.2 Claim for Increase or Decrease in Price

The Contract Price may only be changed by a Change Order. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the CONTRACTOR to the ENGINEER promptly (but in no event later than

thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by CONTRACTOR'S written statement that the amount claimed covers all known amounts (direct, indirect, and consequential) to which the CONTRACTOR is entitled as a result of the occurrence of said event.

10.3 Value of Work

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

10.3.1 Unit Prices

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

10.3.2 Lump Sum

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

10.3.3 Cost Plus Fee

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

10.4 Cost of the Work

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

10.4.1 Payroll Costs

Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall

include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by OWNER.

10.4.2 Materials and Equipment Costs

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

10.4.3 Subcontractor Costs

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

10.4.4 Special Consultant Costs

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

10.4.5 Supplemental Costs

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

10.4.5.2 Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less

market value of such items used but not consumed which remain the property of CONTRACTOR.

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

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

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

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

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

10.4.5.8 Minor expenses such as telegrams, long distance telephone calls, telephone service at the site,

expressage and similar petty cash items in connection with the Work.

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

10.5 Not to Be Included in Cost of the Work

The term Cost of the Work shall not include any of the following:

10.5.1 Costs of Officers and Executives

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

10.5.2 Principal Office

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

10.5.3 Capital Expense

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

10.5.4 Bonds and Insurance

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

10.5.5 Costs Due to Negligence

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

10.5.6 Other Costs

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

10.6 Contractor's Fee

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

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

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

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

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

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

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

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

10.7 Itemized Cost Breakdown

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

10.8 Cash Allowances

It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such Subcontractors or Suppliers and for such sums within the limit of the allowances as may be acceptable to ENGINEER, CONTRACTOR agrees that:

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

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

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

10.9 Unit Price Work

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

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

10.9.3 Claim for Increase in Unit Price
Where the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement and there is no corresponding adjustment with respect to any other item of Work and if CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof, CONTRACTOR may make a claim for an increase in the Contract Price in accordance with Article 10.

11. CHANGE OF CONTRACT TIME

11.1 Change Order

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

11.2 Justification for Time Extensions

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

11.3 Time Limits

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

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

12.1 Warranty and Guarantee

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

12.2 Access to Work

ENGINEER and ENGINEER'S representatives, other representatives of OWNER, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide proper and safe conditions for such access.

12.3 Tests and Inspections

12.3.1 Timely Notice

CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals.

12.3.2 Requirements and Responsibilities

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

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

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

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

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

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

12.3.3 On-Site Construction Test and Other Testing

All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to OWNER and CONTRACTOR (or by ENGINEER if so specified).

12.3.4 Covered Work

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

12.3.5 CONTRACTOR'S Obligation

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

12.4 OWNER May Stop the Work

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

12.5 Correction or Removal of Defective Work

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

12.6 One Year Correction Period

If within one year after the date of Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER'S written instructions, either correct such defective Work, or, if it has been rejected by OWNER, remove it from the site and replace it with non-defective Work. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and

other professionals) will be paid by CONTRACTOR. In special circumstances where a particular item of equipment is placed in continuous service before Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Change Order.

12.7 Acceptance of Defective Work

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

12.8 OWNER May Correct Defective Work

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

13. PAYMENTS TO CONTRACTOR AND COMPLETION

13.1 Schedule of Values

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

13.2 Application for Progress Payment

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

13.3 CONTRACTOR'S Warranty of Title

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

13.4 Review of Applications for Progress Payment

13.4.1 Submission of Application for Payment

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

13.4.2 ENGINEER'S Recommendation

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

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

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

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

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

13.5 Partial Utilization

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

13.6 Final Inspection

Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will make a final inspection with CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies.

13.7 Final Application for Payment

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

13.8 Final Payment and Acceptance

13.8.1 ENGINEER'S Approval

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

13.8.2 Delay in Completion of Work

If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed, OWNER shall, upon receipt of CONTRACTOR'S final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is

less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 10 of Part II, Information for Bidders, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

13.9 CONTRACTOR'S Continuing Obligation

CONTRACTOR'S obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by ENGINEER, nor the issuance of a certificate of Completion, nor any payment by OWNER to CONTRACTOR under the Contract Documents, nor any use or occupancy of the Work or any part thereof by OWNER, nor any act of acceptance by OWNER nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor any correction of defective Work by OWNER will constitute an acceptance of Work not in accordance with the Contract Documents or a release of CONTRACTOR'S obligation to perform the Work in accordance with the Contract Documents (except as provided in paragraph 13.10).

13.10 Waiver of Claims

The making and acceptance of final payment will constitute:

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

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

14. SUSPENSION OF WORK AND TERMINATION

14.1 OWNER May Suspend Work

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

14.2 OWNER May Terminate

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

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

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

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

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

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

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

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

14.2.8 if CONTRACTOR disregards the authority of ENGINEER, or

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

OWNER may, after giving CONTRACTOR (and the surety) seven days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from

the site and take possession of the Work and of all CONTRACTOR'S tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct, indirect and consequential costs of completing the Work (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) such excess will be paid to CONTRACTOR. If such costs exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such costs incurred by OWNER will be approved as to reasonableness by ENGINEER and incorporated in a Change Order, but when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

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

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

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

14.3 CONTRACTOR'S Services Terminated

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

14.4 Payment After Termination

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

but not limited to, fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs).

14.5 CONTRACTOR May Stop Work or Terminate

If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within sixty days after it is submitted, or OWNER fails for sixty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER and ENGINEER, terminate the Agreement and recover from OWNER payment for all Work executed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Agreement, if ENGINEER has failed to act on an Application for Payment or OWNER has failed to make any payment as aforesaid, CONTRACTOR may upon seven days' written notice to OWNER and ENGINEER stop the Work until payment of all amounts then due. The provisions of this paragraph shall not relieve CONTRACTOR of the obligations under paragraph 5.16 to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with OWNER.

15. MISCELLANEOUS

15.1 Claims for Injury or Damage

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

15.2 Non-Discrimination in Employment

The CONTRACTOR shall comply with the following requirements prohibiting discrimination:

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

15.2.2 That it is an unlawful practice for an employer:

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

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

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

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

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

15.3 Temporary Street Closing or Blockage

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

15.4 Percentage of Work Performed by prime CONTRACTOR

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

15.5 Clean-up

Cleanup shall progress, to the greatest degree practicable, throughout the course of the Work. The Work will not be considered as completed, and final payment will not be made, until the right-of-way and all ground occupied or affected by the Contractor in connection with the Work has been cleared of all rubbish, equipment,

excess materials, temporary structures, and weeds. Rubbish and all waste materials of whatever nature shall be disposed of, off of the project site, in an acceptable manner. All property, both public and private, which has been damaged in the prosecution of the Work, shall be restored in an acceptable manner. All areas shall be draining, and all drainage ways shall be left unobstructed, and in such a condition that drift will not collect or scour be induced.

15.6 General

The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 12.1, 12.3.5, 13.3, and 15.2 and all of the rights and remedies available to OWNER and ENGINEER thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representations, warranties and guarantees made in the Contract Documents will survive final payment and termination or completion of the Agreement.

15.7 Debris Disposal

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

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PART IV

GENERAL CONDITIONS

1. DEFINITIONS

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

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

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

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

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

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

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

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

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

1.9 Contract Documents

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

1.10 Contract Unit Price

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

1.11 Contract Time

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

1.12 CONTRACTOR

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

1.13 Defective

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

1.13 Drawings

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

1.15 Effective Date of the Agreement

The date indicated in the Agreement on which it becomes effective.

1.16 ENGINEER

The Lexington-Fayette Urban County Government Division of Water Quality or its authorized representative.

1.17 Field Order

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

1.18 Giving Notice

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

1.19 Laws and Regulations

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

1.20 Notice of Award

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

1.21 Notice to Proceed

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

1.22 OWNER

The Lexington-Fayette Urban County Government.

1.23 Partial Utilization

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

1.24 Project

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

1.25 Inspector

The authorized representative of the ENGINEER who is assigned to the site or any part thereof.

1.26 Shop Drawings

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

1.27 Specifications

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

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

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

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

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

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

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

1.33 Unit Price Work
Not applicable

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

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

2. PRELIMINARY MATTERS

2.1 Delivery of Bonds

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

2.2 Copies of Documents

Owner shall furnish to CONTRACTOR up to three copies (unless otherwise specified in the Special Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

2.3 Commencement of Contract Time; Notice to Proceed

The Contract Time will commence to run on the day specified in the Notice to Proceed.

2.4 Starting the Project

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

2.5 Before Starting Construction

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

2.6 Submittal of Schedules

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

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

2.6.2 a preliminary schedule of Shop Drawing submissions; and

2.6.3 a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the

basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work which will be confirmed in writing by CONTRACTOR at the time of submission.

2.7 Preconstruction Conference

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

2.8 Finalizing Schedules

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

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

3.1 General

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

3.2 Intent

It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe Work, materials or equipment such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any

technical society, organization or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or laws or regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to ENGINEER, or any of ENGINEER'S consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 8.12.3 or 8.12.4. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in paragraph 8.4.

3.3 Conflicts

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

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

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

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

3.4 Amending and Supplementing Contract Documents

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

3.5 Reuse of Documents

Neither CONTRACTOR nor any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER shall have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER; and they shall not reuse any of them on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER.

4. AVAILABILITY OF LANDS; PHYSICAL CONDITIONS, REFERENCE POINTS

4.1 Availability of Lands

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

4.2 Physical Conditions

4.2.1 Explorations and Reports

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

4.2.2 Existing Structures

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

4.2.3 Report of Differing Conditions
If CONTRACTOR believes that:

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

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

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

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

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

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

4.3 Physical Conditions-Underground Facilities

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

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

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

the Work with the owners of such underground facilities during construction; and for the safety and protection thereof and repairing any damage thereto resulting from the Work, the cost of all of which will be considered as having been included in the Contract Price.

4.3.2 Not Shown or Indicated

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

4.4 Reference Points

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

5. CONTRACTOR'S RESPONSIBILITIES

5.1 Supervision

CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall assure that all CONTRACTOR personnel (including subcontractors, etc.) conduct themselves in a courteous and respectful manner toward the ENGINEER and the general public. Failure to comply with this condition of the Contract will result in immediate suspension of the Work. Following a review by the Commissioner of Public Works, the Contract may be terminated (see GC section 14). CONTRACTOR shall be solely responsible for the

means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.

5.2 Superintendence

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

5.3 Labor

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

5.4 Start-Up and Completion of Work

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

5.5 Materials and Equipment

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

5.5.1 Not Clearly Specified or Indicated

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

5.5.2 Coordination of Work

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

5.6 Adjusting Progress Schedule

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

5.7 Substitutes or "Or-Equal" Items

5.7.1 General

Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular supplier, the naming of the item is intended to establish the type, function, and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by OWNER/ENGINEER if sufficient information is submitted by CONTRACTOR to allow OWNER/ENGINEER to determine that the material or equipment proposed is equivalent or equal to that named. The procedure for review by OWNER/ENGINEER will include the following. Requests for review of substitute items of material and equipment will not be accepted by OWNER/ENGINEER from anyone, other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall make written application to OWNER/ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will

state that the evaluation and acceptance of the proposed substitute will not prejudice CONTRACTOR'S achievement of completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by OWNER/ENGINEER in evaluating the proposed substitute. OWNER/ENGINEER may require CONTRACTOR to furnish at CONTRACTOR'S expense additional data about the proposed substitute.

5.7.2 Substitutes

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

5.7.3 OWNER/ENGINEER'S Approval

OWNER/ENGINEER will be allowed a reasonable time within which to evaluate each proposed substitute. OWNER/ENGINEER will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without OWNER/ENGINEER'S prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR'S expense a special performance guarantee or other surety with respect to any substitute. OWNER/ENGINEER will record time required by OWNER/ENGINEER and OWNER/ENGINEER'S consultants in evaluating substitutions proposed by CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not OWNER/ENGINEER accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of OWNER/ENGINEER and OWNER/ENGINEER'S consultants for evaluating each proposed substitute.

5.8 Subcontractors, Suppliers, and Others

5.8.1 Acceptable to ENGINEER

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

5.8.2 Objection After Due Investigation

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

5.8.3 Contractor Responsible for Acts of Subcontractors

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

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

CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR'S own acts and omissions. Nothing in the

Contract Documents shall create any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

5.8.4 Division of Specifications

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

5.8.5 Agreement Between Contractor and Subcontractors

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

5.8.6 Statements and Comments by CONTRACTOR

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

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

Should there be any change from the original intent of the project as a result of any statement or comment by the contractor, his employees or subcontractors, contractor shall be held liable for any change in the scope, nature, design, or construction method and shall bear the full cost for the previously mentioned changes.

5.9 Patent Fees and Royalties

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

5.10 Permits

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

5.11 Laws and Regulations

5.11.1 CONTRACTOR to Comply

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

5.11.2 Specifications and Drawings at Variance

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

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

5.12 Taxes

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

5.13 Use of Premises

5.13.1 Project Site

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

5.13.2 Clean UP

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

5.13.1 Loading of Structures

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

5.14 Record Drawings

CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Change Orders, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record

documents together with all approved samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, samples and Shop Drawings will be delivered to ENGINEER for OWNER.

5.15 Shop Drawings and Samples

5.15.1 Shop Drawing Submittals

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

5.15.2 Sample Submittals

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

5.15.3 Review by CONTRACTOR

Before submission of each Shop Drawing or sample CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.

5.15.4 Notice of Variation

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

5.15.5 ENGINEER'S Approval

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

5.15.6 Responsibility for Errors and Omissions

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

5.15.7 Cost of Related Work

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

5.16 Continuing the Work

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

5.17 Erosion and Sediment Control

5.17.1 General Environmental Requirements

The CONTRACTOR and Subcontractors performing work on projects on behalf of the OWNER shall comply with all applicable federal, state, and

local environmental regulations and all requirements and conditions set forth in "special" permits including but not limited to Corp of Engineers 404 permits, 401 Water Quality Certifications, Stream Crossing and Floodplain Encroachment Permits.

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

5.17.2 Stormwater Pollution Prevention

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

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

a. That the Stormwater Pollution Prevention Plan (SWPPP) or erosion control plan is current and available for review on site;
b. That any and all stormwater inspection reports required by the permit are conducted by qualified personnel and are available for review onsite; and
c. That all best management practices (BMPs) are adequately maintained and effective at controlling erosion and preventing sediment from leaving the site.

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

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

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

6. OTHER WORK

6.1 Related Work at Site

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

6.2 Other Contractors or Utility Owners

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

6.3 Delays Caused by Others

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

6.4 Coordination

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

7. OWNER'S RESPONSIBILITIES

7.1 Communications

OWNER shall issue all communications to CONTRACTOR through ENGINEER.

7.2 Data and Payments

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

7.3 Lands, Easements, and Surveys

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

7.4 Change Orders

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

7.5 Inspections, Tests and Approvals

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

7.6 Stop or Suspend Work

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

8. ENGINEER'S STATUS DURING CONSTRUCTION

8.1 OWNER'S Representative

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

8.2 Visits to Site

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

8.3 Project Representation

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

8.4 Clarifications and Interpretations

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

8.5 Authorized Variations in Work

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

8.6 Rejecting Defective Work

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

8.7 Shop Drawings

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

8.8 Change Orders

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

8.9 Payments

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

8.10 Determinations for Unit Prices

ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR.

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

8.11 Decision on Disputes

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

8.12 Limitations on Engineer's Responsibilities

8.12.1 CONTRACTOR, Supplier, or Surety

Neither ENGINEERS authority to act under this Article 8 or elsewhere in the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority shall give rise to any duty or

responsibility of ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization performing any of the Work, or to any surety for any of them.

8.12.2 To Evaluate the Work

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

8.12.3 CONTRACTOR'S Means, Methods, Etc.

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

8.12.4 Acts of Omissions of CONTRACTOR

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

9. CHANGES IN THE WORK

9.1 OWNER May Order Change

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

9.2 Claims

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

9.3 Work Not in Contract Documents

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

9.4 Change Orders

OWNER and CONTRACTOR shall execute appropriate Change Orders covering:

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

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

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

9.5 Notice of Change

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

10. CHANGE OF CONTRACT PRICE

10.1 Total Compensation

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

10.2 Claim for Increase or Decrease in Price

The Contract Price may only be changed by a Change Order. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the CONTRACTOR to the ENGINEER promptly (but in no event later than

thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by CONTRACTOR'S written statement that the amount claimed covers all known amounts (direct, indirect, and consequential) to which the CONTRACTOR is entitled as a result of the occurrence of said event.

10.3 Value of Work

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

10.3.1 Unit Prices

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

10.3.2 Lump Sum

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

10.3.3 Cost Plus Fee

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

10.4 Cost of the Work

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

10.4.1 Payroll Costs

Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall

include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by OWNER.

10.4.2 Materials and Equipment Costs

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

10.4.3 Subcontractor Costs

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

10.4.4 Special Consultant Costs

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

10.4.5 Supplemental Costs

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

10.4.5.2 Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less

market value of such items used but not consumed which remain the property of CONTRACTOR.

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

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

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

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

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

10.4.5.8 Minor expenses such as telegrams, long distance telephone calls, telephone service at the site,

expressage and similar petty cash items in connection with the Work.

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

10.5 Not to Be Included in Cost of the Work

The term Cost of the Work shall not include any of the following:

10.5.1 Costs of Officers and Executives

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

10.5.2 Principal Office

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

10.5.3 Capital Expense

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

10.5.4 Bonds and Insurance

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

10.5.5 Costs Due to Negligence

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

10.5.6 Other Costs

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

10.6 Contractor's Fee

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

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

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

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

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

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

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

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

10.7 Itemized Cost Breakdown

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

10.8 Cash Allowances

It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such Subcontractors or Suppliers and for such sums within the limit of the allowances as may be acceptable to ENGINEER, CONTRACTOR agrees that:

10.8.1 Materials and Equipment

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

10.8.2 Other Costs

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

10.8.3 Change Order

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

10.9 Unit Price Work

10.9.1 General

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

10.9.2 Overhead and Profit

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

10.9.3 Claim for Increase in Unit Price

Where the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement and there is no corresponding adjustment with respect to any other item of Work and if CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof, CONTRACTOR may make a claim for an increase in the Contract Price in accordance with Article 10.

11. CHANGE OF CONTRACT TIME

11.1 Change Order

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

11.2 Justification for Time Extensions

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

11.3 Time Limits

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

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

12.1 Warranty and Guarantee

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

12.2 Access to Work

ENGINEER and ENGINEER'S representatives, other representatives of OWNER, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide proper and safe conditions for such access.

12.3 Tests and Inspections

12.3.1 Timely Notice

CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals.

12.3.2 Requirements and Responsibilities

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

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

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

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

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

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

12.3.3 On-Site Construction Test and Other Testing

All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to OWNER and CONTRACTOR (or by ENGINEER if so specified).

12.3.4 Covered Work

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

12.3.5 CONTRACTOR'S Obligation

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

12.4 OWNER May Stop the Work

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

12.5 Correction or Removal of Defective Work

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

12.6 One Year Correction Period

If within one year after the date of Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER'S written instructions, either correct such defective Work, or, if it has been rejected by OWNER, remove it from the site and replace it with non-defective Work. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and

other professionals) will be paid by CONTRACTOR. In special circumstances where a particular item of equipment is placed in continuous service before Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Change Order.

12.7 Acceptance of Defective Work

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

12.8 OWNER May Correct Defective Work

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

13. PAYMENTS TO CONTRACTOR AND COMPLETION

13.1 Schedule of Values

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

13.2 Application for Progress Payment

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

13.3 CONTRACTOR'S Warranty of Title

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

13.4 Review of Applications for Progress Payment

13.4.1 Submission of Application for Payment

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

13.4.2 ENGINEER'S Recommendation

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

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

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

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

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

13.5 Partial Utilization

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

13.6 Final Inspection

Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will make a final inspection with CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies.

13.7 Final Application for Payment

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

13.8 Final Payment and Acceptance

13.8.1 ENGINEER'S Approval

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

13.8.2 Delay in Completion of Work

If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed, OWNER shall, upon receipt of CONTRACTOR'S final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is

less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 10 of Part II, Information for Bidders, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

13.9 CONTRACTOR'S Continuing Obligation

CONTRACTOR'S obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by ENGINEER, nor the issuance of a certificate of Completion, nor any payment by OWNER to CONTRACTOR under the Contract Documents, nor any use or occupancy of the Work or any part thereof by OWNER, nor any act of acceptance by OWNER nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor any correction of defective Work by OWNER will constitute an acceptance of Work not in accordance with the Contract Documents or a release of CONTRACTOR'S obligation to perform the Work in accordance with the Contract Documents (except as provided in paragraph 13.10).

13.10 Waiver of Claims

The making and acceptance of final payment will constitute:

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

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

14. SUSPENSION OF WORK AND TERMINATION

14.1 OWNER May Suspend Work

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

14.2 OWNER May Terminate

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

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

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

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

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

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

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

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

14.2.8 if CONTRACTOR disregards the authority of ENGINEER, or

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

OWNER may, after giving CONTRACTOR (and the surety) seven days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from

the site and take possession of the Work and of all CONTRACTOR'S tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct, indirect and consequential costs of completing the Work (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) such excess will be paid to CONTRACTOR. If such costs exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such costs incurred by OWNER will be approved as to reasonableness by ENGINEER and incorporated in a Change Order, but when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

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

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

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

14.3 CONTRACTOR'S Services Terminated

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

14.4 Payment After Termination

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

but not limited to, fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs).

14.5 CONTRACTOR May Stop Work or Terminate

If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within sixty days after it is submitted, or OWNER fails for sixty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER and ENGINEER, terminate the Agreement and recover from OWNER payment for all Work executed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Agreement, if ENGINEER has failed to act on an Application for Payment or OWNER has failed to make any payment as aforesaid, CONTRACTOR may upon seven days' written notice to OWNER and ENGINEER stop the Work until payment of all amounts then due. The provisions of this paragraph shall not relieve CONTRACTOR of the obligations under paragraph 5.16 to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with OWNER.

15. MISCELLANEOUS

15.1 Claims for Injury or Damage

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

15.2 Non-Discrimination in Employment

The CONTRACTOR shall comply with the following requirements prohibiting discrimination:

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

15.2.2 That it is an unlawful practice for an employer:

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

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

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

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

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

15.3 Temporary Street Closing or Blockage

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

15.4 Percentage of Work Performed by prime CONTRACTOR

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

15.5 Clean-up

Cleanup shall progress, to the greatest degree practicable, throughout the course of the Work. The Work will not be considered as completed, and final payment will not be made, until the right-of-way and all ground occupied or affected by the Contractor in connection with the Work has been cleared of all rubbish, equipment,

excess materials, temporary structures, and weeds. Rubbish and all waste materials of whatever nature shall be disposed of, off of the project site, in an acceptable manner. All property, both public and private, which has been damaged in the prosecution of the Work, shall be restored in an acceptable manner. All areas shall be draining, and all drainage ways shall be left unobstructed, and in such a condition that drift will not collect or scour be induced.

15.6 General

The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 12.1, 12.3.5, 13.3, and 15.2 and all of the rights and remedies available to OWNER and ENGINEER thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representations, warranties and guarantees made in the Contract Documents will survive final payment and termination or completion of the Agreement.

15.7 Debris Disposal

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

END OF SECTION

RISK MANAGEMENT PROVISIONS
INSURANCE AND INDEMNIFICATION

INDEMNIFICATION AND HOLD HARMLESS PROVISION

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

(2) CONTRACTOR shall indemnify, save, hold harmless and defend the Lexington-Fayette Urban County Government and its elected and appointed officials, employees, agents, volunteers, and successors in interest (hereinafter "LFUCG") from and against all liability, damages, and losses, including but not limited to, demands, claims, obligations, causes of action, judgments, penalties, fines, liens, costs, expenses, interest, defense costs and reasonable attorney's fees that are in any way incidental to or connected with, or that arise or are alleged to have arisen, directly or indirectly, from or by CONTRACTOR's performance or breach of the agreement and/or the provision of goods or services provided that: (a) it is attributable to personal injury, bodily injury, sickness, or death, or to injury to or destruction of property (including the loss of use resulting therefrom), or to or from the negligent acts, errors or omissions or willful misconduct of the CONTRACTOR; and (b) not caused solely by the active negligence or willful misconduct of LFUCG.

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

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

FINANCIAL RESPONSIBILITY

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

INSURANCE REQUIREMENTS

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

Required Insurance Coverage

BIDDER/CONTRACTOR shall procure and maintain for the duration of this contract the following or equivalent insurance policies at no less than the limits shown below and cause its

subcontractors to maintain similar insurance with limits acceptable to LFUCG in order to protect LFUCG against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by CONTRACTOR. The cost of such insurance shall be included in any bid:

Coverage	Limits
General Liability (Insurance Services Office Form CG 00 01)	$1 million per occurrence, $2 million aggregate or $2 million combined single limit
Commercial Automobile Liability (Insurance Services Office Form CA 0001)	combined single, $1 million per occurrence
Worker's Compensation	Statutory
Employer's Liability	$500,000.00

The policies above shall contain the following conditions:

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

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

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

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

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

Renewals

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

Deductibles and Self-Insured Programs

IF YOU INTEND TO SUBMIT A SELF-INSURANCE PLAN IT MUST BE FORWARDED TO LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DIVISION OF RISK MANAGEMENT, 200 EAST MAIN STREET, LEXINGTON, KENTUCKY 40507 NO LATER THAN A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO THE RESPONSE DATE. Self-insurance programs, deductibles, and self-insured retentions in insurance policies are subject to separate approval by Lexington-Fayette Urban County Government's Division of Risk Management, upon review of evidence of BIDDER/CONTRACTOR's financial capacity to respond to claims. Any such programs or retentions must provide LFUCG with at least the same protection from liability

and defense of suits as would be afforded by first-dollar insurance coverage. If BIDDER/CONTRACTOR satisfies any portion of the insurance requirements through deductibles, self-insurance programs, or self-insured retentions, BIDDER/CONTRACTOR agrees to provide Lexington-Fayette Urban County Government, Division of Risk Management, the following data prior to the final acceptance of bid and the commencement of any work:

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

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

c. Actuarial funding reports or retained losses.

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

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

f. Self-Insured Associations will be considered.

Safety and Loss Control

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

Verification of Coverage

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

Right to Review, Audit and Inspect

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

DEFAULT

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

PART V
SPECIAL CONDITIONS
INDEX

1. **BLASTING**

Blasting shall only be allowed with the specific written permission from the OWNER and the CONTRACTOR will be fully responsible and will be required to provide additional insurance.

Blasting is only allowed by a licensed blaster in compliance with the State of Kentucky Laws, KRS Section 351.310 – 351.340 and applicable rules and regulations issued by the Department of Mines and Minerals.

CONTRACTOR shall notify each property owner and public utility company having structures or facilities in proximity to the site of the work of the intent to use explosives. Give such notice sufficiently in advance to enable those being notified to take the necessary steps to protect their property from injury. CONTRACTOR will be liable for any and all damages and claims made as a result of his blasting operations.

CONTRACTOR shall preserve the original bearing value of rock located under proposed structure foundations from damage be blasting, by concussion from the blasting or by excessive breakage. The CONTRACTOR shall bear any increase in structure costs caused by blasting damage to rock under proposed foundations.

2. RISK MANAGEMENT PROVISIONS INSURANCE AND INDEMNIFICATION

INDEMNIFICATION AND HOLD HARMLESS PROVISION

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

(2) CONTRACTOR shall indemnify, save, hold harmless and defend the Lexington-Fayette Urban County Government and its elected and appointed officials, employees, agents, volunteers, and successors in interest (hereinafter "LFUCG") from and against all liability, damages, and losses, including but not limited to, demands, claims, obligations, causes of action, judgments, penalties, fines, liens, costs, expenses, interest, defense costs and reasonable attorney's fees that are in any way incidental to or connected with, or that arise or are alleged to have arisen, directly or indirectly, from or by CONTRACTOR's performance or breach of the agreement and/or the provision of goods or services provided that: (a) it is attributable to personal injury, bodily injury, sickness, or death, or to injury to or destruction of property (including the loss of use resulting therefrom), or to or from the negligent acts, errors or omissions or willful misconduct of the CONTRACTOR; and (b) not caused solely by the active negligence or willful misconduct of LFUCG.

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

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

FINANCIAL RESPONSIBILITY

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

INSURANCE REQUIREMENTS

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

Required Insurance Coverage

BIDDER/CONTRACTOR shall procure and maintain for the duration of this contract the following or equivalent insurance policies at no less than the limits shown below and cause its subcontractors to maintain similar insurance with limits acceptable to LFUCG in order to protect LFUCG against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by CONTRACTOR. The cost of such insurance shall be included in any bid:

Coverage	**Limits**
General Liability aggregate (Insurance Services Office Form CG 00 01)	$1 million per occurrence, $2 million or $2 million combined single limit
Commercial Automobile Liability occurrence (Insurance Services Office Form CA 0001)	combined single, $1 million per
Worker's Compensation	Statutory
Employer's Liability	$500,000.00

The policies above shall contain the following conditions:

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

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

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

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

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

Renewals

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

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

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

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

c. Actuarial funding reports or retained losses.

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

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

f. Self-Insured Associations will be considered.

Safety and Loss Control

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

Verification of Coverage

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

Right to Review, Audit and Inspect

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

DEFAULT

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

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3. **WAGE SCALES** – insert if applicable

END OF SECTION

PART VI

CONTRACT AGREEMENT

INDEX

PART VI

CONTRACT AGREEMENT

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

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

1. SCOPE OF WORK

The CONTRACTOR shall furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the Proposal, the General Conditions, and the Special Conditions of the Contract, the Specifications and Contract Documents therefore as prepared by _____for the _____ project.

2. TIME OF COMPLETION

The time period estimated and authorized by the OWNER for the proper execution of the Work by the Contract, in full, is hereby fixed as ninety (90) calendar days. The time shall begin ten (10) days after the CONTRACTOR is given the Notice to Proceed with the Work.

3. ISSUANCE OF WORK ORDERS

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

4. THE CONTRACT SUM

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

5. PROGRESS PAYMENTS

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

6. ACCEPTANCE AND FINAL PAYMENT

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

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

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

7. THE CONTRACT DOCUMENTS

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

8. EXTRA WORK

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

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

SPECIFICATIONS

Update as needed for your specific bid

Division 1 - General Requirements

Division 2 - Site Work

Division 3 – Concrete

Division 4 – Not Used

Division 5 – Not Used

Division 6 – Not Used

Division 7 – Thermal and Moisture Protection

Division 8 – Not Used

Division 9 – Finishes

Division 10 – Not Used

Division 11 – Equipment

Division 12 – Not Used

Division 13 – Special Construction

Division 14 – Not Used

Division 15 – Mechanical

Division 16 – Electrical

Division 17 – Instrumentation

APPENDIX A Standard Drawings

PLAN DRAWINGS –

C0 – Cover Sheet

C1 – General Notes

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

(Seal)

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

ATTEST:

_____
Clerk of the Urban County Council

BY: _____
MAYOR

_____
(Witness)

_____
(Title)

(Seal)

_____
(Contractor)

_____
(Secretary)*

BY: _____

_____
(Witness)

_____
(Title)

_____
(Address and Zip Code)

IMPORTANT: *Strike out any non-applicable terms.

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

PART VII

PERFORMANCE AND PAYMENT BONDS

1. PERFORMANCE BOND

2. PAYMENT BOND

PART VII

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that

_____
(Name of CONTRACTOR)

_____
(Address of CONTRACTOR)

a_____, hereinafter
(Corporation, Partnership, or Individual)

called Principal, and _____
(Name of Surety)

_____
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

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

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

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

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

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

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

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

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

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

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

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

ATTEST:

_____
Principal

_____
(Principal) Secretary

BY: _____(s)

_____
(Address)

_____

_____
Witness as to Principal

_____
(Address)

_____

_____
Surety

ATTEST:

BY: _____
Attorney-in-Fact

_____
(Surety) Secretary

_____
(Address)

_____

(SEAL)

_____
Witness as to Surety

_____
(Address)

_____

TITLE: _____
Surety

_____

_____

BY: _____

TITLE: _____

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

PART VII

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENT: that

_____
(Name of Contractor)

_____
(Address of Contractor)

a _____, hereinafter
(Corporation, Partnership or Individual)

called Principal, and _____
(Name of Surety)

_____
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto:

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

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

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

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

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

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

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

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

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

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

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

IN WITNESS WHEREOF, this instrument is executed in _____ counterparts, each one of
(number)

which shall be deemed an original, this the _____ day of _____, 20_____.

ATTEST:

_____
(Principal)

_____
(Principal) Secretary

(SEAL)

BY: _____(s)

_____
(Address)

_____

_____
(Witness to Principal)

_____
(Address)

_____

_____
(Surety)

ATTEST:

BY: _____
(Attorney-in-Fact)

_____
(Surety) Secretary

(SEAL)

_____
Witness as to Surety

_____
(Address)

_____

_____
(Address)

_____

_____

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

END OF SECTION

PART VIII

ADDENDA

All addenda issued during the bidding of the Project will be reproduced in the signed Contract Documents, on the pages following this heading sheet.

Addendum Number	Title	Date
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____

SECTION 010000 - Special Requirements

1.1 SECTION INCLUDES:
This Section includes information which supplements the General Conditions:

1. Scope
2. Time for Completion
3. Ordering Materials
4. Storage of Materials
5. Protection of Existing Facilities
6. Project Closeout and Record Drawings.
7. Access to Site and Building
8. Temporary Parking
9. Owner Occupancy
10. Interruption and Protection of Utilities
11. Progress Meetings
12. Work by Owner
13. Field Office
14. Communications Service
15. Staging and Storage
16. Sanitary Facilities
17. Utilities
18. Final Cleaning
19. Substantial Completion, Final Inspections and Subsequent Inspections
20. Divisions of Specifications
21. Disputes
22. Allocation of Work
23. Codes and Ordinances
24. Conduct of Employees
25. Contractor Coordination
26. Cutting and Patching
27. Fire-Smoke Detectors - Existing
28. Submittal Procedure
29. Construction Photographs
30. Proposed Materials and Equipment List
31. Interior Enclosures
32. Progress Cleaning
33. Hazardous Materials

1. SCOPE

A. Project Description: This project involves the construction of a new rest room with shower in the existing locker rooms in three Fire Stations. Fire Station #15 and #14 has a concrete slab floor cast over pre-cast concrete T sections, over a crawl space. Fire Station #11 is concrete slab on grade. Fire Station #11 will require some amount concrete slab removal and replacement. The new rest rooms are to attach on to existing utilities. Existing utilities are to be extended to the new location for piping, electric and HVAC.

B. Bidders, subcontractors and suppliers, before submitting proposals, shall visit and examine the site to satisfy themselves as to the nature and scope of the existing conditions at the site. The submission of a proposal will be construed as evidence that a visit and examination have been made. Later claims for labor equipment, or materials required for difficulties encountered which could have been foreseen had such an examination been made will not be recognized.

C. The Work under this contract does not include any items marked N.I.C. on the Drawings (Not In Contract).

D. It shall be the responsibility of all Contractors and Subcontractors to carefully examine all Drawings, Specifications and Contract Documents pertaining to all phases of the construction in order that Contractor and Subcontractor may foresee all requirements for coordination of their work.

Submission of a bid shall be construed as evidence that such an examination has been made. Claims based on unforeseen requirements will not be considered.

E. Should any error or inconsistency appear in Drawings or Specifications, the Contractor, before proceeding with the work, must make mention of the same to the Architect for proper adjustment, and in no case proceed with the work in uncertainty or with insufficient drawings.

F. The Contractor and each Subcontractor shall be responsible for verification of all measurements at the building before ordering any materials or doing any work. No extra charge or compensation shall be allowed due to differences between actual dimensions and dimensions indicated on the Drawings. Any such discrepancy in dimensions which may be found shall be submitted to the Architect for his consideration before the Contractor proceeds with the work in the affected areas.

G. Contractors shall follow sizes in Specification or figures on Drawings, in preference to scale measurements and follow detail drawings in preference to general drawings.

2. TIMES FOR COMPLETION:

A. Substantial Completion: Subject to the conditions of the General Conditions, the total work to be done under this Construction Contract shall be commenced at the time stipulated in the Work Order to the Contractor and shall be substantially completed within: ***90 calendar days*** for entire project.

B. The date of Substantial Completion, to be determined, shall be the date certified by the Architect when the work is sufficiently complete, in accordance with the Contract Documents, so the Owner may conditionally accept, and beneficially occupy and use, all of the facilities provided under this Construction Contract.

C. Final Completion: Subject to the conditions of the General Conditions, the total work to be done under this Construction Contract shall be fully completed within thirty (30) consecutive calendar days after the Date of Substantial Completion.

D. The Date of Final Completion shall be the date that the work is complete and all Contract requirements have been fulfilled by the Contractor.

3. ORDERING MATERIALS

A. Immediately following Award of Contract for this work, Contractor shall determine source of supply for all materials and length of time required for their delivery, including materials of subcontractors, and order shall be placed for such materials based on the project schedule.

B. If, for any reason, any item specified will not be available when needed and Contractor can show that he has made a reasonably persistent effort to obtain item in question, the Architect is to be notified in writing within 15 days after Contract is signed; otherwise the Contractor will not be excused for delays in securing materials specified and will be held accountable if completion of building is thereby delayed.

4. STORAGE OF MATERIALS

A. Each Contractor providing materials and equipment shall be responsible for the proper and adequate storage of his materials and equipment, and for the removal of same upon completion of his work. Storage of materials at the site shall be confined to areas within Contract Limits or as otherwise designated by the Owner at the Pre-Construction Conference. Coordinate with Architect. Storage will be limited to the site.

5. **PROTECTION OF EXISTING FACILITIES**

A. The General Contractor shall repair and/or replace, at no expense to the Owner, any sections of existing roads, streets, sidewalks, curbs, grassed areas, shrubs, trees, utilities, buildings, automobiles, trucks and other structures or vehicles damaged by reason of work performed under this Contract or incidental thereto, whether by his own forces or by his subcontractors or his material suppliers.

Care should be taken by the Contractor to protect from injury any persons and vehicles that will use the building during construction. The Contractor, at the Construction Conference will outline his proposed procedures of construction, determine degrees of potential dangers and outline protective measures he will take during various construction phases.

B. Exterior Enclosures. Provide temporary weather-tight closures to exterior openings to protect the interior at all times for all types of weather.

C. Security. Provide security to protect work and existing facilities from unauthorized entry, vandalism or theft. Verify with Owner the schedule for opening and closing the building.

6. **PROJECT CLOSEOUT AND RECORD DRAWINGS**

A. The Owner will furnish one (1) set of blue line prints which the Contractor shall keep on file in the field office. The Contractor shall record on these prints from day to day as the work progresses, all changes and deviations from the contract Drawing, with special emphasis on the exact location of all work concealed from view by offset distances to surface improvements such as building corners, curbs, etc. Entries and notations shall be neat, legible and permanent. These prints shall be delivered to the Architect upon completion of this project. Approval of final payment will be contingent upon compliance with these provisions.

B. Provide a minimum of three (3) bound final installation, training, operation, maintenance and repair manuals to be turned over to the LFUCG's Project Manager and approved for content by the Owner prior to acceptance of substantial completion.

C. Manuals provided must be of sufficient detail to enable customer to install, calibrate, train, operate, maintain, service and repair every system, subsystem, and/or piece of equipment installed on or as part of this contract. Manual must contain:

1. Project Title, Project number, Location, dates of submittals, names of Design Consultant, Engineer, Contractor, and Contractor's Subs. Provide phone numbers and addresses for Contractor and Subs.

2. An Equipment Index that includes vendors name, address, and telephone number for all equipment purchased on the project.

3. Emergency instructions with phone numbers and names of contact persons on warranty items.

4. All manuals in binders shall be original copies provided by the manufacturer. At minimum these binders must include:

Installation manuals Calibration manuals

Training manuals
Service Manual
Reviewed shop drawings
Repair manuals
Parts list

5. Included in the front of the "Operation and Maintenance Manual" shall be a copy of the Interior and Exterior Finish plan and Schedule listing all finish materials, the manufacturer, the finish color, and the manufacturer's paint number.

D. Submission of final set of record drawings.

1. The Contractor, on copies of the Contract Documents provided by the contractor, shall submit a Record Set of Drawings indicating all deviations of construction as originally specified in the contract documents. These Record Drawings will compile information from the General Contractor as well as all sub-contractors. The Contractor shall provide a qualified representative to update the Record Set of Drawings as construction progresses.

2. Approval of the final payment request will be contingent upon compliance with these provisions. The Contractor's Record Set of Drawings shall be delivered to the Design Consultant at their completion so that the Design Consultant may make any changes on the original contract drawings.

7. ACCESS TO SITE AND BUILDING

A. Contact the architect for arrangements to visit the building.

8. TEMPORARY PARKING

A. Parking is limited to existing parking lot, coordinate with owner.

9. OWNER OCCUPANCY:

A. The site will be occupied during construction.

B. The contractor shall confine his operations, including delivery and unloading of materials and equipment, to the areas within the designated Contract Limits.

10. INTERRUPTION AND PROTECTION OF UTILITIES:

A. Utilities on the site are not to be interrupted without 48 hour notice to the Owner.

B. The contractor shall protect all utilities during construction.

11. PROGRESS MEETINGS

A. With the express purpose of expediting construction and providing the opportunity for cooperation of affected parties, meetings may be called which shall be attended by representatives of:

(1) Project Manager LFUCG, Fire Department, other
(2) the Architect and Consultants
(3) the General Contractor
(4) all Subcontractors

A location on or near the site will be designated where such meetings will be held. The frequency of meeting shall be twice a month for a formal meeting.

12. **WORK BY OWNER**

A. The owner may under take minor construction projects related to this project. The owner will coordinate any projects with the contractor and not disrupt the construction project.

13. **FIELD OFFICE**

A. Field office is not required; contractor cannot leave any items on site without permission of Station.

14. **COMMUNICATIONS SERVICE**

A. Contractor to arrange for and provide direct on-site communication by telephone during the construction of this project. Cellular phone is acceptable.

15. **STAGING AND STORAGE AREA**

A. All staging and storage is to occur within the site limits.

16. **SANITARY FACILITIES**

A. Restroom facilities are to be provided by the contractor for his workers and subcontractors. Drinking water shall be provided from an approved safe source, so piped or transported as to be kept clean and fresh and served from single service containers or satisfactory types of sanitary drinking stands or fountains. All such facilities and services shall be furnished in strict accordance with existing governing health regulations.

17. **UTILITIES**

A. The Contractor to provide can connect to existing electric service for construction power.

B. The Contractor to provide can connect to existing water service for construction water.

18. **FINAL CLEANING:**

A. Execute prior to final inspection. Clean building according to general conditions final cleaning. The intent is to clean and vacuum the entire building to keep dirt from being drawn into the HVAC system.

B. Clean interior and exterior surfaces exposed to view.

C. Clean debris from site, roofs, gutters, downspouts and drainage systems.

D. Remove waste and surplus materials, rubbish and construction facilities from the site.

19. **SUBSTANTIAL COMPLETION, FINAL INSPECTION & SUBSEQUENT INSPECTIONS:**

A. In as much as all parties with and intend to prosecute the work in a diligent and good faith manner, and to complete the work in a timely fashion, the Contractor shall notify the Architect when the Contractor believes he has attained Substantial Completion. Notification shall be made

at least five (5) calendar days prior to the date set to the Substantial Completion inspection. The Contractor shall comply with the prerequisite requirements for Substantial Completion as set forth in General Conditions.

B. Upon receipt of the Contractor's request, the Architect will either proceed with inspection or advise Contractor of prerequisites not fulfilled. Following initial inspection, the Architect will either prepare a certificate of substantial completion, or advise the Contractor of work which must be performed prior to issuance of the certificate of substantial completion. The Architect will repeat the inspection when requested and assure that the work has been substantially completed. Results of the completed inspection will form the initial "punch list" for final acceptance.

C. The Architect will re-inspect the work upon the receipt of the Contractor's notice that he believes in good faith that except for those items whose completion has been delayed due to circumstances that are acceptable to the Architect, the work has been completed, including punch list items from earlier inspections. Punch List shall be completed within 30 working days or Liquidated Damages can be assessed. Upon completion of re-inspection, the Architect will either recommend final acceptance and final payment, or will advise the Contractor of work not completed or obligations not fulfilled as required for final acceptance by issuance of another punch list. The architect will inspect for punch list completion only twice.

D. The Contractor, upon completion of all outstanding items set forth on the punch list, shall notify the Architect of the completion of the work. The Architect shall verify completion of the work by an on-site inspection.

E. If at this final inspection items remain on the punch list the general contractor shall be responsible for the cost of re-inspection by the architect and engineer. The cost is to be determined prior to the inspection but will not be less than hourly amounts noted on the Architect and Owner contract.

20. **DIVISION OF SPECIFICATIONS:**

A. Division of Specification into sections is done for convenience of reference and is not intended to control contractors in dividing work among subcontractors or to limit scope of work performed by any trade under any given section.

21. **DISPUTES:**

A. Contractor is hereby put on notice that it is his contractual obligation to adjust differences between his several subcontractors. Attempts to have the Architect or Owner settle disputes between Prime Contractor and his subcontractors, will not be given consideration.

22. **ALLOCATION OF WORK:**

A. Where certain materials are specified to be installed under various headings, it shall be the responsibility of the General Contractor to reallocate such work under the proper subcontractor if the specification is in conflict with local jurisdiction.

23. **CODES AND ORDINANCES:**

A. All branches of the work shown on the Plans or specified, whether specifically mentioned or not, shall be executed in strict compliance with all local or state regulations and codes and shall be in compliance with all national codes, when same have jurisdiction.

24. **CONDUCT OF EMPLOYEES:**

A. No Smoking is allowed on the job site.

B. The Contractor shall post signs conspicuously on the site to prohibit the use or possession of alcoholic beverages by any of his employees while they are on the grounds of this project. The Contractor is responsible for reporting violations of the provisions of KRS 244 to the proper authorities and for taking the necessary action to insure that the intent of this paragraph is carried out

25. **CONTRACTOR COORDINATION:**

A. The General Contractor and all Subcontractors shall cooperate and coordinate their work to expedite the progress of the project. All Subcontractors shall review and refer to the Drawings and Specifications of other trades involved with their particular work before proceeding. Any work installed which conflicts with another trade and had not been brought to the attention of the Architect prior to installation shall be removed at no additional expense to the Owner.

26. **CUTTING AND PATCHING:**

A. This is a historic building. All craftsmen are to be skilled in working on historic building. Extra time and care is needed to properly selectively demolish and rebuild this project. Matching new materials to the existing will require test patches to be approved before entire work is started. There will be discussion of the construction techniques and methods to make sure that the finished product will meet the required standards.

B. Employ a skilled and experienced installer to perform cutting and patching; replace materials ONLY if existing materials cannot be restored by splicing, filling and other appropriate restoration procedures.

C. Fit work tight to adjacent elements. Seal voids and gaps with appropriate sealant as indicated in plans and specifications. Consult the architect for detailing questions.

27. **FIRE-SMOKE DETECTORS - EXISTING:**

A. Existing systems are to remain in operation at all times except when construction will cause false alarms. Devise methods to cover and protect existing equipment during construction. Remove to keep system operational while no construction underway.

28. **SUBMITTAL PROCEDURES:**

A. Submittal form to identify Project, Contractor, Subcontractor Supplier and pertinent Contract Document Reference Numbers.

B. Apply Contractor's stamp or signature, certifying that review, verification of products required, field dimensions, adjacent work and coordination of information is in accordance with the requirements of the Work and Contract Documents.

C. Identify variations from Contract Documents and Product Specifications which may be detrimental to successful performance of the completed work.

D. Revise and resubmit submittals as required; identify all changes made since previous submittal.

E. Product Data. Submit the number of copies which the Contractor requires plus two copies to be retained by the Architect/Engineer. Mark each copy to identify applicable product, model, options, etc. Supplement manufacturers' standard data to provide information unique to this project.

F. Samples. Submit samples to illustrate functional and aesthetic

characteristics of the product. Submit samples of projects from the full range of manufacturers' standard colors or in custom colors selected, textures, and patterns for Architect/Engineer's selection.

29. **CONSTRUCTION PHOTOGRAPHS:**

A. Provide digital photographs of all uncovered conditions, and prior to covering any detail of construction.

30. **PROPOSED MATERIALS AND EQUIPMENT LIST:**

A. Within one hour of bid opening the successful low bidder must submit complete list of major Products proposed for use, with name of manufacturer, trade name, and model number of each Product.

31. **INTERIOR ENCLOSURES:**

A. Provide interior enclosures to control duct while performing demolition or cutting plaster, concrete, terrazzo, masonry or other material that generates dust.

B. Provide interior enclosures as required by hazardous materials rules and regulations.

32. **PROGRESS CLEANING:**

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

33. **HAZARDOUS MATERIALS:**

A. The owner has tested suspect materials in the building and there are no currently known hazardous materials on site.

B. The architect and architect's consultants shall have no responsibility for the discovery, presence, handling, removal or disposal of or exposure of persons to hazardous materials in any form at the project site, including but not limited to asbestos, asbestos products, polychlorinated biphenyl (PCB) or other toxic substances.

C. If the work which is to preformed under this contract interfaces in any way with existing components which contain hazardous materials, it shall be the contractor's responsibility to contact the Owner or Owner's environmental consultant regarding the proper means and methods to be utilized in dealing with the hazardous materials.

D. By execution of the contract for construction, the Contractor hereby agrees to bring no claim for negligence, breach of contract, indemnity, or otherwise against the Architect, his principals, employees, agents, and consultants if such claim in any way would involve the investigation of or remedial work related to hazardous materials in any form at the project site, including but not limited to asbestos, asbestos products, polychlorinated biphenyl (PCB) or other toxic substances. The contractor further agrees to defend, indemnify, and hold the Architect and his principals, employees, agents, and consultants harmless from any such claims related to hazardous materials that may be brought by the Contractor's Subcontractors, Suppliers, or other third parties who may be acting under the direction of the Contractor pursuant to this project.

END OF SECTION 010000 - Special Requirements

Technical Specifications

Rest Room Construction Station #11
1226 Harrodsburg Road
Lexington, KY

Lexington Fire Department
Division o Fire and Emergency Services
Facilities Maintenance Bureau
219 East Third St.
Lexington, KY 40508

Bid No. 14-0000

Prepared by: Fitzsimons Office of Architecture
112 West Third St.
Lexington, KY 40508
859-243-0838
KTA Consulting Engineers
1708 Jaggie Fox Way
Lexington, KY 40511
(859) 253-2459

Technical Specifications Contents

SECTION 010000 - Special Requirements

1.1 SECTION INCLUDES:
This Section includes information which supplements the General Conditions:

1. Scope
2. Time for Completion
3. Ordering Materials
4. Storage of Materials
5. Protection of Existing Facilities
6. Project Closeout and Record Drawings.
7. Access to Site and Building
8. Temporary Parking
9. Owner Occupancy
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26. Cutting and Patching
27. Fire-Smoke Detectors - Existing
28. Submittal Procedure
29. Construction Photographs
30. Proposed Materials and Equipment List
31. Interior Enclosures
32. Progress Cleaning
33. Hazardous Materials

1. SCOPE

A. Project Description: This project involves the construction of a new rest room with shower in the existing locker room. Fire Station #11 floor is a poured concrete slab. The concrete slab will need to cut and patched for the new plumbing connections. The new rest room is to attach on to existing utilities. Existing utilities are to be extended to the new location for piping, electric and HVAC.

B. Bidders, subcontractors and suppliers, before submitting proposals, shall visit and examine the site to satisfy themselves as to the nature and scope of the existing conditions at the site. The submission of a proposal will be construed as evidence that a visit and examination have been made. Later claims for labor equipment, or materials required for difficulties encountered which could have been foreseen had such an examination been made will not be recognized.

C. The Work under this contract does not include any items marked N.I.C. on the Drawings (Not In Contract).

D. It shall be the responsibility of all Contractors and Subcontractors to carefully examine all Drawings, Specifications and Contract Documents pertaining to all phases of the construction in order that Contractor and Subcontractor may foresee all requirements for coordination of their work. Submission of a bid shall be construed as evidence that such an examination has been made. Claims based on unforeseen requirements will not be

considered.

E. Should any error or inconsistency appear in Drawings or Specifications, the Contractor, before proceeding with the work, must make mention of the same to the Architect for proper adjustment, and in no case proceed with the work in uncertainty or with insufficient drawings.

F. The Contractor and each Subcontractor shall be responsible for verification of all measurements at the building before ordering any materials or doing any work. No extra charge or compensation shall be allowed due to differences between actual dimensions and dimensions indicated on the Drawings. Any such discrepancy in dimensions which may be found shall be submitted to the Architect for his consideration before the Contractor proceeds with the work in the affected areas.

G. Contractors shall follow sizes in Specification or figures on Drawings, in preference to scale measurements and follow detail drawings in preference to general drawings.

2. TIMES FOR COMPLETION:

A. Substantial Completion: Subject to the conditions of the General Conditions, the total work to be done under this Construction Contract shall be commenced at the time stipulated in the Work Order to the Contractor and shall be substantially completed within: ***90 calendar days*** for entire project.

B. The date of Substantial Completion, to be determined, shall be the date certified by the Architect when the work is sufficiently complete, in accordance with the Contract Documents, so the Owner may conditionally accept, and beneficially occupy and use, all of the facilities provided under this Construction Contract.

C. Final Completion: Subject to the conditions of the General Conditions, the total work to be done under this Construction Contract shall be fully completed within thirty (30) consecutive calendar days after the Date of Substantial Completion.

D. The Date of Final Completion shall be the date that the work is complete and all Contract requirements have been fulfilled by the Contractor.

3. ORDERING MATERIALS

A. Immediately following Award of Contract for this work, Contractor shall determine source of supply for all materials and length of time required for their delivery, including materials of subcontractors, and order shall be placed for such materials based on the project schedule.

B. If, for any reason, any item specified will not be available when needed and Contractor can show that he has made a reasonably persistent effort to obtain item in question, the Architect is to be notified in writing within 15 days after Contract is signed; otherwise the Contractor will not be excused for delays in securing materials specified and will be held accountable if completion of building is thereby delayed.

4. STORAGE OF MATERIALS

A. Each Contractor providing materials and equipment shall be responsible for the proper and adequate storage of his materials and equipment, and for the removal of same upon completion of his work. Storage of materials at the site shall be confined to areas within Contract Limits or as otherwise designated by the Owner at the Pre-Construction Conference. Coordinate with Architect. Storage will be limited to the site.

5. PROTECTION OF EXISTING FACILITIES

A. The General Contractor shall repair and/or replace, at no expense to the Owner, any sections of existing roads, streets, sidewalks, curbs, grassed areas, shrubs, trees, utilities, buildings, automobiles, trucks and other structures or vehicles damaged by reason of work performed under this Contract or incidental thereto, whether by his own forces or by his subcontractors or his material suppliers.

Care should be taken by the Contractor to protect from injury any persons and vehicles that will use the building during construction. The Contractor, at the Construction Conference will outline his proposed procedures of construction, determine degrees of potential dangers and outline protective measures he will take during various construction phases.

B. Exterior Enclosures. Provide temporary weather-tight closures to exterior openings to protect the interior at all times for all types of weather.

C. Security. Provide security to protect work and existing facilities from unauthorized entry, vandalism or theft. Verify with Owner the schedule for opening and closing the building.

6. PROJECT CLOSEOUT AND RECORD DRAWINGS

A. The Owner will furnish one (1) set of blue line prints which the Contractor shall keep on file in the field office. The Contractor shall record on these prints from day to day as the work progresses, all changes and deviations from the contract Drawing, with special emphasis on the exact location of all work concealed from view by offset distances to surface improvements such as building corners, curbs, etc. Entries and notations shall be neat, legible and permanent. These prints shall be delivered to the Architect upon completion of this project. Approval of final payment will be contingent upon compliance with these provisions.

B. Provide a minimum of three (3) bound final installation, training, operation, maintenance and repair manuals to be turned over to the LFUCG's Project Manager and approved for content by the Owner prior to acceptance of substantial completion.

C. Manuals provided must be of sufficient detail to enable customer to install, calibrate, train, operate, maintain, service and repair every system, subsystem, and/or piece of equipment installed on or as part of this contract. Manual must contain:

1. Project Title, Project number, Location, dates of submittals, names of Design Consultant, Engineer, Contractor, and Contractor's Subs. Provide phone numbers and addresses for Contractor and Subs.

2. An Equipment Index that includes vendors name, address, and telephone number for all equipment purchased on the project.

3. Emergency instructions with phone numbers and names of contact persons on warranty items.

4. All manuals in binders shall be original copies provided by the manufacturer. At minimum these binders must include:

Installation manuals	Calibration manuals
Training manuals	Repair manuals
Service Manual	Parts list

Reviewed shop drawings

5. Included in the front of the "Operation and Maintenance Manual" shall be a copy of the Interior and Exterior Finish plan and Schedule listing all finish materials, the manufacturer, the finish color, and the manufacturer's paint number.

D. Submission of final set of record drawings.

1. The Contractor, on copies of the Contract Documents provided by the contractor, shall submit a Record Set of Drawings indicating all deviations of construction as originally specified in the contract documents. These Record Drawings will compile information from the General Contractor as well as all sub-contractors. The Contractor shall provide a qualified representative to update the Record Set of Drawings as construction progresses.

2. Approval of the final payment request will be contingent upon compliance with these provisions. The Contractor's Record Set of Drawings shall be delivered to the Design Consultant at their completion so that the Design Consultant may make any changes on the original contract drawings.

7. ACCESS TO SITE AND BUILDING

A. Contact the architect for arrangements to visit the building.

8. TEMPORARY PARKING

A. Parking is limited to existing parking lot, coordinate with owner.

9. OWNER OCCUPANCY:

A. The site will be occupied during construction.

B. The contractor shall confine his operations, including delivery and unloading of materials and equipment, to the areas within the designated Contract Limits.

10. INTERRUPTION AND PROTECTION OF UTILITIES:

A. Utilities on the site are not to be interrupted without 48 hour notice to the Owner.

B. The contractor shall protect all utilities during construction.

11. PROGRESS MEETINGS

A. With the express purpose of expediting construction and providing the opportunity for cooperation of affected parties, meetings may be called which shall be attended by representatives of:

(1) Project Manager LFUCG, Fire Department, other
(2) the Architect and Consultants
(3) the General Contractor
(4) all Subcontractors

A location on or near the site will be designated where such meetings will be held. The frequency of meeting shall be twice a month for a formal meeting.

12. WORK BY OWNER

A. The owner may under take minor construction projects related to this project. The owner will coordinate any projects with the contractor and not disrupt the construction project.

13. **FIELD OFFICE**

A. Field office is not required, contractor cannot leave any items on site without permission of Station.

14. **COMMUNICATIONS SERVICE**

A. Contractor to arrange for and provide direct on-site communication by telephone during the construction of this project. Cellular phone is acceptable.

15. **STAGING AND STORAGE AREA**

A. All staging and storage is to occur within the site limits.

16. **SANITARY FACILITIES**

A. Restroom facilities are to be provided by the contractor for his workers and subcontractors. Drinking water shall be provided from an approved safe source, so piped or transported as to be kept clean and fresh and served from single service containers or satisfactory types of sanitary drinking stands or fountains. All such facilities and services shall be furnished in strict accordance with existing governing health regulations.

17. **UTILITIES**

A. The Contractor to provide can connect to existing electric service for construction power.

B. The Contractor to provide can connect to existing water service for construction water.

18. **FINAL CLEANING:**

A. Execute prior to final inspection. Clean building according to general conditions final cleaning. The intent is to clean and vacuum the entire building to keep dirt from being drawn into the HVAC system.

B. Clean interior and exterior surfaces exposed to view.

C. Clean debris from site, roofs, gutters, downspouts and drainage systems.

D. Remove waste and surplus materials, rubbish and construction facilities from the site.

19. **SUBSTANTIAL COMPLETION, FINAL INSPECTION & SUBSEQUENT INSPECTIONS:**

A. In as much as all parties with and intend to prosecute the work in a diligent and good faith manner, and to complete the work in a timely fashion, the Contractor shall notify the Architect when the Contractor believes he has attained Substantial Completion. Notification shall be made at least five (5) calendar days prior to the date set to the Substantial Completion inspection. The Contractor shall comply with the prerequisite

requirements for Substantial Completion as set forth in General Conditions.

B. Upon receipt of the Contractor's request, the Architect will either proceed with inspection or advise Contractor of prerequisites not fulfilled. Following initial inspection, the Architect will either prepare a certificate of substantial completion, or advise the Contractor of work which must be performed prior to issuance of the certificate of substantial completion. The Architect will repeat the inspection when requested and assure that the work has been substantially completed. Results of the completed inspection will form the initial "punch list" for final acceptance.

C. The Architect will re-inspect the work upon the receipt of the Contractor's notice that he believes in good faith that except for those items whose completion has been delayed due to circumstances that are acceptable to the Architect, the work has been completed, including punch list items from earlier inspections. Punch List shall be completed within 30 working days or Liquidated Damages can be assessed. Upon completion of re-inspection, the Architect will either recommend final acceptance and final payment, or will advise the Contractor of work not completed or obligations not fulfilled as required for final acceptance by issuance of another punch list. The architect will inspect for punch list completion only twice.

D. The Contractor, upon completion of all outstanding items set forth on the punch list, shall notify the Architect of the completion of the work. The Architect shall verify completion of the work by an on-site inspection.

E. If at this final inspection items remain on the punch list the general contractor shall be responsible for the cost of re-inspection by the architect and engineer. The cost is to be determined prior to the inspection but will not be less than hourly amounts noted on the Architect and Owner contract.

20. DIVISION OF SPECIFICATIONS:

A. Division of Specification into sections is done for convenience of reference and is not intended to control contractors in dividing work among subcontractors or to limit scope of work performed by any trade under any given section.

21. DISPUTES:

A. Contractor is hereby put on notice that it is his contractual obligation to adjust differences between his several subcontractors. Attempts to have the Architect or Owner settle disputes between Prime Contractor and his subcontractors, will not be given consideration.

22. ALLOCATION OF WORK:

A. Where certain materials are specified to be installed under various headings, it shall be the responsibility of the General Contractor to reallocate such work under the proper subcontractor if the specification is in conflict with local jurisdiction.

23. CODES AND ORDINANCES:

A. All branches of the work shown on the Plans or specified, whether specifically mentioned or not, shall be executed in strict compliance with all local or state regulations and codes and shall be in compliance with all national codes, when same have jurisdiction.

24. CONDUCT OF EMPLOYEES:

A. No Smoking is allowed on the job site.

B. The Contractor shall post signs conspicuously on the site to prohibit the use or possession of alcoholic beverages by any of his employees while they are on the grounds of this project. The Contractor is responsible for reporting violations of the provisions of KRS 244 to the proper authorities and for taking the necessary action to insure that the intent of this paragraph is carried out

25. **CONTRACTOR COORDINATION:**

A. The General Contractor and all Subcontractors shall cooperate and coordinate their work to expedite the progress of the project. All Subcontractors shall review and refer to the Drawings and Specifications of other trades involved with their particular work before proceeding. Any work installed which conflicts with another trade and had not been brought to the attention of the Architect prior to installation shall be removed at no additional expense to the Owner.

26. **CUTTING AND PATCHING:**

A. This is a historic building. All craftsmen are to be skilled in working on historic building. Extra time and care is needed to properly selectively demolish and rebuild this project. Matching new materials to the existing will require test patches to be approved before entire work is started. There will be discussion of the construction techniques and methods to make sure that the finished product will meet the required standards.

B. Employ a skilled and experienced installer to perform cutting and patching; replace materials ONLY if existing materials cannot be restored by splicing, filling and other appropriate restoration procedures.

C. Fit work tight to adjacent elements. Seal voids and gaps with appropriate sealant as indicated in plans and specifications. Consult the architect for detailing questions.

27. **FIRE-SMOKE DETECTORS - EXISTING:**

A. Existing systems are to remain in operation at all times except when construction will cause false alarms. Devise methods to cover and protect existing equipment during construction. Remove to keep system operational while no construction underway.

28. **SUBMITTAL PROCEDURES:**

A. Submittal form to identify Project, Contractor, Subcontractor Supplier and pertinent Contract Document Reference Numbers.

B. Apply Contractor's stamp or signature, certifying that review, verification of products required, field dimensions, adjacent work and coordination of information is in accordance with the requirements of the Work and Contract Documents.

C. Identify variations from Contract Documents and Product Specifications which may be detrimental to successful performance of the completed work.

D. Revise and resubmit submittals as required; identify all changes made since previous submittal.

E. Product Data. Submit the number of copies which the Contractor requires plus two copies to be retained by the Architect/Engineer. Mark each copy to identify applicable product, model, options, etc. Supplement manufacturers' standard data to provide information unique to this project.

F. Samples. Submit samples to illustrate functional and aesthetic characteristics of the product. Submit samples of projects from the full range of manufacturers' standard colors or in custom colors selected,

textures, and patterns for Architect/Engineer's selection.

29. **CONSTRUCTION PHOTOGRAPHS:**

A. Provide digital photographs of all uncovered conditions, and prior to covering any detail of construction.

30. **PROPOSED MATERIALS AND EQUIPMENT LIST:**

A. Within one hour of bid opening the successful low bidder must submit complete list of major Products proposed for use, with name of manufacturer, trade name, and model number of each Product.

31. **INTERIOR ENCLOSURES:**

A. Provide interior enclosures to control duct while performing demolition or cutting plaster, concrete, terrazzo, masonry or other material that generates dust.

B. Provide interior enclosures as required by hazardous materials rules and regulations.

32. **PROGRESS CLEANING:**

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

33. **HAZARDOUS MATERIALS:**

A. The owner has tested suspect materials in the building and there are no currently known hazardous materials on site.

B. The architect and architect's consultants shall have no responsibility for the discovery, presence, handling, removal or disposal of or exposure of persons to hazardous materials in any form at the project site, including but not limited to asbestos, asbestos products, polychlorinated biphenyl (PCB) or other toxic substances.

C. If the work which is to preformed under this contract interfaces in any way with existing components which contain hazardous materials, it shall be the contractor's responsibility to contact the Owner or Owner's environmental consultant regarding the proper means and methods to be utilized in dealing with the hazardous materials.

D. By execution of the contract for construction, the Contractor hereby agrees to bring no claim for negligence, breach of contract, indemnity, or otherwise against the Architect, his principals, employees, agents, and consultants if such claim in any way would involve the investigation of or remedial work related to hazardous materials in any form at the project site, including but not limited to asbestos, asbestos products, polychlorinated biphenyl (PCB) or other toxic substances. The contractor further agrees to defend, indemnify, and hold the Architect and his principals, employees, agents, and consultants harmless from any such claims related to hazardous materials that may be brought by the Contractor's Subcontractors, Suppliers, or other third parties who may be acting under the direction of the Contractor pursuant to this project.

END OF SECTION 010000 - Special Requirements

SECTION 020700 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. The construction of a new rest room should have very little impact on existing conditions. Only minor demolition is needed install new partitions, plumbing, HVAC to a single restroom.
2. Relocation of existing attic opening.
3. Patching and repairs are to be completed under other sections of the specifications but coordination between demolition and renovation must be considered and planned for.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section 01001 "Summary of Work" for use of the building requirements.
2. Division 1 Section 01001 "Cutting and Patching" for cutting and patching procedures for selective demolition operations.
3. Division 1 Section 01001 "Contract Closeout" for record document requirements.

1.3 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.

1.4 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 with further disposition at the Contractor's option.

1.5 QUALITY ASSURANCE

A. Demolition Firm Qualifications: Engage an experienced (min. five years experience) 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.

1.6 PROJECT CONDITIONS

A. Owner assumes no responsibility for actual condition of buildings to be selectively demolished.
   1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

B. Asbestos: It is not expected that asbestos will be encountered in the Work. If any materials suspected of containing asbestos are encountered, do not disturb the materials. Immediately stop all work. Remove workmen from the area. Immediately notify the Architect and the Owner.

PART 2 - PRODUCTS

2.1 REPAIR MATERIALS

A. Use repair materials identical to existing materials.

   1. Where identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
   2. Use a material whose installed performance equals or surpasses that of existing materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. 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.

3.2 UTILITY SERVICES

A. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services serving building to be selectively demolished.

1. Arrange to shut off indicated utilities with LFUCG Division of Fire and Emergency Services.

B. Utility Requirements: A licensed electrical contractor shall be employed for shutting off, disconnecting, removing, and sealing or capping utility services. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 PREPARATION

A. Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.

B. Employ a certified, licensed exterminator to treat building and to control rodents and vermin before and during selective demolition operations.

C. Conduct demolition operations and remove debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

D. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and 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.
2. Cover and protect furniture, furnishings, and equipment that have not been removed.

F. Coordinate new openings in the existing concrete slab with existing structural system.

3.4 POLLUTION CONTROLS

A. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.

1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

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.

3.5 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. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition work above each floor or tier before disturbing supporting members on lower levels.
2. 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.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

3.6 PATCHING AND REPAIRS

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

B. Patching is specified in Division 1 Section "Cutting and Patching."

C. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.

D. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction to remain in a manner that eliminates evidence of patching and refinishing.

E. Patch and repair floor and wall surfaces in the new space where demolished walls or partitions extend one finished area into another. Provide a flush and even surface of uniform color and appearance.

1. Closely match texture and finish of existing adjacent surface.
2. Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
3. Where patching smooth painted surfaces, extend final paint coat over entire unbroken surface containing the patch after the surface has received primer and second coat.
4. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
5. Inspect and test patched areas to demonstrate integrity of the installation, where feasible.

F. Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site. Remove debris daily from the site.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them. The disposal of any materials removed by the contractor must be in compliance with all building codes, local, city, state and federal requirements.

3.8 CLEANING

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

END OF SECTION 020700

SECTION 061000 - GENERAL CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
1. Wall framing for new partitions and wood nailers, framing and blocking.
2. Finish carpentry, miscellaneous trim work.
3. Interior architectural woodwork.
4. Solid surface counter top, substrate, backsplash, coordinated with ADA under-counter piping protection panels.

B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Division 9 Section "Painting" for back priming and finishing of finish carpentry.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for each type of factory-fabricated product and process specified, including details of construction relative to materials, dimensions of individual components, profiles, finishing and installation.

C. Material certificates for dimensional lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use as well as design values approved by the Board of Review of American Lumber Standards Committee (ALSC).

D. Wood treatment data as follows including chemical treatment manufacturer's instructions for handling, storing, installation, and finishing of treated material:
1. For each type of preservative treated wood product include certification by treating plant stating type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards.
2. Warranty of chemical treatment manufacturer.

E. Shop drawings showing location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

F. Lumber and panel products with non-factory applied finish, 50 sq. in. (300 sq. cm) for lumber and 8 by 10 inches (203 by 250 mm) for panels for each species and cut, with one-half of exposed surface finished.

G. Mockup: Prior to fabricating or installing interior architectural woodwork, cabinetry, construct mockup to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution. Build mockup of the size indicated, using materials indicated for final unit of work, and complying with the following requirements.
1. Locate mockup on site in the location indicated or, if not indicated, as directed by Architect.

2. Notify Architect one week in advance of the date and time when mockup will be installed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain architect's acceptance of mockup before start of final unit of Work.
5. Retain and maintain mockup during construction in an undisturbed condition as a standard for judging the completed Work.
   a. Accepted mockup in an undisturbed condition at the time of Substantial Completion may become part of the completed Work.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Arrange for installation of carpentry items by firms that can demonstrate successful experience in installing carpentry items similar in type and quality to those required for this Project.

B. Source Quality Control: Obtain trim, paneling and siding each from a single manufacturer to ensure a match of quality, color, pattern and texture.

C. Comply with the AWI Quality Standards of the Architectural Woodwork Institute for grades of interior architectural woodwork, construction, finishes and other requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Storage: Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber; provide for air circulation within and around stacks and under temporary coverings including polyethylene and similar materials.
   1. For lumber pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.

B. Do not deliver interior finish carpentry until concrete, plaster, masonry, ceramic tile, and other wet work is complete and cured to a condition of equilibrium and temperature and humidity are maintained at or near occupancy levels.

1.6 PROJECT CONDITIONS

A. Environmental Conditions: Obtain and comply with finish carpentry manufacturer's and installer's coordinated advice for optimum temperature and humidity conditions for finish carpentry during its storage and installation.

B. Weather Conditions: Proceed with finish carpentry only when existing and forecasted weather conditions will permit exterior finish carpentry to be installed in compliance with manufacturer's recommendations and when substrate is completely dry.

C. Open sealed packages of wood to permit natural adjustment of moisture content and allow wood to acclimate to the room conditions.

D. Field Measurements: Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
   1. Verify locations of concealed framing, blocking, reinforcements, and furring that support woodwork by accurate field measurements before being enclosed. Record measurements on final shop drawings.

1.7 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

1.8 EXTRA MATERIAL

A. Deliver extra material to owner. Before installation begins, furnish not less than 1.0 percent of the quantity of each type of wood trim profile installed on the project packaged with protective covering for storage and identified with labels clearly describing contents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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:
   1. Solid Surface Material: NEMA LD 3, grades as indicated, or if not indicated, as required by woodwork quality standard.
      a. Ralph Wilson Plastics Co.
      b. Formica
      c. Pionite
      d. Substitutions as per Section 01001.

2.2 MATERIALS

A. General: Provide materials that comply with requirements of the AWI quality standard for each type of woodwork and quality grade indicated and, where the following products are part of interior woodwork, with requirements of the referenced product standards that apply to product characteristics indicated:
   1. Hardboard: AHA A135.4.
   2. Particleboard: ANSI A208.1, Grade M-2.
   3. Softwood Plywood: PS 1.
   4. Hardwood Plywood and Face Veneers: HPVA HP-1.

2.3 LUMBER, GENERAL

A. Lumber Standards: Furnish lumber manufactured to comply with DOC PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.

B. Inspection Agencies: Inspection agencies and the abbreviations used to reference them with lumber grades and species include the following:
   1. NELMA - Northeastern Lumber Manufacturers Association.
   2. SPIB - Southern Pine Inspection Bureau.
   3. NHLA - National Hardwood Lumber Association.

C. Grade Stamps: Provide lumber with each piece factory-marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
   1. For exposed lumber furnish pieces with grade stamps applied to ends or back of each piece; or omit grade stamps entirely and provide certificates of grade compliance issued by inspection agency.

D. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.

   1. Provide dry lumber with 19 percent maximum moisture content at time of dressing and shipment for sizes 2 inches or less in nominal thickness, unless otherwise indicated.

2.4 DIMENSION LUMBER

A. General: Provide dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.

B. For light framing (2 to 4 inches thick, 2 to 4 inches wide) provide the following grade and species:
   1. "Construction" grade.
   2. Southern Pine graded under SPIB rules.

2.5 MISCELLANEOUS LUMBER

A. General: Provide lumber for support or attachment of other construction, including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members.

B. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shapes shown.

C. Moisture Content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.

D. Grade: For dimension lumber sizes, provide No. 3 or Standard grade lumber per ALSC's NGRs of any species. For board-size lumber, provide No. 3 Common grade per NELMA, NLGA, or WWPA; No. 2 grade per SPIB; or Standard grade per NLGA, WCLIB or WWPA of any species.

2.6 FASTENERS

A. General: Provide fasteners of size and type required for application indicated to provide secure attachment.
   1. Provide noncorrosive aluminum fasteners or fasteners with a hot dipped zinc coating per ASTM A 153 or of QISI Type 304 stainless steel.
   2. For finish carpentry, countersink nails and fill surface where face nailing is unavoidable.
   3. Nails, Wire, Brads, and Staples: FS FF-N-105.
   4. Power-Driven Fasteners: CABO NER-272.
   5. Wood Screws: ASME B18.6.1.
   6. Lag Bolts: ASME B18.2.1. (ASME B18.2.3.8M)
   7. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

B. Adhesives: Comply with manufacturer's recommendations for adhesives.

C. Flashing: Comply with requirements of Division 7 Section "Flashing and Sheet Metal" for flashing materials installed in finish carpentry.

D. Sealants: Comply with requirements of Division 7 Section "Joint Sealants" for materials required for sealing.

2.7 ENGINEERED WOOD PRODUCTS

A. General: Provide engineered wood products for which current model code evaluation/research reports exist that are acceptable to authorities having jurisdiction and that evidence compliance for the application indicated with specified requirements and the building code in effect for this Project.

B. Laminated Veneer Lumber: Lumber manufactured by laminating wood veneers in a continuous press using an exterior-type adhesives complying with ASTM D 2559 to produce members with grain of veneers parallel with their lengths and complying with the following requirements:

1. Veneer Characteristics: Douglas fir or southern pine veneers of varying thickness by widths and lengths standard with manufacturer, end-jointed with a lap-joint, butt joint, or scarf joint.
2. Allowable Design Stresses: As published by manufacturer, determined from empirical data or by rational engineering analysis, and demonstrated by comprehensive testing performed by a qualified independent testing laboratory.
3. Sizes: 1-3/4 inches thick by depth and length indicated.
4. Sizes: As indicated.

C. Prefabricated Wood I Joists: Units manufactured by bonding stress-graded lumber flanges to APA-Performance-Rated panel webs with exterior-type adhesives complying with ASTM D 2559, to produce I-shaped joists complying with the following requirements:
1. Flange Material: Spruce-pine-fir dimension lumber.
2. Web Material: Oriented strand board.
3. Web Material: Plywood complying with PS 1.
4. Web Material: Either material indicated above, as standard with joist manufacturer.
5. Allowable Design Stresses: As published by manufacturer, determined according to ASTM D 5055, and demonstrated by comprehensive testing performed by a qualified independent testing laboratory.
6. Sizes: Depths and widths as indicated, with flanges not less than 1-1/2 inches wide.

D. Composite Joists and Headers: Lumber manufactured by laminating visually graded wood veneers, whose thicknesses range from 0.15 to 0.25 inches in thickness and grain runs parallel to long axis, to narrow faces of oriented strand board to produce rectangular members with veneers making up not less than 32 percent of total cross section.
1. Wood Species: Veneers and board composed of a random mix of yellow-poplar, sweetgum, red maple, and southern pine; with a minor amount of ash, elm, sycamore, and black gum not to exceed 15 percent of finished product.
2. Adhesives: Melamine formaldehyde adhesive for gluing veneers to each other and phenol formaldehyde adhesive for gluing veneers to oriented flakeboard.
3. Allowable Design Stresses: As follows, determined from empirical data or by rational engineering analysis, and demonstrated by comprehensive testing performed by a qualified independent testing laboratory:
   a. Extreme Fiber Stress in Bending (Fb): 1950 psi for single member uses, 2250 psi for multiple member uses.
   b. Modulus of Elasticity in Edgewise Bending (Eb): 1,500,000 psi.
   c. Compression Perpendicular to Veneer Face: 550 psi.
   d. Horizontal Shear of Flakeboard (Fv): 500 psi.
4. Sizes: 1-1/2 inches thick by depth and length indicated.

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

F. Products: Subject to compliance with requirements, provide one of the following:
1. Laminated Veneer Lumber:
   a. "Micro=Lam L.V.L Headers and Beams," Trus Joist Corporation.
   b. "Gang-Lam Laminated Veneer Lumber," Mitek Wood Products, Inc.
2. Prefabricated Wood I Joists:
   a. "Alpine Structures I-Beams and Headers," Wood Products Division, Alpine Engineered Wood Products, Inc.
   b. "Wood I-Beam Prefabricated Wooden I Joists and Headers," Georgia Pacific Corp.
   c. "TJI Joists," Trus Joist Corporation.
3. Composite Joists and Headers:
   a. "Arrowood Joists VJ1," Fibreboard Technology Corp.

2.8 CONSTRUCTION PANELS, GENERAL

A. Construction Panel Standards: Comply with PS 1 "U.S. Product Standard for Construction and Industrial Plywood" for plywood construction panels and, for products not manufactured under PS 1 provisions, with APA PRP-108.

B. Trademark: Furnish construction panels that are each factory-marked with APA trademark evidencing compliance with grade requirements.

2.9 CONCEALED PERFORMANCE-RATED CONSTRUCTION PANELS

A. General: Where construction panels are indicated for the following concealed types of applications, provide APA Performance-Rated Panels complying with requirements designated under each application for grade designation, span rating, exposure durability classification, edge detail (where applicable), and thickness.

2.10 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, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of AISI Type 304 stainless steel.

B. Nails, Wire, Brads, and Staples: FS FF-N-105.

C. Power Driven Fasteners: National Evaluation Report NER-272.

D. Wood Screws: ANSI B18.6.1.

E. Lag Bolts: ANSI B18.2.1.

F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and where indicated, flat washers.

2.11 METAL FRAMING ANCHORS

A. General: Provide metal framing anchors of type, size, metal, and finish indicated that comply with requirements specified including the following:
1. Current Evaluation/Research Reports: Provide products for which model code evaluation/research reports exist that are acceptable to authorities having jurisdiction and that evidence compliance of metal framing anchors for application indicated with the building code in effect for this Project.
2. Allowable Design Loads: Provide products for which manufacturer publishes allowable design loads that are determined from empirical data or by rational engineering analysis and that are demonstrated by comprehensive testing performed by a qualified independent testing laboratory.

B. Galvanized Steel Sheet: Steel sheet zinc-coated by hot-dip process on continuous lines prior to fabrication to comply with ASTM A 525 for Coating Designation G60 and with ASTM A 446, Grade A (structural quality); ASTM A 526 (commercial quality); or ASTM A 527 (lock-forming quality); as standard with manufacturer for type of anchor indicated.

1. Use galvanized steel framing anchors for rough carpentry exposed to weather, in ground contact, or in area of high relative humidity, and where indicated.

C. Painted Steel Sheet: ASTM A 366 (commercial quality) cold rolled steel sheet or ASTM A 570, Grade 33 (structural quality) hot-rolled steel sheet, as standard with manufacturer for type of anchor indicated,

coated after fabrication with manufacturers standard, fast-curing, lead-free "universal primer" resistant to normal atmospheric corrosion.
1. Use painted steel framing anchors for rough carpentry not exposed to weather, in ground contact, or in area of high relative humidity.

2.12 MISCELLANEOUS MATERIALS

A. Sill Sealer Gaskets: Glass fiber resilient insulation fabricated in strip form for use as a sill sealer; 1 inch nominal thickness compressible to 1/32 inch; selected from manufacturer's standard widths to suit width of sill members indicated; in rolls of 50 feet or 100 feet in length.

B. Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by both adhesive and panel manufacturer.

C. Water Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbonate (IPBC) as its active ingredient.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Discard units of material with defects that impair quality of carpentry construction and that are too small to use in fabricating carpentry with minimum joints or optimum joint arrangement.

B. Set carpentry to required levels and lines, with members plumb and true to line and cut and fitted.

C. Fit carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.

D. Securely attach carpentry work to substrate by anchoring and fastening as required to securely attach.

E. Countersink nail heads on exposed carpentry work and fill holes.

F. Use common wire nails for rough carpentry work, unless otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners

3.2 WOOD FRAMING, GENERAL

A. Framing Standard: Comply with N.F.P.A. "Manual for Wood Frame Construction," unless otherwise indicated.

B. Install wall framing members of nominal 2" x 4"'s at 16" on center or as required to match existing.

C. Install roof framing members of nominal 2" x (x)"'s as noted on drawings at 16" on center or as required to match existing.

D. Anchor and nail as required to securely attach, and to comply with the following:
1. "Appendix C - Recommended Nailing Schedule" of the BOCA National Building Code.

E. Do not splice structural members between supports.

F. Firestop concealed spaces of wood framed walls and partitions at each floor level and at the ceiling line of the top story. Where firestops are not automatically provided by the framing system used, use closely fitted wood blocks of nominal 2-inch-thick lumber of the same width as framing members.

3.3 FINISH CARPENTRY EXAMINATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting installation and performance of finish carpentry. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.4 FINISH CARPENTRY PREPARATION

A. Clean substrates of projections and substances detrimental to application.

B. Condition finish carpentry to average prevailing humidity conditions in installation areas before installation for a minimum of 24 hours unless longer conditioning recommended by manufacturer.

C. Backprime lumber for painted finish exposed on the exterior. Comply with requirements for surface preparation and application in Section "Painting."

3.5 FINISH CARPENTRY INSTALLATION, GENERAL

A. Do not use finish carpentry materials that are unsound, warped, bowed, twisted, improperly treated or finished, not adequately seasoned, or too small to fabricate with proper jointing arrangements.
1. Do not use manufactured units with defective surfaces, sizes, or patterns.

B. Install finish carpentry plumb, level, true, and aligned with adjacent materials. Use concealed shims where required for alignment.
1. Scribe and cut finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
2. Install to tolerance of 1/8 inch in 8 feet for plumb and level. Install adjoining finish carpentry with 1/16 inch maximum offset for flush installation and 1/8 inch maximum offset for reveal installation.
3. Coordinate finish carpentry with materials and systems that may be in or adjacent to standing and running trim and rails. Provide cutouts for mechanical and electrical items that penetrate exposed surfaces of trim and rails.

C. Finish in accordance with specified requirements.

D. Refer to Division 9 Sections for final finishing of finish carpentry.

3.6 FINISH CARPENTRY, STANDING AND RUNNING TRIM AND RAILS

A. Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Stagger joints in adjacent and related standing and running trim and rails. Cope at returns and miter at corners to produce tight-fitting joints with full-surface contact throughout length of joint. Use scarf joints for end-to-end joints. Plane back of casings to provide uniform thickness across joints if required.
1. Match grain pattern across joints.
2. Drill pilot holes in hardwood prior to nailing or fastening to prevent splitting. Fasten to prevent movement or warping. Countersink nail heads on exposed carpentry work and fill holes.
3. Fit exterior joints to exclude water. Apply flat grain lumber with bark side exposed to weather.

B. Condition woodwork to average prevailing humidity conditions in installation areas prior to installing.

3.7 ADJUSTING

A. Repair damaged or defective finish carpentry where possible to eliminate functional or visual defects. Where not possible to repair, replace finish carpentry. Adjust joinery for uniform appearance.

3.8 CLEANING

A. Clean finish carpentry on exposed and semiexposed surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.

3.9 PROTECTION

A. Provide final protection and maintain conditions that ensure finish carpentry is without damage or deterioration at time of Substantial Completion.

3.10 INTERIOR ARCHITECTURAL WOODWORK

A. PREPARATION
1. Condition woodwork to average prevailing humidity conditions in installation areas prior to installing.
2. Prior to installation of architectural woodwork, examine shop fabricated work for completion, and complete work as required, including back priming and removal of packing.

B. INSTALLATION
1. Install woodwork 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 (including tops); and with no variations in flushness of adjoining surfaces.
2. Scribe and cut work to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.
3. Pressure treated wood: Handle, store, and install pressure treated wood in compliance with recommendations of chemical treatment manufacturer including those for adhesives, where required for installation.
4. Anchor woodwork to anchors or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fasteners heads are required, use fine finishing nails for exposing nailing, countersunk and filled flush with woodwork, and matching final finish where transparent finish is indicated.
5. 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 and comply with referenced Quality Standards for joinery.
6. Cabinets: install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated. Maintain veneer sequence matching (if any) of cabinets with transparent finish.
7. Tops: Anchor securely to base units and other support systems as indicated.
8. Secure backsplashes to tops with concealed metal brackets at 16" 0.0.
9. Wood storage shelving: Complete the assembly of units and install in the areas indicated, including hardware and accessories as indicated.

10. Paneling: Anchor paneling to supporting substrate with concealed panel-hanger clips and by blind nailing on backup strips, splined-connection strips, and similar associated trim and framing. Do not face nail unless otherwise indicated.
    a. Install flush paneling with no more than 1/16 inch in 96-inch (1.5 mm in 2400-mm) vertical cup or bow and 1/8 inch in 96-inch (3 mm in 2400-mm) horizontal variation from a true plane.

3.11 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork where possible to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean woodwork on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

3.12 INSTALLATION

A. Quality Standard: Install woodwork to comply with WIC Section 26 for the same grade specified in Part 2 of this Section for type of woodwork involved.

B. Install woodwork plumb, level, true, and straight with no distortions. Shim as required with concealed shims. Install to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm) for plumb and level (including tops).

C. Scribe and cut woodwork to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.

D. Cabinets: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.
    1. Install cabinets with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
    2. Maintain veneer sequence matching of cabinets with transparent finish.

E. Tops: Anchor securely to base units and other support systems as indicated. Caulk space between backsplash and wall with specified sealant.
    1. Install countertops with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.

F. Complete the finishing work specified in this Section to the extent not completed at shop or before installation of woodwork. Fill nail holes with matching filler where exposed. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats were applied in the shop.

3.13 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork where possible to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean woodwork on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

SECTION 079000 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes joint sealants for the following locations:
   1. Interior joints where rest room installed.

B. Related Sections: The following sections contain requirements that relate to this Section:
   1. Division 6 Section "Woodwork" for sealing all woodwork and carpentry.
   2. Division 9 Section "Painting."

1.3 SYSTEM PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that have been produced and installed to establish and to maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.

1.4 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data from manufacturers for each joint sealant product required.
   1. Certification by joint sealant manufacturer that sealants plus the primers and cleaners required for sealant installation shall contain no volatile organic compounds.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has completed joint sealant applications similar in material, design, and extent to that indicated for Project that have resulted in construction with a record of successful in-service performance.

B. Conform to Sealant and Waterproofers Institute requirements for materials and installation.

C. Product Testing: Provide comprehensive test data for each type of joint sealant based on tests conducted by a qualified independent testing laboratory on current product formulations within a 24-month period preceding date of Contractor's submittal of test results to Architect.
   1. Test elastomeric sealants for compliance with requirements specified by reference to ASTM C 920. Include test results for hardness, stain resistance, adhesion and cohesion under cyclic movement (per ASTM C 719), low-temperature flexibility, modulus of elasticity at 100 percent strain, effects of heat aging, and effects of accelerated weathering.

D. Field-Constructed Mock-Ups: Prior to installation of joint sealants, apply elastomeric sealants as follows to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution:

1. Joints in field-constructed mock-ups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants specified in this Section.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multi-component materials.

B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Conditions: Do not proceed with installation of joint sealants under the following conditions:
1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer.
2. When joint substrates are wet.

B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than allowed by joint sealant manufacturer for application indicated.

C. Joint Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.

1.8 SEQUENCING AND SCHEDULING

A. Sequence installation of joint sealants to occur not less than 21 nor more than 30 days after completion of waterproofing, unless otherwise indicated.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, joint fillers, 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: Provide color of exposed joint sealants to comply with the following:
1. Provide selections made by Architect from manufacturer's full range of standard colors for products of type indicated.

2.2 ELASTOMERIC JOINT SEALANTS

A. Exterior sealant, except paving joints, shall be Sonolastic NP-I by Sonneborn, Dymetric by Tremco, Synthacalk GC-5 by Pecora, or approved equal.

B. Interior sealant shall be Pecora AC-20 acrylic or equal by Sonneborn or Tremco.

C. Joint fillers and back-up materials, solvents, primers, bond breakers, and cleaners shall be as recommended by sealant manufacturer for various conditions encountered and shall be non-bituminous material.

2.3 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from pre-construction 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 in any way joint substrates and adjacent nonporous surfaces, and formulated to promote optimum adhesion of sealants with joint substrates.

C. Masking Tape: Non-staining, non-absorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance. Do not proceed with installation of joint sealants until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturer and the following requirements:
   1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
   2. Clean concrete, masonry, unglazed surfaces of ceramic tile, and similar 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 from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
   3. Remove laitance and form release agents from concrete.
   4. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile, and other 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.

B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealant manufacturer based on pre-construction joint sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's recommendations. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. 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.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

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

C. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:
   1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
      a. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width.
      b. Do not stretch, twist, puncture, or tear joint fillers.
      c. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.
   2. Install bond breaker tape between sealants where backer rods are not used between sealants and joint fillers or back of joints.

D. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.

E. Tooling of Non-sag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
   1. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

3.4 CLEANING

A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so that and installations with repaired areas are indistinguishable from original work.

END OF SECTION 079000

SECTION 08 11 00 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
B. Door Schedule see plans: two hollow metal door frames.

1.2 SUMMARY

A. This Section includes the following:
   1. Non-rated rolled steel frame, no hollow metal door in project, frame for drywall partition, 2x4 wood stud wall, to receive solid core wood door.

B. Relates Sections: The following Sections contain requirements that relate to this section
   1. Section 08710: Finish Hardware.
   2. Section 09900: Painting (Field painting of doors and frames).

1.3 SUBMITTALS

A. Submit shop drawings and product data under provisions of Section 01001.
B. Indicate frame configuration, anchor types and spacings, location of cutouts for hardware, reinforcement, and finish.
C. Indicate door elevations, internal reinforcement, closure method, and cut outs for glazing.
D. Submit manufacturer's installation instructions under provisions of Section 01001.

1.4 QUALITY ASSURANCE

A. Conform to requirements of SDI-100.

1.5 REGULATORY REQUIREMENTS

A. Conform to applicable code for fire rated frames and doors.

1.6 DELIVERY, STORAGE AND PROTECTION

A. Protect products under provisions of Section 01001.

B. Protect doors and frames with resilient packaging sealed with heat shrunk plastic.

C. Break seal on-site to permit ventilation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Steelcraft, Inc.
B. Fenestra
C. Amweld Building Products, Inc.
D. Substitutions: Under provisions of Section 01001.

2.2 FRAMES

A. Interior Frames: 16 gage thick material.

2.3 ACCESSORIES

A. Rubber Silencers Resilient rubber, 3 on strike side.

2.5 PROTECTIVE COATINGS

A. Bituminous Coating: Fibered asphalt emulsion.

B. Primer: Zinc chromate type.

2.6 FABRICATION

A. Fabricate frames as welded unit for drywall slip-on type.

B. Mullions for Double Doors: Removable type. Provide metal T shaped astragals for double doors.

C. Fabricate frames and doors with hardware reinforcement plates welded in place. Provide mortar guard boxes.

D. Reinforce frames wider than 48 inches (1 200 mm) with roll formed steel channels fitted tightly into frame head, flush with top.

E. Prepare frame for silencers. Provide three single rubber silencers for single doors and mullions of double doors on strike side, and two single silencers on frame head at double doors without mullions.

F. Attach fire rated label to each frame and door unit.

G. Close top edge of exterior door flush with inverted steel channel closure. Seal joints watertight.

H. Fabricate frames for masonry wall coursing with 4 inch head member.

I. Galvanize all components of the door and frame. Galvanize the top and bottom cap inserts and all stiffeners or reinforcements. Touch up all welded areas, patched or repaired areas.

2.7 FINISH

A. Interior Units: 0.60 oz/sq ft galvanized.

B. Primer: Baked on.

C. Finish: Site applied. See Section 09900 - Painting.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install frames in accordance with SDI-105.

B. Coordinate with masonry and wallboard wall construction for anchor placement.

3.2 TOLERANCES

A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.3 ADJUSTING AND CLEANING

A. Adjust hardware for smooth and balanced door movement.

END OF SECTION 08 11 00

SECTION 08 11 00 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
B. Door Schedule see: one hollow metal door frame.

1.2 SUMMARY

A. This Section includes the following:
   1. Non-rated rolled steel frame, no hollow metal door in project, frame for drywall partition, 2x4 wood stud wall, to receive solid core wood door.

B. Relates Sections: The following Sections contain requirements that relate to this section
   1. Section 08710: Finish Hardware.
   2. Section 09900: Painting (Field painting of doors and frames).

1.3 SUBMITTALS

A. Submit shop drawings and product data under provisions of Section 01001.
B. Indicate frame configuration, anchor types and spacings, location of cutouts for hardware, reinforcement, and finish.
C. Indicate door elevations, internal reinforcement, closure method, and cut outs for glazing.
D. Submit manufacturer's installation instructions under provisions of Section 01001.

1.4 QUALITY ASSURANCE

A. Conform to requirements of SDI-100.

1.5 REGULATORY REQUIREMENTS

A. Conform to applicable code for fire rated frames and doors.

1.6 DELIVERY, STORAGE AND PROTECTION

A. Protect products under provisions of Section 01001.

B. Protect doors and frames with resilient packaging sealed with heat shrunk plastic.

C. Break seal on-site to permit ventilation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Steelcraft, Inc.
B. Fenestra
C. Amweld Building Products, Inc.
D. Substitutions: Under provisions of Section 01001.

2.2 FRAMES

A. Interior Frames: 16 gage thick material.

2.3 ACCESSORIES

A. Protect doors with resilient packaging, sealed with heat shrunk plastic. Break seal on site to permit ventilation.

1.8 WARRANTY

A. Provide five year manufacturer's warranty under provisions of Section 01001.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Weyerhauser Company
B. Cal-Wood Door Div.
C. Algoma Hardwood, Inc.
D. Eggers Industries
E. Glen-Mar Door
F. Graham
G. Substitutions: Under provisions of Section 01001.

2.2 DOOR TYPES

A. Strand Core Doors for Transparent Finish: Comply with the following requirements:
1. Faces: White birch, plain sliced.
2. Grade: Premium.
3. Construction: 7 plies.
4. Core: Glued-block core.
5. Bonding: Stiles and rails bonded to core, then entire unit abrasive planed before veneering.

2.3 DOOR CONSTRUCTION (AWI QUALITY STANDARD)

A. Solid, Non-Rated Core: AWI Section 1300, SLC-5 or SLC-7, glue blocked core, 7 plys. Provide solid wood hardware blocking.

2.4 FLUSH DOOR FACING

A. Facing Quality: AWI premium grade.

B. Flush Interior Door Veneer: oak, plain sliced with random matched grain for natural finish.

C. Face Panel: High density overlay plywood face veneer.

2.5 ADHESIVES

A. Interior Doors: AWI, Type II.

2.6 FABRICATION

A. Fabricate non-rated doors in accordance with AWI Quality Standards requirements.

B. Provide flush doors with 1/2 inch thick edge strips of wood species to match face veneer.

C. Pre-machine doors for finish hardware.

2.7 FACTORY FINISHING

A. Comply with referenced AWI quality standard including section 1500 "Factory Finishing". Pre-finish doors at factory.

B. Transparent finish system is to comply with AWI Premium Grade, System #3 alkyd-urea conversion varnish, filled finish, semi-gloss. Finish

to match existing stained wood doors.

PART 3 EXECUTION

3.1 INSTALLATION

A. Manufacturer's Instructions: Install wood doors to comply with manufacturer's instructions and referenced quality standard and as indicated.
1. Install fire-rated doors in corresponding fire-rated frames according to requirements of NFPA 80.

B. Job-Fit Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted with fire-rated doors. Machine doors for hardware. Seal cut surfaces after fitting and machining.
1. Fitting Clearances for Non-Fire-Rated Doors: Provide 1/8 inch (3.2 mm) at jambs and heads, 1/16 inch (1.6 mm) per leaf at meeting stiles for pairs of doors, and 1/8 inch (3.2 mm) from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4-inch (6.4-mm) clearance from bottom of door to top of threshold.
2. Fitting Clearances for Fire-Rated Doors: Comply with NFPA 80.
3. Bevel non-fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock and hinge edges.
4. Bevel fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) on lock edge; trim stiles and rails only to extent permitted by labeling agency.

C. Machine cut relief for hinges and closers and coring for handsets and cylinders.

D. Trim door width by cutting equally on both jamb edges.

E. Trim door height by cutting equally on top and bottom edges to a maximum of 3/4 inch (19 mm).

F. Pilot drill screw and bolt holes. Use threaded through bolts for half surface hinges.

G. Prepare doors to receive finish hardware in accordance with AWI requirements.

H. Conform to AWI requirements for fit tolerances.

3.2 INSTALLATION TOLERANCES

A. Maximum Diagonal Distortion: 1/8 inch measured with straight edge, corner to corner.

3.3 ADJUSTING AND CLEANING

A. Adjust for smooth and balanced door movement.

3.4 SCHEDULE: See Door Schedule

END OF SECTION 08 21 00

SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Commercial door hardware for the following swinging doors:
   a. Flush wood.

B. Related Sections include the following:

1. Division 08 Section "Hollow Metal Doors and Frames" for astragals provided as part of fire-rated labeled assemblies and for door silencers provided as part of hollow-metal frames.
2. Division 08 Section "Flush Wood Doors" for astragals provided as part of fire-rated labeled assemblies.

1.3 SUBMITTALS

A. Number of Submittals: All items listed in this section are to be included in one submittal prepared by one Supplier.

B. Product Data: Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.

C. Qualification Data:

1. Finish Hardware Installers
   a. Finish hardware, including electrified hardware, for wood, hollow metal, and aluminum doors to be installed by personnel trained and certified by the manufacturer of the product furnished.
   b. Provide manufacturer's certificates for installer as part of Contractor's bid information. Failure to supply certificates may result in rejection of bid.
2. Hardware Supplier
   a. Established contract hardware firm which maintains and operates an office, display, and stock in project area and which is a factory authorized distributor of the lock being furnished.
   b. Hardware scheduled and furnished by or under direct supervision an Architectural Hardware Consultant.
   c. All schedules submitted to the Architect for approval and job use must carry the signature and certified seal of this Architectural Hardware Consultant.
3. Architectural Hardware Consultant
   a. Currently certified by the Door and Hardware Institute.

b. Full-time employee of the Hardware Supplier or an individual having no contractual ties to any supplier/manufacturer entity.
c. Available at reasonable times to Architect, Owner, and Contractor during course of work.

D. Maintenance Data: For each type of door hardware. Include final hardware schedule, keying schedule, riser diagrams, and point-to-point wiring diagrams in 3-ring binder, labeled on spine with project name and "Door Hardware".

E. Warranty: Special warranty specified in this Section.

F. Other Action Submittals:

1. Door Hardware Sets: Prepared by or under the supervision of a DHI certified Architectural Hardware Consultant, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final door hardware sets with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

a. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule"; other formats will be rejected without review. Double space entries, and number and date each page.
b. Numerical Sequence of Sets and Headings: Submittal headings shall be in exact order as hardware sets in specification: one heading only per set. Submittal set numbers shall relate to specification set numbers, ie. if three headings are required for Set 12 due to door width differences, then the heading numbers should be 12.1, 12.2, and 12.3 or employing similar linking logic.
c. Door Numbers: Identical to those used in the contract documents.
d. Number of Copies: (5).
e. Content: Include the following information:

1) Identification number, location, hand, fire rating, and material of each door and frame.
2) Type, style, function, size, quantity, and finish of each door hardware item.
3) Complete designations of every item required for each door or opening including name and manufacturer.
4) Degree of opening for closer and overhead stop and holder installation.
5) Keying information.
6) Fastenings and other pertinent information.
7) Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
8) Explanation of abbreviations, symbols, and codes contained in schedule.
9) Mounting locations for door hardware.
10) Notes included with specification hardware sets transcribed verbatim into submittal hardware sets.
11) Door and frame sizes and materials.
12) List of related door devices specified in other Sections for each door and frame.

f. Submittal Sequence: Submit the final door hardware sets at earliest possible date, particularly where approval of the

door hardware sets must precede fabrication of other work that is critical in Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the door hardware sets.

2. Keying Schedule: Prepared by or under the supervision of Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.

1.4 QUALITY ASSURANCE

A. Furnish proper hardware types and quantities for door function, hardware mounting and clearances, and to meet applicable codes. Bring discrepancies to the attention of the Architect a minimum of (10) days prior to bid date so that an addendum may be issued. No additional compensation will be allowed after bidding for hardware changes required for proper function, hardware mounting or clearances, or to meet codes.

B. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

C. Source Limitations: All items listed in hardware sets are to be furnished by one supplier. Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.

D. Keying Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." In addition to Owner, Contractor, and Architect, conference participants shall also include Hardware Supplier's Architectural Hardware Consultant. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:

1. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
2. Preliminary key system schematic diagram.
3. Requirements for key control system.
4. Address for delivery of keys.

E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." In addition to Owner, Contractor, and Architect, conference participants shall also include Certified Installer, Hardware Supplier's Architectural Hardware Consultant, and Security Supplier. Review methods and procedures related to electrified door hardware including, but not limited to, the following:

1. Coordinate electrical roughing-in and other preparatory work to be performed by other trades.
2. Review sequence of operation for each type of electrified door hardware.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review required testing, inspecting, and certifying procedures.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

B. Tag each item or package separately with identification related to the final door hardware sets, and include basic installation instructions, templates, and necessary fasteners with each item or package.

C. Deliver keys to Owner by registered mail or overnight package service. Obtain Owner's contact name and address from Architect.

1.6 COORDINATION

A. Templates: Distribute door hardware templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Distribute templates in a timely manner so as not to delay suppliers. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including excessive deflection, cracking, or breakage.
b. Faulty operation of operators and door hardware.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period: Five years from date of Substantial Completion, except as follows:

a. Manual Closers: 10 years from date of Substantial Completion.

1.8 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

B. Maintenance Service: Beginning at Substantial Completion, provide six months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door hardware operation. Provide parts and supplies same as those used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in this and door hardware sets indicated in Part 3 "Door Hardware Sets" Article.

1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products.
2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.

B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Sets" Article. Products are identified by using door hardware designations, as follows:

1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Sets" Article.
2. References to BHMA Standards: Provide products complying with these standards and requirements for description, quality, and function.

C. 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.

2.2 BUTT HINGES, GENERAL

A. Quantity: Provide the following, unless otherwise indicated:

1. Two Hinges: For doors with heights up to 60 inches (1524 mm).
2. Three Hinges: For doors with heights 61 to 90 inches (1549 to 2286 mm).
3. Four Hinges: For doors with heights 91 to 120 inches (2311 to 3048 mm).
4. For doors with heights more than 120 inches (3048 mm), provide 4 hinges, plus 1 hinge for every 30 inches (750 mm) of door height greater than 120 inches (3048 mm).

B. Template Requirements: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.

C. Hinge Height, Width, and Weight: Unless otherwise indicated, provide the following:

1. Doors with Exit Devices or 3'6" or more in width: 5" high, heavy-weight hinges.
2. Doors less than 3'6" in width: 4-1/2" high, standard-weight hinges.

3. Width: 4-1/2" heavy-weight, 4" standard-weight, unless proper clearance requires a different width.
4. Doors with Closers: Antifriction-bearing hinges.

D. Hinge Base Metal: Unless otherwise indicated, provide the following:

1. Exterior and in-swinging restroom door hinges: Stainless steel, with stainless-steel pin.
2. Balance of hinges: Steel, with steel pin.

E. Hinge Options: Provide the following:

1. Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for reverse bevel lockable doors.
2. Corners: Square.
3. Number of knuckles: Five.

F. Fasteners: Comply with the following:

1. Machine Screws: For metal doors and frames. Install into drilled and tapped holes.
2. Wood Screws: For wood doors and frames.
3. Threaded-to-the-Head Wood Screws: For fire-rated wood doors.
4. Screws: Phillips flat-head. Finish screw heads to match surface of hinges.

G. Template Hinge Dimensions: BHMA A156.7.

H. Available Manufacturers:

1. Bommer Industries, Inc. (BI).
2. Hager Companies (HAG).
3. McKinney Products Company; an ASSA ABLOY Group company (MCK).
4. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
5. PBB, Inc. (PBB)

2.3 LOCKS AND LATCHES, GENERAL

A. Accessibility Requirements: Where indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22 N).

B. Latches and Locks for Means of Egress Doors: Comply with NFPA 101. Latches shall not require more than 15 lbf (67 N) to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.

C. Grade 1 or Grade 2 as indicated by model number in hardware sets.

D. Lock Trim:

1. Levers: Cast.

a. Sargent P model with full smooth return.

2. Roses: Forged.
   a. Sargent L model.
3. Lockset Designs: Provide design indicated in hardware sets, or, if sets are provided by another manufacturer, provide designs that match those designated.

E. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

1. Bored Locks: Minimum 1/2-inch (13-mm) latchbolt throw.

F. Backset: 2-3/4 inches (70 mm), unless otherwise indicated.

G. Strikes: Manufacturer's standard strike with strike box for each latchbolt or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, and as follows:

1. Strikes for Bored Locks and Latches: BHMA A156.2.

2.4 MECHANICAL LOCKS AND LATCHES

A. Lock Functions: Function numbers and descriptions indicated in door hardware sets comply with the following:

1. Bored Locks: BHMA A156.2.

B. Bored Locks: BHMA A156.2 Grade 1 or 2 as indicated in hardware sets.

1. Available Manufacturers:

   a. Best Access Systems; Div. of The Stanley Works (BAS).
   b. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
   c. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
   d. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).
   e. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).

2.5 DOOR BOLTS

A. Bolt Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

1. Mortise Flush Bolts: Minimum 3/4-inch (19-mm) throw.

B. Manual Flush Bolts: BHMA A156.16, Grade 1; designed for mortising into door edge.

1. Available Manufacturers:

   a. Door Controls International (DCI).
   b. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
   c. Hager Companies (HAG).
   d. IVES Hardware; an Ingersoll-Rand Company (IVS).
   e. McKinney Products Company; an ASSA ABLOY Group company (MCK).

f. Rockwood Manufacturing Company (RM).
g. Trimco (TBM).

2.6 LOCK CYLINDERS

A. Standard Lock Cylinders: BHMA A156.5, Grade 1.

B. Cylinders: Provide cylinders for all devices requiring key cylinders to properly function: constructed from brass or bronze, stainless steel, or nickel silver, and complying with the following:

1. Number of Pins: Six.
2. Keyway: Manufacturer's standard.
3. Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.
4. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
5. Bored-Lock Type: Cylinders with tailpieces to suit locks.

C. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:

1. Small-format Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.

D. Construction Keying: Comply with the following:

1. Construction Cores: Provide keyed brass construction cores that are replaceable by permanent cores for locking devices on exterior doors. Provide 5 construction master keys.

a. Replace construction cores with permanent cores as directed by Owner.

E. Supplemental Items: Provide cylinder spacers, collars, and correct cams as needed for proper function of locking devices.

F. Available Manufacturers:

1. Best Access Systems; Div. of The Stanley Works (BAS).
2. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
3. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
4. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).
5. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).

2.7 OPERATING TRIM

A. Materials: Fabricate from stainless steel, unless otherwise indicated.

B. Dimensions: All dimensions, shapes, fasteners, and other properties identical to models specified in hardware sets.

C. Available Manufacturers:

1. Hager Companies (HAG).

2. IVES Hardware; an Ingersoll-Rand Company (IVS).
3. McKinney Products Company; an ASSA ABLOY Group company (MCK).
4. Rockwood Manufacturing Company (RM).
5. Trimco (TBM).

2.8 SURFACE CLOSERS

A. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

1. Comply with the following maximum opening-force requirements:

a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

B. Door Closers for Means of Egress Doors: Comply with NFPA 101. Door closers shall not require more than 30 lbf (133 N) to set door in motion and not more than 15 lbf (67 N) to open door to minimum required width.

C. Fasteners: Manufacturer's standard for arms, shoes and brackets. Sex bolts for fastening closers to doors.

D. Mounting Accessories: Provide shoes, brackets, drop plates, spacers, etc., as needed for proper mounting of closers and arms to door and frame.

E. Spring Size of Units: Provide field-sizable closers, adjustable for spring sizes 1-6, plus 50% extra spring power at spring size 6, to meet field conditions and requirements for opening force.

F. Cylinders: As specified in hardware sets.

G. Mounting Configuration: Unless otherwise indicated by model number in the hardware sets:

1. Do not furnish closers capable of being mounted on the corridor side of doors.
2. Do not furnish regular arm closers in areas accessible to students.
3. If tri-pack closers are furnished for regular arm applications, remove parallel arm shoe from closer box before delivering to job.
4. Parallel Arm closers are to be manufacturer's double forged rigid models.

H. Available Manufacturers:

1. LCN Closers; an Ingersoll-Rand Company (LCN).
2. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
3. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
4. Norton
5. Yale
6. Corbin-Russwin

2.9 PROTECTIVE TRIM UNITS

A. Size:
1. Width
a. Singles, and pairs with removable mullions or surface applied astragals: 2 inches (38 mm) less than door width on push side and 1 inch (13 mm) less than door width on pull side
b. Other pairs: 1 inch (13 mm) less than door width
2. Height: as specified in door hardware sets; or, if constrained by door bottom rail height, 1" less bottom rail height.

B. Fasteners: Manufacturer's machine or self-tapping countersunk screws.

C. Metal Protective Trim Units: BHMA A156.6; beveled 4 sides; fabricated from 0.050-inch- (1.3-mm-) thick stainless steel.

D. Available Manufacturers:

1. Hager Companies (HAG).
2. IVES Hardware; an Ingersoll-Rand Company (IVS).
3. McKinney Products Company; an ASSA ABLOY Group company (MCK).
4. Rockwood Manufacturing Company (RM).
5. Trimco (TBM).

2.10 MECHANICAL WALL AND FLOOR STOPS AND HOLDERS

A. Stops and Bumpers: BHMA A156.16, Grade 1.

1. Provide wall stops for doors unless floor, overhead, or other type stops are scheduled or indicated. Do not mount floor stops where they will impede traffic. Provide floor stops (and spacers if needed) of proper height and configuration to accommodate floor condition. Where floor or wall stops are not appropriate, provide overhead holders.
2. Properties. Cast construction with fastener suitable for wall or floor condition.
3. Available Manufacturers:
a. Hager Companies (HAG).
b. IVES Hardware; an Ingersoll-Rand Company (IVS).
c. McKinney Products Company; an ASSA ABLOY Group company (MCK).
d. Rockwood Manufacturing Company (RM).
e. Trimco (TBM).

2.11 OVERHEAD STOPS AND HOLDERS

A. BHMA A156.8, Grade 1. Template for maximum degree of opening before encountering obstruction.

B. Available Manufacturers:

1. Architectural Builders Hardware Mfg., Inc. (ABH).
2. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
3. Rixson Specialty Door Controls; an ASSA ABLOY Group company (RIX).
4. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).

2.12 SILENCERS

A. Silencers for Metal Door Frames: BHMA A156.16, Grade 1; neoprene or rubber, minimum diameter 1/2 inch (13 mm); fabricated for drilled-in application to frame.

B. Available Manufacturers:

1. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
2. Hager Companies (HAG).
3. IVES Hardware; an Ingersoll-Rand Company (IVS).
4. McKinney Products Company; an ASSA ABLOY Group company (MCK).
5. Rockwood Manufacturing Company (RM).
6. Trimco (TBM).

2.13 FABRICATION

A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.

1. Manufacturer's identification is permitted on rim of lock cylinders only.

B. Base Metals: Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.

C. Fasteners: Manufacturer's standard, except as noted in product sections of this specification.

2.14 FINISHES

A. Standard: BHMA A156.18, as indicated in door hardware sets.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly

construction, wall and floor construction, and other conditions affecting performance.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

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

3.2 PREPARATION

A. Steel Doors and Frames: Comply with DHI A115 Series.

1. Surface-Applied Door Hardware: Drill and tap doors and frames according to ANSI A250.6.

B. Wood Doors: Comply with DHI A115-W Series.

3.3 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights indicated as follows unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

B. Mounting Locations:

1. Floor Stops and Holders: Locate at least 20" out from hinge edge of door for maximum degree of opening before door encounters obstruction.
2. Wall Stops: Locate so that lockset spindle and wall stop share horizontal and vertical centerlines.
3. Closers and Overhead Stop/Holders: Template and mount closers and overhead stops for maximum degree of opening before door encounters obstruction. When used with closers, template and locate overhead stops so that closer arm does not fully extend and bottom out.

C. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

D. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule. Document cross-indexing per manufacturer's instructions.

E. Weatherstrip and Gasketing: Miter cut at butt joints as needed for neat appearance with no gaps between retainers or bulbs.

F. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

3.4 FIELD QUALITY CONTROL

A. Provide Door Hardware Inspection Services and Field Quality Report as indicated below.

B. Door Hardware Inspection Services

1. Scope
   a. Inspection of all swinging doors and door hardware immediately following completion of installation.
   b. Inspector to furnish a Field Quality Report, itemized per each individual opening, to the Architect within 7 days of the inspection, including:
      1) deficiencies in workmanship and standard industry practices,
      2) use of allowable products,
      3) use of manufacturer recommended fasteners,
      4) compliance with the ADA,
      5) proper door/frame/hardware clearances,
      6) problems related to function, security, aesthetics or maintenance.
   c. Follow-up inspections as required at additional fee.
2. Inspector Qualifications
      1) Certified Architectural Hardware Consultant.
      2) Entirely independent of the supply side of the project, having no familial or financial relationship with any manufacturer, manufacturer's representative, distributor, installer or supplier used on this project.
      3) Approved by Architect. Go to http://www.dhi.org/ for searchable list of local Architectural Hardware Consultants.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

B. Overhead Stops/Holders: Set adjustable stops for maximum degree of opening before door encounters obstruction. Adjust friction to control door.

C. Door Closers:

unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

B. Overhead Stops/Holders: Set adjustable stops for maximum degree of opening before door encounters obstruction. Adjust friction to control door.

C. Door Closers:

1. Unless otherwise required by authorities having jurisdiction, adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches (75 mm) from the latch, measured to the leading edge of the door.
2. Adjust latch period so that door does not slam nor injure fingers.
3. Adjust spring power so that door properly latches.
4. Adjust backcheck to slow door down before hitting stop point so as to prevent damage to closer, arm, door, frame, and fasteners.

D. Occupancy Adjustment: Approximately six months after date of Substantial Completion, Installer shall examine and readjust, including adjusting operating forces, each item of door hardware as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.6 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.7 DOOR HARDWARE SETS (on following pages followed by Door-Set Index)

Hardware Set 01			
(6) Butt Hinges	TA2314-454	630	MCK
(2) Closer, w/Stop	1431-PS	689	SAR
(2) Kick Plate	K1050 x 8 x 2LDW x B4E	630	ROC
(1) Rest Room Lock	28-73-7P-10G04-LP	626	SAR
Hardware Set 02			
(6) Butt Hinges	TA2314-454	630	MCK
(2) Closer, w/Stop	1431-PS	689	SAR
(2) Kick Plate	K1050 x 8 x 2LDW x B4E	630	ROC
(1) Exterior Lock	1082-6S	626	SAR

End of Section Finish Hardware 087100

SECTION 09 25 50 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
1. Gypsum board assemblies attached to wood framing and furring members.

B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Division 7 Section "Firestopping" for firestopping systems and fire-resistive-rated joint sealants.

1.3 DEFINITIONS

A. Gypsum Board Construction Terminology: Refer to ASTM C 11 and GA-505 for definitions of terms related to gypsum board assemblies not defined in this Section or in other referenced standards.

1.4 ASSEMBLY PERFORMANCE REQUIREMENTS

A. Sound Transmission Characteristics: For gypsum board assemblies indicated to have STC ratings, provide materials and construction identical to those of assemblies whose STC ratings were determined per ASTM E 90 and classified per ASTM E 413 by a qualified independent testing agency.

1.5 SUBMITTALS

A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections.

B. Product data for each type of product specified.

C. Product certificates signed by manufacturers of gypsum board assembly components certifying that their products comply with specified requirements.

1.6 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Where fire-rated gypsum board assemblies are indicated, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
1. Fire Resistance Ratings: As indicated by reference to GA File Numbers in GA-600 "Fire Resistance Design Manual" or to design designations in UL "Fire Resistance Directory" or in the listing of another testing and inspecting agency acceptable to authorities having jurisdiction.

B. Single-Source Responsibility for Steel Framing: Obtain steel framing members for gypsum board assemblies from a single manufacturer.

C. Single-Source Responsibility for Panel Products: Obtain each type of gypsum board and other panel products from a single manufacturer.

D. Single-Source Responsibility for Finishing Materials: Obtain finishing materials from either the same manufacturer that supplies gypsum board and other panel products or from a manufacturer acceptable to gypsum board manufacturer.

E. Field Samples: On actual gypsum board assemblies, prepare field samples of at least 100 sq. ft. in surface area for the following applications. Simulate finished lighting conditions for review of in-place unit of Work.
1. Wall surfaces indicated to receive nontextured paint finishes.
2. Ceiling surfaces indicated to receive nontextured paint finishes.
3. Surfaces indicated to receive textured paint finishes.
4. Surfaces indicated to receive textured finishes specified in this Section.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.

B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Neatly stack gypsum panels flat to prevent sagging.

C. Handle gypsum board to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage metal corner beads and trim.

1.8 PROJECT CONDITIONS

A. Environmental Conditions, General: Establish and maintain environmental conditions for applying and finishing gypsum board to comply with ASTM C 840 and with gypsum board manufacturer's recommendations.

B. Room Temperatures: For nonadhesive attachment of gypsum board to framing, maintain not less than 40 deg F (4 deg C). For adhesive attachment and finishing of gypsum board, maintain not less than 50 deg F (10 deg C) for 48 hours prior to application and continuously after until dry. Do not exceed 95 deg F (35 deg C) when using temporary heat sources.

C. Ventilation: Ventilate building spaces, as required, for drying joint treatment materials. Avoid drafts during hot dry weather to prevent finishing materials from drying too rapidly.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Steel Framing and Furring:
   a. Clark Steel Framing.
   b. Consolidated Systems, Inc.
   c. Dale Industries, Inc.
   d. Dietrich Industries, Inc.
   e. Marino Industries Corp.
   f. Gold Bond Building Products Div., National Gypsum Co.

g. Unimast Inc.
2. Gypsum Board and Related Products:
a. Domtar Gypsum.
b. Georgia-Pacific Corp.
c. Gold Bond Building Products Div., National Gypsum Co.
d. United States Gypsum Co.

2.2 GYPSUM BOARD PRODUCTS

A. General: Provide gypsum board of types indicated in maximum lengths available to minimize end-to-end butt joints.
1. Thickness: Provide gypsum board in thicknesses indicated or, if not otherwise indicated, in either 1/2 inch or 5/8 inch thicknesses to comply with ASTM C 840 for application system and support spacing indicated.

B. Gypsum Wallboard: ASTM C 36 and as follows:

1. Type: Regular for vertical surfaces, unless otherwise indicated.
2. Type: Type X where required for fire-resistive-rated assemblies.
3. Type: Sag-resistant type for ceiling surfaces.
4. Type: Proprietary type as required for specific fire-resistive-rated assemblies.
5. Edges: Tapered.
6. Edges: Tapered and featured (rounded or beveled) for prefilling.
7. Thickness: 5/8 inch, unless otherwise indicated.
8. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work where proprietary gypsum wallboard is indicated include, but are not limited to, the following:
9. Products: Subject to compliance with requirements, provide one of the following products where proprietary gypsum wallboard is indicated:
a. Gyprock Fireguard C Gypsum Board, Domtar Gypsum.
b. Firestop Type C, Georgia-Pacific Corp.
c. Fire-Shield G, Gold Bond Building Products Div., National Gypsum Co.
d. SHEETROCK Brand Gypsum Panels, FIRECODE C Core, United States Gypsum Co.
e. SHEETROCK Brand Gypsum Panels, ULTRACODE Core, United States Gypsum Co.

2.3 TRIM ACCESSORIES

A. Accessories for Interior Installation: Corner beads, edge trim, and control joints complying with ASTM C 1047 and requirements indicated below:
1. Material: Formed metal, plastic, or metal combined with paper, with metal complying with the following requirement:
a. Sheet steel zinc-coated by hot-dip process.
b. Sheet steel coated with zinc by hot-dip or electrolytic processes, or with aluminum or rolled zinc.
2. Shapes indicated below by reference to Fig. 1 designations in ASTM C 1047:
a. Cornerbead on outside corners, unless otherwise indicated.
b. LC-bead with both face and back flanges; face flange formed to receive joint compound. Use LC-beads for edge trim unless otherwise indicated.
c. L-bead with face flange only; face flange formed to receive joint compound. Use L-bead where indicated.
d. U-bead with face and back flanges; face flange formed to be left without application of joint compound. Use U-bead where indicated.
e. One-piece control joint formed with V-shaped slot, with removable strip covering slot opening.

2.4 JOINT TREATMENT MATERIALS

A. General: Provide joint treatment materials complying with ASTM C 475 and the recommendations of both the manufacturers of sheet products and of joint treatment materials for each application indicated.

B. Joint Tape for Gypsum Board: Paper reinforcing tape, unless otherwise indicated.
1. Use pressure-sensitive or staple-attached open-weave glass-fiber reinforcing tape with compatible joint compound where recommended by manufacturer of gypsum board and joint treatment materials for application indicated.

C. Joint Tape for Cementitious Backer Units: Polymer-coated, open glass-fiber mesh.

D. Setting-Type Joint Compounds for Gypsum Board: Factory-packaged, job-mixed, chemical-hardening powder products formulated for uses indicated.
1. Where setting-type joint compounds are indicated as a taping compound only or for taping and filling only, use formulation that is compatible with other joint compounds applied over it.
2. For prefilling gypsum board joints, use formulation recommended by gypsum board manufacturer for this purpose.
3. For filling joints and treating fasteners of water-resistant gypsum backing board behind base for ceramic tile, use formulation recommended by the gypsum board manufacturer for this purpose.
4. For topping compound, use sandable formulation.

E. Drying-Type Joint Compounds for Gypsum Board: Factory-packaged vinyl-based products complying with the following requirements for formulation and intended use.
1. Ready-Mixed Formulation: Factory-mixed product.
2. Job-Mixed Formulation: Powder product for mixing with water at Project site.
3. Taping compound formulated for embedding tape and for first coat over fasteners and face flanges of trim accessories.
4. Topping compound formulated for fill (second) and finish (third) coats.
5. All-purpose compound formulated for both taping and topping compounds.

2.5 ACOUSTICAL SEALANT

A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following requirements:
1. Product is effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies per ASTM E 90.
2. Product has flame-spread and smoke-developed ratings of less than 25 per ASTM E 84.

B. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.

C. Available Products: Subject to compliance with requirements, acoustical sealants that may be incorporated in the Work include, but are not limited to, the following:

D. Products: Subject to compliance with requirements, provide one of the following:
1. Acoustical Sealant:
a. AC-20 FTR Acoustical and Insulation Sealant, Pecora Corp.

b. SHEETROCK Acoustical Sealant, United States Gypsum Co.

2. Acoustical Sealant for Concealed Joints:
   a. BA-98, Pecora Corp.
   b. Tremco Acoustical Sealant, Tremco, Inc.

2.6 MISCELLANEOUS MATERIALS

A. General: Provide auxiliary materials for gypsum board construction that comply with referenced standards and recommendations of gypsum board manufacturer.

B. Laminating Adhesive: Special adhesive or joint compound recommended for laminating gypsum panels.

C. Spot Grout: ASTM C 475, setting-type joint compound recommended for spot grouting hollow metal door frames.

D. Fastening Adhesive for Wood: ASTM C 557.

E. Fastening Adhesive for Metal: Special adhesive recommended for laminating gypsum panels to steel framing.

F. Steel drill screws complying with ASTM C 1002 for the following applications:
   1. Fastening gypsum board to steel members less than 0.03 inch thick.
   2. Fastening gypsum board to wood members.
   3. Fastening gypsum board to gypsum board.

G. Steel drill screws complying with ASTM C 954 for fastening gypsum board to steel members from 0.033 to 0.112 inch thick.

H. Corrosion-resistant-coated steel drill screws of size and type recommended by board manufacturer for fastening cementitious backer units.

I. Gypsum Board Nails: ASTM C 514.

J. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.

K. Sound Attenuation Blankets: Unfaced mineral-fiber blanket insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing):
   1 Mineral-Fiber Type: Fibers manufactured from glass.

L. Thermal Insulation: Material indicated below, of thickness and width to fill voids formed by Z-furring members:
   1. Unfaced Mineral-Fiber Blanket Insulation: Unfaced mineral-fiber blanket insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing):
      a. mineral-Fiber Type: Fibers manufactured from glass.
   2. Extruded Polystyrene Board Thermal Insulation: Rigid, cellular, thermal insulation with closed cells and integral high-density skin, formed by the expansion of polystyrene base resin in an extrusion process to comply with ASTM C 578 for Type IV, and with the following surface-burning characteristics:
      a. Flame-spread and smoke-developed ratings of 75 and 450, respectively, per ASTM E 84.

M. Polyethylene Vapor Retarder: ASTM D 4397, thickness and maximum permeance rating as follows:
   1. 6.0 mils, 0.13 perms.

N. Vapor Retarder Tape: Pressure-sensitive tape of type recommended by vapor retarder manufacturer for sealing joints and penetrations in vapor retarder.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates to which gypsum board assemblies attach or abut, installed hollow metal frames, cast-in-anchors, and structural framing with Installer present for compliance with requirements for installation tolerances and other conditions affecting performance of assemblies specified in this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Ceiling Anchorages: Coordinate installation of ceiling suspension systems with installation of overhead structural assemblies to ensure that inserts and other provisions for anchorages to building structure have been installed to receive ceiling hangers that will develop their full strength and at spacing required to support ceilings.
1. Furnish concrete inserts and other devices indicated to other trades for installation well in advance of time needed for coordination with other construction.

3.3 INSTALLING STEEL FRAMING FOR FURRED CEILINGS

A. Screw furring members to wood framing.
1. Do not connect or suspend steel framing from ducts, pipes or conduit.

3.4 APPLYING AND FINISHING GYPSUM BOARD, GENERAL

A. Gypsum Board Application and Finishing Standards: Install and finish gypsum panels to comply with ASTM C 840 and GA-216.

B. Install sound attenuation blankets where indicated prior to installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

C. Install ceiling board panels across framing to minimize the number of abutting end joints and avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

D. Install wall/partition board panels to minimize the number of abutting end joints or avoid them entirely. Stagger abutting end joints not less than one framing member in alternate courses of board. At stairwells and other high walls, install panels horizontally with end abutting joints over studs and staggered.

E. Install gypsum panels with face side out. Do not install imperfect, damaged, or damp panels. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

F. Locate both edge or end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Position adjoining panels so that tapered edges abut tapered edges, and field-cut edges abut field-cut edges and ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions. Avoid joints at corners of framed openings where possible.

G. Attach gypsum panels to steel studs so that the leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

H. Attach gypsum panels to framing provided at openings and cutouts.

I. Do not attach gypsum panels across the flat grain of wide-dimension lumber including floor joists and headers. Instead, float gypsum panels over these members using resilient channels or provide control joints to counteract wood shrinkage.

J. Spot grout hollow metal door frames for solid core wood doors, hollow metal doors, and doors over 32 inches wide. Apply spot grout at each jamb anchor clip and immediately insert gypsum panels into frames.

K. Form control joints and expansion joints at locations indicated and as detailed, with space between edges of adjoining gypsum panels, as well as supporting framing behind gypsum panels.

L. Cover both faces of steel stud partition framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chase walls that are braced internally.
   1. Except where concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
   2. Fit gypsum panels around ducts, pipes, and conduits.
   3. Where partitions intersect open concrete coffers, concrete joists, and other structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by coffers, joists, and other structural members; allow 1/4-to-1/2-inch-wide joints to install sealant.

M. Isolate perimeter of non-load-bearing gypsum board partitions at structural abutments, except floors, as detailed. Provide 1/4-inch-to-1/2-inch-wide spaces at these locations and trim edges with U-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

N. Floating Construction: Where feasible, including where recommended by manufacturer, install gypsum panels over wood framing, with floating internal corner construction.

O. Where STC-rated gypsum board assemblies are indicated, seal construction at perimeters, behind control and expansion joints, openings, and penetrations with a continuous bead of acoustical sealant including a bead at both faces of the partitions. Comply with ASTM C 919 and manufacturer's recommendations for location of edge trim and closing off sound-flanking paths around or through gypsum board assemblies, including sealing partitions above acoustical ceilings.

P. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's recommendations.

3.5 GYPSUM BOARD APPLICATION METHODS

A. Single-Layer Application: Install gypsum wallboard panels as follows:
   1. On ceilings, apply gypsum panels prior to wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.
   2. On partitions/walls, apply gypsum panels vertically (parallel to framing), unless otherwise indicated, and provide panel lengths that will minimize end joints.
   3. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing), unless parallel application is required

for fire-resistive-rated assemblies. Use maximum-length panels to minimize end joints.

4. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.

B. Single-Layer Fastening Methods: Apply gypsum panels to supports as follows:
1. Fasten with screws.
2. Fasten to wood supports with single nailing.
3. Fasten to wood supports with double nailing.
4. Fasten to wood supports with adhesive and supplementary nails or screws.

C. Direct-Bonding to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members or base layer of gypsum board), comply with gypsum board manufacturer's recommendations, and temporarily brace or fasten gypsum panels until fastening adhesive has set.

3.6 INSTALLING TRIM ACCESSORIES

A. General: For trim accessories with back flanges, fasten to framing with the same fasteners used to fasten gypsum board. Otherwise, fasten trim accessories according to accessory manufacturer's directions for type, length, and spacing of fasteners.

B. Install corner beads at external corners.

C. Install edge trim where edge of gypsum panels would otherwise be exposed or semiexposed. Provide edge trim type with face flange formed to receive joint compound except where other types are indicated.
1. Install LC-bead where gypsum panels are tightly abutted to other construction and back flange can be attached to framing or supporting substrate.
2. Install L-bead where edge trims can only be installed after gypsum panels are installed.
3. Install U-bead where indicated.
4. Install aluminum edge trim and other accessories where indicated.

D. Install control joints at locations indicated, and where not indicated according to ASTM C 840, and in locations approved by Architect for visual effect.

E. Install H-molding in exterior gypsum board assemblies where control joints are indicated. Install on cut or ends of gypsum panels, not on tapered edges.

3.7 FINISHING GYPSUM BOARD ASSEMBLIES

A. General: Apply joint treatment at gypsum board joints (both directions); flanges of corner bead, edge trim, and control joints; penetrations; fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration and levels of gypsum board finish indicated.

B. Prefill open joints, rounded or beveled edges, and damaged areas using setting-type joint compound.

C. Apply joint tape over gypsum board joints except those with trim accessories having concealed face flanges not requiring taping to prevent cracks from developing in joint treatment at flange edges.

D. Apply joint tape over gypsum board joints and to trim accessories with concealed face flanges as recommended by trim accessory manufacturer and

as required to prevent cracks from developing in joint compound at flange edges.

E. Levels of Gypsum Board Finish: Provide the following levels of gypsum board finish per GA-214.
1. Level 4 for gypsum board surfaces unless otherwise indicated.

G. For level 4 gypsum board finish, embed tape in joint compound and apply three seperate coats of joint compound over joints, angles, fastener heads, and accessories. Touch up and sand between coats and after last coat as needed to produce a surface free of visual defects and ready for decoration. Use the following joint compound combination:
1. Embedding and First Coat: Ready-mixed, drying-type, all-purpose or taping compound.
2. Fill (Second) Coat: Ready-mixed, drying-type, all-purpose or topping compound.
3. Finish (Third) Coat: Ready-mixed, drying-type, all-purpose or topping compound.

3.8 CLEANING AND PROTECTION

A. Promptly remove any residual joint compound from adjacent surfaces.

B. Provide final protection and maintain conditions, in a manner suitable to Installer, that ensures gypsum board assemblies remain without damage or deterioration at time of Substantial Completion.

END OF SECTION 09 25 50

SECTION 09 30 00 - CERAMIC TILE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
1. Glazed ceramic mosaic tile for use on restroom walls.
2. Unglazed ceramic mosaic tile for use on restroom floor.
2. Stone thresholds.
3. Cementitious backer units.

B. Related Sections: The following sections contain requirements that relate to this Section:
1. Division 2 Section "Selective Demolition" for removal of existing tile.
2. Division 7 Section "Joint Sealers" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
3. Division 9 Section "Gypsum Board Assemblies" for glass mat water resistant gypsum backer units installed as part of gypsum wallboard systems.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for each type of product specified.

C. Shop drawings indicating tile patterns and locations and widths of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
1. Locate precisely each joint and crack in tile substrates by measuring, record measurements on shop drawings, and coordinate them with tile joint locations, in consultation with Architect.

D. Samples for initial selection purposes in form of manufacturer's color charts consisting of actual tiles or sections of tile showing full range of colors, textures, and patterns available for each type and composition of tile indicated. Include samples of grout and accessories involving color selection.

1.4 QUALITY ASSURANCE

A. Single-Source Responsibility for Tile: Obtain each color, grade, finish, type, composition, and variety of tile from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

B. Single-Source Responsibility for Setting and Grouting Materials: Obtain ingredients of a uniform quality from one manufacturer for each cementitious and admixture component and from one source or producer for each aggregate.

C. Installer Qualifications: Engage an experienced Installer who has successfully completed tile installations similar in material, design, and extent to that indicated for Project.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement of ANSI A137.1 for labeling sealed tile packages.

B. Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.

C. Handle tile with temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If despite these precautions coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.6 PROJECT CONDITIONS

A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.

B. Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.

C. Maintain temperatures at 50 deg F (10 deg C) or more in tiled areas during installation and for 7 days after completion, unless higher temperatures are required by referenced installation standard or manufacturer's instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that match the existing tile, may be incorporated in the Work include, but are not limited to, the following:
   1. Glazed Ceramic Mosaic Tile:
      a. American Olean Tile Co., Inc.
      b. Dal-Tile Corp.
      c. Florida Tile Industries, Inc.
      d. United States Ceramic Tile Co.
      e. Villeroy & Boch (U.S.A.) Inc.
      f. Wenczel Tile Co. of Florida
   2. Dry-Set Mortars and Grouts:
      a. American Olean Tile Co., Inc.
      b. Boiardi Products Corp.
      c. Bostik Construction Products Div.
      d. Custom Building Products
      e. C-Cure Chemical Co.
      f. DAP Inc. Div.; USG Corp.
      g. L & M Mfg. Inc.
      h. Laticrete International Inc.
      i. Mapei Corp.
      j. Southern Grouts & Mortars, Inc.
      k. Summitville Tiles, Inc.
      l. Syracuse Adhesives Co.
      m. American Olean Tile Co., Inc.
      n. Boiardi Products Corp.
      o. Bostik Construction Products Div.
      p. C-Cure Chemical Co.
      q. DAP Inc. Div.; USG Corp.
      r. Mapei Corp.

s. Southern Grouts & Mortars, Inc.
t. Summitville Tiles, Inc.
u. Syracuse Adhesives Co.

3. Acrylic Emulsions for Latex-Portland Cement Grouts:
a. American Olean Tile Co., Inc.
b. Boiardi Products Corp.
c. Bostik Construction Products Div.
d. Custom Building Products
e. C-Cure Chemical Co.
f. DAP Inc. Div.; USG Corp.
g. L & M Mfg. Inc.
h. Laticrete International Inc.
i. Mapei Corp.
j. Southern Grouts & Mortars, Inc.
k. Summitville Tiles, Inc.
l. Syracuse Adhesives Co.

2.2 PRODUCTS, GENERAL

A. ANSI Standard for Ceramic Tile: Comply with ANSI A137.1 "American National Standard Specifications for Ceramic Tile" for types, compositions, and grades of tile indicated.
1. Furnish tile complying with "Standard Grade" requirements unless otherwise indicated.

B. ANSI Standard for Tile Installation Materials: Comply with ANSI standard referenced with products and materials indicated for setting and grouting.

C. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with the following requirements:
1. Provide selections made by Architect from manufacturer's full range of premium price group colors.
2. Provide tile trim and accessories that match color and finish of adjoining flat tile.

D. Factory Blending: For tile exhibiting color variations within the ranges selected during sample submittals, blend tile in factory and package accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples.

E. Mounting: Where factory-mounted tile is required, provide back- or edge-mounted tile assemblies as standard with manufacturer unless another mounting method is indicated.
1. Where tile is indicated for installation in swimming pools, on exteriors or in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies that this type of mounting is suitable for these kinds of uses and has been successfully used on other projects.

F. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating them with a continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.3 TILE PRODUCTS

A. Unglazed Ceramic Mosaic Tile: Provide factory-mounted flat tile complying with the following requirements:
1. Composition: Porcelain.

2. Nominal Facial Dimensions: 2 inches by 2 inches.
3. Nominal Thickness: 1/4 inch.
4. Face: Plain with cushion edges.

B. Trim Units: Provide tile trim units to match characteristics of adjoining flat tile and to comply with following requirements:
1. Size: As indicated, coordinated with sizes and coursing of adjoining flat tile where applicable.
2. Shapes: As follows, selected from manufacturer's standard shapes:
a. Base for Thinset Mortar Installations: Straight.
b. Wainscot Cap for Thinset Mortar Installations: Surface bullnose.
c. External Corners for Thinset Installations: Surface bullnose.
d. Internal Corners: Field-butted square corners, except use coved base and cap angle pieces designed to member with stretcher shapes.

C. Accessories for Glazed Wall Tile: Provide vitreous china accessories of type and size indicated and in color and finish to match adjoining glazed wall tile.
1. One soap holder for each shower and tub indicated.
2. One roll toilet paper holder at each water closet in guest rooms.
3. One set of towel bar brackets with 24" metal bar for each shower and tub indicated.

2.4 STONE THRESHOLDS

A. General: Provide stone that is uniform in color and finish, fabricated to sizes and profiles indicated or required to provide transition between tile surfaces and adjoining finished floor surfaces.

2.5 SETTING MATERIALS

A. Dry-Set Portland Cement Mortar: ANSI A118.1.

B. Latex-Portland Cement Mortar: ANSI A118.4, composition as follows:
1. Latex additive (water emulsion) of type described below, serving as replacement for part or all of gauging water, combined at job site with prepackaged dry mortar mix supplied or specified by latex additive manufacturer.
a. Latex Type: Manufacturer's standard.

2.6 GROUTING MATERIALS

A. Dry-Set Grout: ANSI A118.6, color as indicated.

B. Latex-Portland Cement Grout: ANSI A118.6, color as indicated, composition as follows:
1. Latex additive (water emulsion) serving as replacement for part or all of gauging water, added at job site with dry grout mixture, with type of latex and dry grout mix as follows:
a. Latex Type: Manufacturer's standard.
b. Dry Grout Mixture: Commercial portland cement specified or supplied by latex additive manufacturer.
1) Application: Use commercial portland cement grout combined with latex additive for grouting joints in floor tile unless otherwise indicated.

2.7 CEMENTITIOUS BACKER UNITS

A. Cement-Coated Portland Cement Panels: ANSI A 118.9 high-density portland cement surface coating on both faces and lightweight concrete core composed of portland cement and expanded ceramic aggregate; fabricated in panels 7/16-inch thick by 36 inches wide by 36, 48, 60, 64, or 72 inches long and weighing 3.2 to 3.8 psf.

B. Mortar Unit Finishing Materials: Tape and joint compounds as recommended by manufacturer of cementitious backer units.

C. Available Products: Subject to compliance with requirements, cementitious backer units which may be incorporated in the Work include, but are not limited to, the following:
1. "Wonder-Board"; Modulars Inc.
2. "Durock Tile Backer Board"; Durabond Div., USG Industries, Inc.

2.8 MISCELLANEOUS MATERIALS

A. Temporary Protective Coating: Provide product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout, is compatible with tile and mortar/grout products, and is easily removable after grouting is completed without damaging grout or tile.
1. Petroleum paraffin wax, fully refined, tasteless, odorless, containing at least 0.5 percent oil with a melting point of 120 deg F (49 deg C) to 140 deg F (60 deg C) per ASTM D 87.

2.9 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with requirements of referenced standards and manufacturers including those for accurate proportioning of materials, water, or additive content; type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortars and grouts of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and areas where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
1. Verify that substrates for setting tile are firm, dry, clean, and free from oil or waxy films and curing compounds.
2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.

B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Blending: For tile exhibiting color variations within the ranges selected during sample submittals, verify that tile has been blended in factory and packaged accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION, GENERAL

A. ANSI Tile Installation Standard: Comply with parts of ANSI 108 series of tile installation standards included under "American National Standard Specifications for the Installation of Ceramic Tile" that apply to type of setting and grouting materials and methods indicated.

B. TCA Installation Guidelines: TCA "Handbook for Ceramic Tile Installation"; comply with TCA installation methods indicated.

C. Extend tile work into recesses and 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.

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, walls, 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 joint widths unless otherwise shown.
1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so that extent of each sheet is not apparent in finished work.

F. Lay out tile wainscots to next full tile beyond dimensions indicated.

G. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw cut joints after installation of tiles.
1. Locate joints in tile surfaces directly above joints in concrete substrates.

H. Grout tile to comply with the requirements of the following installation standards:
1. For ceramic tile grouts (sand-portland cement, dry-set, commercial portland cement, and latex-portland cement grouts), comply with ANSI A108.10.

3.4 WALL TILE INSTALLATION METHODS

A. Install types of tile designated for wall application to comply with requirements indicated below for setting-bed methods, TCA installation methods related to subsurface wall conditions, and grout types:
1. Portland Cement Mortar: ANSI A108.1.
   a. Masonry or Concrete, Interior: TCA W211 (bonded).
   b. Solid Backing, Interior: TCA W222 (one-coat method).
   c. Grout: Latex-portland cement.
2. Latex-Portland Cement Mortar: ANSI A108.5.
3. Dry-Set Portland Cement Mortar: ANSI A108.5.
   a. Masonry, Interior: TCA W202.
   b. Wood or Metal Studs, Interior: TCA W243.
   c. Glass Mat Water Resistant Gypsum Board Backer Units, Interior: TCA W244.
   d. Grout: Latex-portland cement.

3.5 CLEANING AND PROTECTION

A. Cleaning: Upon completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
   1. Remove latex-portland cement grout residue from tile as soon as possible.
   2. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to brick and grout manufacturer. Trap and remove coating to prevent it from clogging drains.

B. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.

C. Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensures that tile is without damage or deterioration at time of Substantial Completion.
   1. 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 staining, damage, and wear.
   2. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

E. Cold Weather Note: The setting portland cement mortars are retarded by low temperatures. Finished work should be protected for an extended period of time.

END OF SECTION 09 30 00

SECTION 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 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This section includes the following:
1. Surface preparation, all preparation required to make all painted surfaces ready to paint, including sealants and sanding of surfaces.
2. Surface finish schedule for painted items.

B. Related Work under this section to include:
1.) Painting of ferrous metal, including metal doors and frames.
2.) Painting of wood items, interior misc. millwork and trim.
3.) Painting of patched and repaired interior plaster surfaces.
4.) Painting of all drywall wall and ceiling surfaces.
5.) Painting of mechanical and electrical work, all pipes to be painted where exposed in mechanical spaces.

1.03 REGULATORY REQUIREMENTS

A. Conform to the Kentucky Building Code for flame/fuel/smoke rating requirements for finishes.

1.04 SUBMITTALS

A. Submit product data under provisions of Section 01001, Submissions.

B. Provide product data on all finishing products and special coating.

C. Submit manufacturer's application instructions under provisions of Section 01001.

1.05 DEFINITIONS

A. Conform to ANSI/ASTM D16 for interpretation of terms used in this Section.

1.06 QUALITY ASSURANCE

A. Product Manufacturer: Company specializing in manufacturing quality paint and finish products with 5 years experience.

B. Applicator: Company specializing in commercial painting and finishing with 5 years documented experience.

1.07 FIELD SAMPLES

A. Provide samples under provisions of Section 01001.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site under provisions of Section 01001.

B. Store and protect products under provisions of Section 01001.

C. Deliver products to site in sealed and labeled containers; inspect to verify acceptance.

D. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.

E. Store paint materials at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in well ventilated area, unless required otherwise by manufacturer's instructions.

F. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees F for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.

B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent, unless required otherwise by manufacturer's instructions.

C. Minimum Application Temperatures for Latex Paints: 45 degrees F (7 degrees C) for interiors; 50 degrees F (10 degrees C) for exterior; unless required otherwise by manufacturer's instructions.

D. Minimum Application Temperature for Varnish and Epoxy Finishes: 65 degrees F (18 degrees C) for interior or exterior, unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

1.10 EXTRA STOCK

A. Provide a one gallon container of each color and surface texture to Owner.

B. Label each container with color, texture, room locations, and indicate if wall or trim paint in addition to the manufacturer's label.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - PAINT

A. Benjamine Moore Product: exterior and interior alkyd enamels and all latex enamels
B. Sherwin Williams Paints Product: same
C. ICI Product: same
D. Porter Paint: same
E. Substitutions: Under provisions of Section 01001.

2.02 ACCEPTABLE MANUFACTURERS - PRIMER-SEALERS

A. Benjamin Moore Product: Moorcraft Latex Primer-Sealer
B. Sherwin Williams
C. ICI
D. Porter Paint
E. Substitutions: Under provisions of Section 01001.

2.04 MATERIALS

A. Coatings: Ready mixed, except field catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.

B. Coatings: Good flow and brushing properties; capable of drying or curing free of streaks or sags.

C. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

D. All surfaces shall be painted with materials from the same manufacturer from primer through finish coat.

2.05 FINISHES

A. Refer to Room Finish Schedule, Door Schedule and Window Schedule for finish types and locations. Color Schedule will be submitted by Architect prior to primecoating.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:

1. Plaster and Gypsum Wallboard: 12 percent.
2. Masonry, Concrete, and Concrete Unit Masonry: 12%
3. Interior Located Wood: 15 percent, measured in accordance with ASTM D2016.
4. Concrete Floors: 7 percent.

D. Beginning of installation means acceptance of existing surfaces.

3.02 PREPARATION

A. Remove electrical plates, hardware, light fixture trim, and fittings prior to preparing surfaces or finishing.

B. Correct minor defects and clean surfaces which affect work of this Section.

C. Shellac and seal marks which may bleed through surface finishes.

D. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

E. Aluminum Surfaces Scheduled for Paint Finish: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.

F. Asphalt, Creosote, or Bituminous Surfaces Scheduled for Paint Finish: Remove foreign particles to permit adhesion of finishing materials. Apply latex based sealer or primer.

G. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.

H. Gypsum Board Surfaces: Latex fill minor defects. Spot prime defects after repair.

I. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

J. Plaster Surfaces: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

K. Uncoated Steel and Iron Surfaces: Remove grease, scale, dirt, and rust. Where heavy coatings of scale are evident, remove by wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.

L. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.

M. Interior Wood Items Scheduled to Receive Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Apply sealant to all open cracks between adjacent so that paint will flow and seal all open gags.

N. Exterior Wood Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior caulking compound after prime coat has been applied.

O. Wood and Metal Doors Scheduled for Painting: Seal top and bottom edges with primer.

3.03 PROTECTION

A. Protect elements surrounding the work of this Section from damage or disfiguration.

B. Repair damage to other surfaces caused by work of this section.

C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.

D. Remove empty paint containers from site.

3.04 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Do not apply finishes to surfaces that are not dry.

C. Apply each coat to uniform finish.

D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.

E. Sand lightly between coats to achieve required finish.

F. Allow applied coat to dry before next coat is applied.

G. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

H. Prime back surfaces of interior and exterior woodwork with primer paint.

I. Prime back surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

J. After prime and first finish coat, Architect to inspect color. If contractor applies final finish coat, before Architect reviews first finish coat, the contractor will be required to repaint at no cost to the Owner.

3.05 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. Paint shop primed equipment, including all new steel pipe hand railings and guard screens. Minimum of two additional coats required.

B. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

C. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports which occur in rooms and areas receiving paint.

D. Replace identification markings on mechanical or electrical equipment when painted accidentally.

E. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint, to limit of sight line. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.

F. Paint exposed conduit and electrical equipment occurring in finished areas.

G. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.

H. Color code equipment, piping, conduit, and exposed ductwork in accordance with requirements indicated. Color band and identify with flow- arrows, names, and numbering.

I. Replace electrical plates, hardware, light fixture trim, and fittings removed prior to finishing.

3.06 CLEANING

A. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.

B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.

C. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.07 SCHEDULE - SHOP PRIMED ITEMS FOR SITE FINISHING

A. Metal Fabrications (Section 05500): Exposed surfaces of lintels, roof

ladders, roof exhaust hoods, etc.

3.08 SCHEDULE - INTERIOR SURFACES

A. Wood - Painted
   1. One coat alkyd prime sealer.
   2. Two coats alkyd enamel, semi-gloss.

B. Concrete, Concrete Block
   1. One coat block filler mixed with latex primer.
   2. Two coats alkyd, semi-gloss
   3. Where schedule calls for epoxy/ester, install instead of finish coats, 2 coats; 5'4" high on wall. Paint line to match block coursing

C. Steel - Unprimed
   1. One coat zinc chromate primer.
   2. Two coats alkyd enamel, semi- gloss.

D. Steel - Primed
   1. Touch-up with original primer.
   2. Two coats alkyd enamel, semi-gloss.

E. Steel - Galvanized
   1. One coat zinc chromate primer.
   2. Two coats alkyd enamel, semi-gloss.

F. Plaster, Gypsum Board
   1. One coat latex primer-sealer.
   2. Two coats alkyd, semi-gloss.

3.09 SCHEDULE - COLORS

A. Color Schedule to be submitted by Architect prior to prime coating procedures. Note architect will inspect and approve colors upon first finish coat. If final coats are applied without architect inspection, finish coats may have to be redone at contractor's expense.

END OF SECTION 09 90 00

SECTION 10 28 00 - TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes toilet and bath accessory items as scheduled.

B. Mirrored glass for frameless applications is specified in Division 8 Section "Mirrored Glass."

C. Ceramic tile accessories are specified in Division 9.

1.3 SUBMITTALS

A. General: Submit the following according to Conditions of Contract and Division 1 Specifications Sections.

B. Product data for each toilet accessory item specified, including construction details relative to materials, dimensions, gages, profiles, mounting method, specified options, and finishes.

C. Samples of each toilet accessory item to verify design, operation, and finish requirements. Acceptable full-size samples will be returned and may be used in the Work.

D. Schedule indicating types, quantities, sizes, and installation locations (by room) for each toilet accessory item to be provided for project.

E. Setting drawings where cutouts are required in other work, including templates, substrate preparation instructions, and directions for preparing cutouts and installing anchorage devices.

F. Maintenance instructions including replaceable parts and service recommendations.

1.4 QUALITY ASSURANCE

A. Inserts and Anchorages: Furnish accessory manufacturers' standard inserts and anchoring devices that must be set in concrete or built into masonry. Coordinate delivery with other work to avoid delay.

B. Single-Source Responsibility: Provide products of same manufacturer for each type of accessory unit and for units exposed to view in same areas, unless otherwise acceptable to Architect.

1.5 PROJECT CONDITIONS

A. Coordination: Coordinate accessory locations, installation, and sequencing with other work to avoid interference with and ensure proper installation, operation, adjustment, cleaning, and servicing of toilet accessory items.

1.6 WARRANTY

A. Warranty: Submit a written warranty executed by mirror manufacturer, agreeing to replace any mirrors that develop visible silver spoilage defects within warranty period.

B. Warranty Period: 15 years from date of Substantial Completion.

C. The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering toilet accessories that may be incorporated in the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide toilet accessories by one of the following:

1. A & J Washroom Accessories.
2. American Specialties, Inc.
3. Bobrick Washroom Equipment, Inc.
4. Bradley Corporation.
5. General Accessory Manufacturing Co.
6. McKinney/Parker.

2.2 MATERIALS, GENERAL

A. Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 0.034-inch (22-gage) minimum thickness.

B. Brass: Leaded and unleaded, flat products, ASTM B 19; rods, shapes, forgings, and flat products with finished edges, ASTM B 16; Castings, ASTM B 30.

C. Sheet Steel: Cold-rolled, commercial quality ASTM A 366, 0.04-inch (20-gage) minimum. Surface preparation and metal pretreatment as required for applied finish.

D. Galvanized Steel Sheet: ASTM A 527, G60.

E. Chromium Plating: Nickel and chromium electro-deposited on base metal, ASTM B 456, Type SC 2.

F. Baked Enamel Finish: Factory-applied, gloss white, baked acrylic enamel coating.

G. Mirror Glass: Nominal 6.0-mm (0.23-inch) thick, conforming to ASTM C 1036, Type I, Class 1, Quality q2, and with silvering, electro-plated copper coating, and protective organic coating.

H. Stainless Steel Mirror Surfaces: Not less than 0.04-inch (20-gage) AISI Type 302/304 stainless steel sheet, stretcher-leveled with No. 8 polished mirror finish. Bond to 1/4-inch minimum hardboard backing.

I. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.

J. Fasteners: Screws, bolts, and other devices of same material as accessory unit, or of galvanized steel where concealed.

2.3 PAPER TOWEL DISPENSERS

A. Surface-Mounted Towel Dispensers: Fabricate of stainless steel with hinged front equipped with tumbler lockset. Provide pierced slots at sides as refill indicators.

1. Capacity: Not less than either 300 C-fold or 400 multifold paper towels without special adapters.

2.4 TOILET TISSUE DISPENSERS

A. Roll-In-Reserve Dispenser: Fabricate of stainless steel for mounting indicated below, size to store and dispense either 4-1/2-inch-diameter or 5-inch-diameter core tissue rolls, with reserve roll placed in service by automatic release or by action of manual release bar. Hinge front of unit with pivot hinge and secure with tumbler lockset.

1. Mounting: Semirecessed for nominal 4-inch wall depth.

2.5 GRAB BARS

A. Surface Mounted Grab Bars: constructed of stainless steel tubing in 1-1/4" and 1-1/2" diameters, exposed mounting, satin finish, nonslip gripping surface, comply with structural strenght requirements to support 900 lbs at 1-1/2" clearance from wall meeting ADA Accessibility Guidelines. Bobrick Model # B-490 Series for the lengths noted on the plans, including shower grab bar.

2.6 SOAP DISPENSERS

A. Liquid Soap Dispenser, Horizontal-Tank Type: Fabricate for surface mounting, sized for 40-fluid-ounce minimum capacity. Provide stainless steel piston, springs, and internal parts designed to dispense soap in measured quantity by pump action. Provide cover of type 304 stainless steel in No. 4 finish, with unbreakable window-type refill indicator.

1. Equip unit with push-type valve for dispensing soap in liquid form.

2.7 SHOWER AND BATH ACCESSORIES

A. Shower Curtain Rod, Normal Duty: 1-inch o.d., 0.04-inch (20-gage) stainless steel, satin finish; furnish with 3-inch o.d., minimum 0.04-inch (20-gage) stainless steel flanges with satin finish, designed for exposed fasteners.

B. Recessed Soap Dish: One-piece construction of stainless steel for recess mounting in wall; furnish with mounting clamp or lugs appropriate for wall construction indicated.

C. Towel Bar: size as indicated on plans, satin-finished, Type 304 stainless steel tubular (3/4-inch-square) bar and rectangular end brackets. Provide galvanized backplates for concealed mounting.

D. Shower Seat: size as indicated on plans, satin-finished, Type 304 stainless steel tubular (3/4-inch-round) with solid phenolic seat, hinged for wall mounting, ADA compliant, 24" x 15", fold down leg supports. Provide galvanized backplates for concealed mounting.

E. Garb Bar: size as indicated on plans. L shaped, satin-finished, Type 304 stainless steel tubular (1-1/2") bar and rectangular end brackets. Provide galvanized backplates for concealed mounting.

F. Shower Handheld Head and Mounting Bar: Shower Panel; Constructed of 16 gauge stainless steel with recessed soap dish. Showerhead;Standard fixed direction adjustable sprayhead. Diverter Valve; Lever handle operation for easy transfer of water flow between fixed and hand-held hose spray. Hand-Held Shower Spray; Consisting of hand shower with on-off control, a 60" stainless steel flexible hose and post style mounting bracket to hold to shower panel. Elevated in-line backflow preventer with quick-disconnect for flexible hose. Supply inlets are flexible, stainless steel hoses with 1/2" NPT connections. Flow Control; A 2.0 GPM (7.6 LPM)

flow control is standard. Actual flow may vary, but will not exceed 2.5 GPM (9.5 LPM) max.

G. One-piece, pre-pitched shower pan, PVC, with integrated roll-in entrance, splash walls, and 2" PVC drain, tile set directly on shower pan surface, ADA compliant,

2.8 MISCELLANEOUS ACCESSORIES

A. Double-Prong Robe Hook: Heavy-duty satin finished stainless steel double-prong robe hook; rectangular wall bracket with backplate for concealed mounting.

B. Tumbler and Toothbrush Holder: Satin-finished stainless steel unit with 2-1/4-inch-diameter hole in center to hold tumbler and two holes on each side to accommodate total of four toothbrushes; rectangular wall bracket equipped with backplate for concealed mounting.

C. Soap Dish: Satin-finished, stainless steel soap dish with rectangular wall bracket equipped with backplate for concealed mounting.

D. Towel Pin: Satin-finished, stainless steel pin projecting minimum of 3 inches from wall surface; rectangular wall bracket with backplate for concealed mounting.

2.9 MIRROR UNITS

A. Stainless Steel Framed Mirror Units: Fabricate frame with angle shapes not less than 0.05 inch (18 gage), with square corners mitered, welded, and ground smooth. Provide in No. 4 satin polished finish.

C. Fixed-Tilt, Stainless Steel Framed Mirror Units: Fabricate frame of not less than 0.04-inch (20-gage) stainless steel, with all joints mitered, welded, and ground smooth. Construct frame so that taper is not less than 3 inches from top to bottom.

2.10 FABRICATION

A. General: No names or labels are permitted on exposed faces of toilet and bath accessory units. On either interior surface not exposed to view or on back surface, provide identification of each accessory item either by a printed, waterproof label or a stamped nameplate indicating manufacturer's name and product model number.

C. Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous stainless steel piano hinge. Provide concealed anchorage wherever possible.

D. Recessed Toilet Accessories, General: Except where otherwise indicated, fabricate units of all-welded construction, without mitered corners. Hang doors or access panels with full-length, stainless steel piano hinge. Provide anchorage that is fully concealed when unit is closed.

E. Framed Mirror Units, General: Fabricate frames for glass mirror units to accommodate wood, felt, plastic, or other glass edge protection material. Provide mirror backing and support system that will permit rigid, tamperproof glass installation and prevent moisture accumulation, as follows:

1. Provide galvanized-steel backing sheet, not less than 0.034 inch (22 gage) and full mirror size, with nonabsorptive filler material. Corrugated cardboard is not an acceptable filler material.

F. Mirror Unit Hangers: Provide system for mounting mirror units that will permit rigid, tamperproof, and theftproof installation, as follows:

1. One-piece, galvanized-steel, wall-hanger device with spring-action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
2. Heavy-duty wall brackets of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.

G. Keys: Provide universal keys for access to toilet accessory units requiring internal access for servicing, resupply, etc. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install toilet accessory units according to manufacturers' instructions, using fasteners appropriate to substrate as recommended by unit manufacturer. Install units plumb and level, firmly anchored in locations and at heights indicated.

B. Secure mirrors to walls in concealed, tamperproof manner with special hangers, toggle bolts, or screws. Set units plumb, level, and square at locations indicated, according to manufacturer's instructions for type of substrate involved.

C. Install grab bars to withstand a downward load of at least 250 lbf, complying with ASTM F 446.

3.2 ADJUSTING AND CLEANING

A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.

B. Clean and polish all exposed surfaces strictly according to manufacturer's recommendations after removing temporary labels and protective coatings.

END OF SECTION 10 28 00

SECTION 220500 - COMMON WORK RESULTS FOR MECHANICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes the following:

1. General equipment requirements
2. Dielectric fittings
3. Sleeves
4. Escutcheons
5. Firestopping
6. Smokestopping
7. Drives
8. Roof Curbs
9. General piping requirements
10. Demolition

1.2 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents (ESPECIALLY DIVISIONS 21, 22, 23 AND 26) are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

1.3 GENERAL REQUIREMENTS

A. All equipment shall be properly aligned, leveled and adjusted for satisfactory operation. Equipment shall be installed so that the connecting and disconnecting of piping and accessories can be done readily and so that all parts are easily accessible for inspection, operation, maintenance and repair. Items of equipment shall essentially duplicate equipment that has been in satisfactory use at least 2 years prior to bid opening and shall be supported by a service organization that is, in the opinion of the Architect reasonably convenient to the site.

1.4 IDENTIFICATION

A. Permanent and legible engraved tags, brass or laminated plastic, shall be installed on all switches, pumps, main valves, and controls, using the same nomenclature as appears on record drawings, diagrams and typewritten or printed operating instructions. A permanent index thereto shall be provided in triplicate, one copy of which shall be mounted under framed glass. Each major component of equipment shall have the manufacturer's name, address and catalog number on a metal plate securely attached to the item of equipment. The nameplate shall be easily readable

and not obscured during the period of construction by painting, plastering, insulating or other work.

1.5 PREVENTION OF RUST

A. Surfaces of ferrous metal shall be given a rust inhibiting coating where specified. Coal-tar or asphalt-type coating will not be acceptable unless so stated for a specific item. Where steel is specified to be hot dip galvanized after fabrication, mill galvanized sheet steel may be used, provided all raw edges are painted.

1.6 PROTECTION FROM MOVING PARTS

A. Belts, pulleys, chains, gears, couplings, projecting setscrews, keys and other rotating parts located so that any person can come in close proximity thereto shall be fully enclosed or properly guarded.

1.7 PROTECTION OF EQUIPMENT AND MATERIALS

A. After delivery, before and after installation, equipment and materials shall be protected against weather theft, injury or damage from all causes.

B. Plumbing fixtures and other equipment with enameled or glazed surfaces shall be protected from damage by covering and/or coating, as recommended in bulletin Handling and Care of Enameled Cast Iron Plumbing Fixtures, issued by Plumbing Fixtures Manufacturers' Association.

C. Where marring or disfigurement has occurred, the Contractor shall replace or refinish the damaged surfaces as directed and to the satisfaction of the Architect.

D. Pipe and duct openings shall be closed with caps or plugs during installation.

1.8 MATERIALS

A. Materials specified herein shall conform to the respective publications and other requirements specified in the following paragraphs and as shown on the drawings. Other materials shall be the products of manufacturers regularly engaged in the manufacture of such products. Types, grades, schedules and pressure and temperature ratings for a particular service shall be as specified hereinafter and other sections of these specifications.

B. Unless specifically noted to the contrary, all valves, strainers and accessories listed in these specifications shall be "rated" devices (i.e. 125 lb. steam - 200 lb. water, oil or gas), selected for the proper use and conditions of the system for which they are to be installed. Under no circumstances shall the contractor be relieved of the responsibility of the valve rating by the installation of valves of lesser quality. All valves shall have rising stems, except that ball valves, plug valves, butterfly valves

and other similar types shall have clear indicators for valve positions. Non-rising stem valves, and non-rated valves shall not be used.

PART 2 - PRODUCTS

2.1 DIELECTRIC FITTINGS

A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder joint, plain or weld-neck and connections that match piping system materials.

2.2 SLEEVES

A. Steel: Galvanized, plain ends, ASTM A 53, Type E, Grade B, Schedule 40.

B. Cast Iron: Equivalent to ductile iron pressure pipe with plain ends.

2.3 ESCUTCHEONS

A. Chromium-plated iron or chromium-plated brags, either one piece or split patterns, held in place by internal spring tension or set screw that completely covers opening.

2.4 FIRE STOPPING

A. Asbestos free materials classified by UL to provide Fire Barrier equal to time rating of construction being penetrated and complying with applicable codes and have been tested in accordance with UL 1479 or ASTM E-814.

2.5 DRIVES

A. Each belt-connected motor-driven unit or fan shall be provided with a variable pitch V-belt drive.

B. Sheaves shall be of cast iron or of steel, statically and dynamically balanced, bored to fit properly on the shafts and secured with key of proper size. Sheaves having set screws alone will not be permitted. Sheaves shall be variable pitched and shall be designed to give the required rpm at approximately the midposition of adjustment. Pitch diameters of sheaves shall be not less than 3.0 inches for "A" section belts; 5.4 inches for "B" section belts; 9.0 inches for "C" section belts; and 13.0 inches for "D" section belts.

C. Belts shall be selected for a minimum service factor of 1.5 (based on motor nameplate horsepower), and selected and matched in sets for equal tension.

D. All other drives shall be as described under the respective equipment paragraph of these Specifications, as applicable.

2.6 ROOF CURBS

A. Roof curbs shall be fabricated for complete compatibility with roof panels and framing system. Size and design as required to support vent unit and to adequately divert storm drainage. Provide all sealants, closures, etc. as required for complete installation. Provide roof subframing and/or headers between roof bar joists to provide continuous rigid perimeter support for the curb.

B. Prefabricated roof curbs shall be constructed of galvanized sheet steel, 16 or 14 gauge as required with corners mitered and continuously welded. Provided integral water diverter with seams continuously welded. Provide internal reinforcing as required. Factory insulate curbs with 1 ½" thick 3 lb. density fiber glass insulation. Top of curb shall be level with pitch built into curbs.

C. Mechanical contractor shall coordinate with the roofing contractor to insure compatibility of the systems and for proper installation. Provide shop drawings to roofing contractor for review and coordination.

D. The mechanical contractor is responsible for installing the curb and framing. Roofing contractor is responsible for attaching roofing to the curb. Both contractors will be held responsible for leaks.

E. Top of roof curb to be installed at a minimum of 12" above the adjacent finished roof surface.

PART 3 - EXECUTION

3.1 PIPING

A. Pipe shall be cut accurately to measurements established at the jobsite and worked into place without springing or forcing, properly clearing all windows, doors, and other openings. Cutting or other weakening of the building structure to facilitate piping installation will not be permitted without written approval. Piping and equipment supports shall be provided. Supports shall be attached only to structural framing members and concrete beams or slabs at approved locations with approved connections. Where supports are required between structural framing members, suitable intermediate metal framing shall be provided and detailed. Pipes shall have burrs removed by reaming and shall be installed to permit free expansion and contraction without damage to joints or hangers. Changes in direction shall be made with fittings. All piping shall be installed with sufficient pitch to insure adequate drainage and venting. Piping connections to equipment shall be provided with unions or flanges. Ferrous piping and copper piping shall be electrically isolated from each other with dielectric couplings or fittings.

3.2 WORKMANSHIP

A. General: All materials and equipment shall be installed in accordance with the approved recommendations of the manufacturer to conform with the contract documents. The installation shall be accomplished by workmen skilled in this type of work.

B. Screw joints shall be made with tapered threads properly cut. Joints shall be made tight with a stiff mixture of litharge and glycerin, or polytetrafluorethylene tape, or other approved thread joint compound applied to the male threads only. Not more than three threads shall show after the joint is made up.

C. Victaulic (mechanical bolted) type joints shall be grooved accurately and ends buffed flush before retainer band is put in place. Retainer bands shall be malleable iron or forged steel and shall be properly fitted to each joint.

3.3 EXCAVATION AND BACKFILL

A. As part of the work under these sections, provide all excavating and backfilling, including dewatering and shoring required for the introduction and completion of the work. The work performed under this heading must conform to surrounding grounds or finished grade and must be approved by the Engineer.

B. All excavation shall be classified in accordance with the General Conditions of these specifications.

C. Surplus material and materials unsuitable for use as fill or backfill of foundation or trench excavations shall be disposed of off the Owner's property at the Contractor's expense.

D. Borrow material, if required, may not be available on Owner's property and shall be the responsibility of the Contractor to import any required material at his expense.

E. Explosives and blasting shall not be permitted except by written permission of the Engineer.

F. Where adjacent surface areas are disturbed as a result of construction operations or the storage of materials, they shall be cleaned of all debris and restored to original conditions.

G. The Contractor shall be responsible for location in the field the excavation lines shown on the drawings. The location shall be approved by the Engineer before excavation is begun. The Contractor shall use reference points as shown on the drawings for locating control points for earthwork and construction. In the absence of reference points, the Contractor shall locate control points in accordance with the Engineer's instructions.

H. Active utilities shown on the drawings shall be adequately protected from damage and removed or relocated only as indicated or specified. Where active utilities are encountered but are not shown on the drawings, the Engineer shall be advised; the work shall be adequately protected, supported or relocated as directed by the Architect. In-active and abandoned utilities encountered in excavating and grading operations shall be reported to the Architect; they shall be removed, plugged or capped as directed by the Architect.

I. Trench Excavation: The bottom of the trenches shall be accurately graded to provide uniform bearing and support for the pipe or concrete trench as shown on the drawings. Pipe shall be supported at every point along its entire length. Unless otherwise indicated, excavation shall be by open cut and trench sides shall be vertical. The trench bottom shall follow a uniform grade as shown on the drawings in the direction of flow insofar as possible. Where the trench has been excavated below grade, either inadvertently or purposely, the trench shall be backfilled and thoroughly tamped so as to provide full length bearing for the pipe barrel.

J. Laying Pipe: Laying of pipe on blocks, brick or wood to bring the pipe to a uniform invert shall not be permitted. Drainage lines shall be layed to conform to the drawings. All pipe joints shall be inspected and approved prior to backfilling.

K. Backfilling Trenches: The trenches shall not be backfilled until all required pressure tests are performed and until the system as installed conforms to the requirements specified, except that pipe may be covered between joints to maintain alignment during testing. Except as otherwise specified for special conditions of overdepths, trenches shall be backfilled to the ground surface with selected excavated material or other material that is suitable for the specified compaction and as hereinafter specified. Four (4) inches of crushed stone (#9 gravel), chips, or sand shall be placed in the bottom of the ditch and properly graded to assure firm bedding. After pipe is in place, tests and required inspections completed, the ditch shall be backfilled with crushed stone (#9 gravel), chips, or sand to a depth of elevation no less than 4 inches above the pipe. Commencing above the pipe, the backfill shall be loose earth placed and thoroughly tamped (in layers not to exceed six (6) inches in depth) to finished grade. Where trench undercuts any foundation, provide a minimum of six (6) inches of lean concrete fill below foundation in addition to requirements listed above. Trenches under paved surfaces shall be backfilled to the surface with crushed stone, chips or dense grade. See the drawings for any special requirements noted or shown in details.

L. Backfilling Drain Lines: Compacted earth shall be placed around and over the drain lines to the elevation shown on the drawings.

3.4 WELDING AND BRAZING

A. Welders Qualification

1. Welder's qualifications shall specify results of test, or retest, positions qualified and type of welding in which qualified.

2. All welds shall be of sound metal thoroughly fused to the base metal at all points, free from cracks; and reasonably free from oxidation, blow holes, and non- metallic inclusions. No fins or weld metal shall project within the pipe; and should they occur shall be removed. All pipe beveling shall be done by machine. The surface of all parts to be welded shall be thoroughly cleaned free from paint, oil, rust or scale, at the time of welding except that a light coat of oil may be used to preserve the beveled surfaces from rust.

3. All pipe and fittings shall be carefully aligned with adjacent parts and this alignment must be preserved in a rigid manner during the process of welding.

4. It is required that all welding of piping covered by this specification, regardless of conditions of service, be installed as follows:

   a. Pipe welding shall comply with the provision of the latest revisions of the applicable code whether ASME "Boiler Construction Code", ANSI "Code for Pressure Piping", AWS and/or Kentucky KRS-236 "Boiler Safety Law". The contractor shall make arrangements for inspection visits by the state boiler inspector as required by KRS-236.

   b. The Contractor's welding procedure shall clearly set forth P-numbers of parent metal to be welded, rod or filter metal to be used and positions required.

   c. Before any pipe welding is performed, the Contractor shall submit to the Architect a copy of his welding procedure specifications together with proof of its qualification as outlined and required by the most recent issue of the code having jurisdiction.

   d. Before any operator shall perform any pipe welding, the Contractor shall also submit to the Architect, the operator's qualification record in conformance with provisions of the Code having jurisdiction, showing that the operator was tested under the approved procedure specification submitted by the Contractor.

   e. Welding work shall not be performed by welders who are not approved by the Architect and any such work performed shall be summarily removed and replaced without further recourse by the Contractor.

   f. Standard Procedure Specifications and operators qualified by the National Certified Pipe Welding Bureau shall be considered as conforming to the requirements of the specifications.

g. Each manufacturer or Contractor shall be responsible for the quality of welding done by his organization and shall repair any work not in accordance with these specifications.

h. Brazing, when specified or indicated on the contract drawings, shall be in accordance with Part UB of Section VIII of the ASME Code. Filler metal shall conform to AWS B260, Class B AG-1 or B AG-2. Procedure and performance qualification requirements for brazing shall be the same as for welding, as required above.

5. Flanges and Unions shall be faced true. Flanges shall be provided with 1/16 inch composition gasket, unless otherwise specified, and made square and tight. Union or flange joints shall be provided in each line immediately preceding the connection to each piece of equipment or material requiring maintenance such as coils, pumps, control valves, and other similar items. Gaskets shall conform to ANSI Standard B16.21.

6. Valves in horizontal lines shall be installed with stems horizontal or above. Isolation valves shall be installed on each side of each piece of equipment such as pumps, and other similar items; and at any other points indicated or required for draining, isolation, or sectionalizing purposes.

3.5 PIPE SLEEVES

A. General: Pipes passing through concrete or masonry walls or concrete floor or roofs shall be provided with pipe sleeves fitted into place with epoxy sealing grout at the time of construction. Sleeves shall not be installed in structural members except where indicated or approved. Each sleeve shall extend through its respective wall, floor or roof, and shall be cut flush with each surface, except sleeves through floor where not in chase shall extend 1/4 inch above finished floor. Unless otherwise indicated, sleeves shall be of such size as to provide a minimum of 1/4 inch all around clearance between bare pipe and sleeves or between jacket over insulation and sleeves. Except in pipe chases or interior walls, the annular space between pipe and sleeve or between jacket over insulation and sleeve shall be sealed as specified.

B. Sleeves are not required for core drilled holes.

C. Pipes Passing Through Waterproofing Membranes: Pipes passing through floor waterproofing membrane shall be installed through a 4-pound lead-flashing sleeve, or a 0.032-inch thick aluminum sleeve, each with an integral skirt or flange. Flashing sleeve shall be suitably formed, and the skirt of flange shall extend not less than 8 inches from the pipe and shall set over the floor membrane in a troweled coating of bituminous cement. The flashing sleeve shall extend up the pipe a minimum of 1 inch above the floor. The annular space between the flashing sleeve and the metal-jacket-covered insulation shall be sealed. At the Contractor's option, pipes

passing through floor waterproofing membrane may be installed through a cast iron sleeve with caulking recess, anchor lugs, flashing clamp device, and a pressure ring with brass bolts. Waterproofing membrane shall be clamped into space and sealant shall be placed in the caulking recess.

D. Pipes Passing Through Roof: Pipes passing through the roof shall be installed where shown on the drawings. Any penetration in roof shall be approved by the Roofing Manufacturer.

3.6 ESCUTCHEONS

A. Escutcheons shall be provided at all finished surfaces where exposed piping, bare or insulated, passes through floors, walls, or ceilings. Escutcheons shall be fastened securely to pipe sleeves or to extensions of sleeves without any part of sleeves being visible. Where sleeves project slightly from floors, special deep-type escutcheons shall be used.

3.7 PROTECTIVE COATINGS FOR PIPE AND FITTINGS

A. Protective Coating for Pipe and Fittings: Metallic pipe and fittings, except cast iron and copper, that are installed underground shall be provided with a field- or shop-applied coal-tar coating and wrapping or a shop-applied extruded polyethylene sheath. The coating shall consist of a coat of coal-tar primer, a coat of coal-tar enamel, a second coat of coal-tar enamel, a second wrapper of coal-tar saturated felt, and a wrapper of kraft paper applied in the order named and conforming to the requirements of AWWA Standard C203 for materials, thicknesses, methods of application, tests, and handling, except that interior lining will not be required. Upon completion of satisfactory tests hereinafter specified, the joints shall be hand-wrapped with hot-applied preformed coal-tar tape. Preparation of surface and hand-applied wrapping shall be done in such a manner that a covering equal in effectiveness to that of the shop-applied coating will be produced. When extruded polyethylene sheath is used for the protective coating, fittings and joints shall be covered in the manner and with the materials recommended by the manufacturer of the sheath.

3.8 TESTS

A. General: All tests shall be conducted in the presence of the Engineer who shall be given 2 days notice before any test is to be conducted. Any utilities, materials, equipment, instruments, and personnel required for the tests shall be provided by the Contractor.

B. Piping: After cleaning, all piping (except soil, waste and vent piping) shall be hydrostatically tested at a pressure equal to 150 percent of the total system operating pressure but not less than 100 psi for a period of time sufficient to inspect every joint in the system and in no case less than 2 hours. No loss of pressure will be allowed.

Leaks found during tests shall be repaired by rewelding or replacing pipe or fittings. Caulking or peening of joints or fittings will not be permitted. Concealed and insulated piping shall be tested in place before covering or concealing.

3.9 CLEANING

A. General: Clean all piping and equipment systems as required to leave the piping and equipment clean and free from scale, silt, contamination, etc., as normally required and as specified herein.

B. Utilities and Equipment: The Contractor shall provide all necessary temporary materials and equipment to clean the piping and equipment installed under this specification. No permanent equipment shall be used for storage, mixing, settling, compressing, pumping, etc., without the approval of the Architect. The Contractor shall supply a separate and independent source of clean, dry, oil-free air for the blowdown of systems requiring this method of cleaning.

C. Use of Chemicals: No chemicals, wetting or drying agents shall be used to clean systems or equipment where the materials of the system undergo any changes in their physical or structural characteristics. In case of any doubt as to the compatibility of any materials to the cleaning solution used, the Contractor shall obtain prior written approval for the use of the solution from the manufacturer of the equipment. Piping systems, equipment and sub-assemblies shall be cleaned after completion of welding, machining, threading, testing and any other operations capable of contaminating the system piping or equipment. After cleaning, the permanent strainers shall be removed, cleaned and replaced. Temporary strainers shall be periodically removed, cleaned and replaced during cleaning in lines ahead of equipment to protect against particles becoming lodged in the equipment.

3.10 FIRESTOPPING

A. Firestopping shall be provided around all pipe, duct and chimney penetrations of fire rated floors, masonry walls and other fire rated walls and ceilings.

B. Clean surfaces to be in contact with penetration seal materials, of dirt, grease, oil, loose materials, rust or other substances that may affect proper fitting, adhesion, or the required fire resistance.

C. Install penetration seal materials in accordance with manufacturer's instruction.

D. Seal holes or voids may be penetrations to ensure an effective smoke barrier.

E. Protect materials from damage on surfaces subject to traffic.

F. Stop insulation flush with wall on insulated pipe and seal edges.

3.11 SMOKE-STOPPING

A. Smoke-stopping shall be provided around all pipe, duct and chimney penetrations through floor or floor/ceiling assemblies and any other smoke walls or barriers.

B. Clean surfaces to be in contact with penetration seal materials, of dirt, grease, oil, loose materials, rust or other substances that may affect proper fitting, adhesion, or the required fire resistance.

C. Install penetration seal materials in accordance with manufacturer's instruction.

D. Seal holes or voids may be penetrations to ensure an effective smoke barrier.

E. Protect materials from damage on surfaces subject to traffic.

3.12 DEMOLITION AND SCHEDULE

A. All existing mechanical equipment noted on drawings and listed herein that is to be removed or demolished, shall be removed on schedule and disposed of as hereinafter directed.

B. All items removed shall become the property of the contractor and shall be immediately disposed of off site at contractor's expense except as noted on drawings unless otherwise directed by owner.

C. All demolition shall be carefully accomplished in accordance with master construction schedule so as not to remove any item required for support operation during the planned schedule. No item shall be removed until full schedule is worked out with contractors according to owners demands and agreed to in writing by the Engineer.

D. Storage will be arranged during scheduling process. Contractors to provide own storage and security.

E. Contractor doing the demolition of equipment must conform to the Clean Air Act of 1990. Refrigerant must be recovered from any air conditioning or refrigeration equipment prior to disconnecting and disposal. The contractor must own and use recovery equipment to meet this requirement. The contractor will be responsible for disposal of refrigerant, refrigerant oil or equipment.

F. If pipe, insulation or equipment to remain is damaged in appearance or is unserviceable, remove damage or unserviceable portion and replace with new products of equal capacity and quality. All existing piping to remain shall be permanently capped, new or existing valves are not adequate.

END OF SECTION 220500

SECTION 220700 - PIPING INSULATION

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Piping Insulation

B. Jackets and Accessories

1.2 RELATED WORK

A. The General and Special Conditions and all other Contract Documents (ESPECIALLY DIVISIONS 21, 22, 23 AND 26) are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 220100 - GENERAL PROVISION FOR MECHANICAL WORK

C. Section 220500 - COMMON WORK RESULTS FOR MECHANICAL SYSTEMS

D. Section 220553 - IDENTIFICATION OF MECHANICAL PIPING AND EQUIPMENT

1.3 QUALITY ASSURANCE

A. Materials: Flame spread smoke developed rating of 25/50 in accordance with ASTM E84.

B. All pipe insulation shall be installed by mechanics specializing in this type of work. The finished product shall present a neat and workmanlike appearance. Insulation shall not be applied until all tests except operating tests have been completed, all foreign material, such as rust, scale, or dirt, has been removed and the surfaces are clean and dry. Insulation shall be clean and dry when installed and during the application of any finish.

C. The insulation, insulating materials and related items shall be delivered to the jobsite in the manufacturer's unopened containers. The containers shall have labels stating the manufacturer's name, contents, quantity and other pertinent data.

PART 2 - PRODUCTS

2.1 INSULATION

A. Type A glass fiber insulation; ANSI/ASTM C547; 'k' value of 0.24 at 75 degrees F;

noncombustible.

B. Type B cellular foam; flexible, plastic; 'k' value of 0.27 at 75 degrees F; ASTM C534. APArmaflex W (white) or APArmaflex SS (black) or equal.

C. Type C vinyl plastisol prefabricated assemblies with 1/8 minimum wall thickness. Trap wrap protective kit by Brocar, Truebro or approved equal.

2.2 JACKETS

A. Vapor Barrier Jackets: Kraft reinforced foil vapor barrier with self-sealing adhesive joints.

B. PVC Jackets: One piece, premolded type.

C. Canvas Jackets: UL listed treated cotton fabric, 6 oz/sq yd.

2.3 ACCESSORIES

A. Insulation Bands: 3/4 inch wide; 0.015 inch thick galvanized steel, stainless steel. 0.007 inch 0.18 thick aluminum.

B. Metal Jacket Bands: 3/8 inch wide; 0.015 inch thick aluminum. 0.010 inch thick stainless steel.

C. Insulating Cement: ANSI/ASTM C195; hydraulic setting mineral wool.

D. Finishing Cement: ASTM C449.

E. Fibrous Glass Cloth: Untreaded; 9 oz/sq yd weight.

F. Adhesives: Compatible with insulation.

G. Treated wooden blocks.

PART 3 - EXECUTION

3.1 PREPARATION

A. Install materials after piping has been tested and approved.

3.2 INSTALLATION

A. Install materials in accordance with manufacturer's instructions.

B. Continue insulation with vapor barrier through penetrations, except on fire rated

walls.

C. In exposed piping, locate insulation and cover seams in least visible locations.

D. On insulated piping with vapor barrier, insulate fittings, valves, unions, flanges, strainers, flexible connections, and expansion joints.

E. Provide an insert, not less than 6 inches long, of same thickness and contour as adjoining insulation, between support shield and piping, but under the finish jacket, on piping 2 inches diameter or larger, to prevent insulation from sagging at support points. Inserts shall be cork or other heavy density insulating material suitable for the planned temperature range. Factory fabricated inserts may be used. Insert shall extend around bottom 120 degrees of pipe barrel and shall be included inside vapor barrier jacket where applied. See Section 220529 for shields and hangers.

F. Neatly finish insulation at supports, protrusions, and interruptions.

G. Jackets

1. Indoor, Concealed Applications: Insulated pipes shall have standard jackets, with vapor barrier, factory-applied or field-applied. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass cloth and adhesive. PVC jackets may be used.

2. Indoor, Exposed Applications: For pipe exposed in mechanical equipment rooms or in finished spaces, insulate as for concealed applications. Finish with canvas jacket; size for finish painting. Do not use PVC jackets.

3. Flanges, Valves, Anchors and Fittings: Unless otherwise specified, all flanges, valves, anchors and fittings shall be insulated with factory premolded or field fabricated segments of insulation of the same materials and thickness as the adjoining pipe insulation. When segments of insulation are used, elbows shall be provided with not less than three segments. For other fittings and valves, segments shall be cut to required curvatures, or nesting size sectional insulation shall be used. The segments of the insulation shall be properly placed and jointed with fire-resistant adhesive. After the insulation segments are firmly in place, fire-resistant vapor barrier coating shall be applied over the insulation in two coats with glass tape embedded between coats. The coating shall be applied to a total dry film thickness of 1/16 inch minimum. All glass tape seams shall be terminated neatly at the ends of the unions with insulating cement troweled on the bevel. For piping operating below ambient temperature, the beveled ends shall receive a coat of vapor barrier coating. Where anchors are used and secured directly to low temperature piping, they shall be insulated for a distance to prevent condensation, but not less than 6 inches from the surface of the pipe insulation. For jacket facing to receive finish painting, the factory applied

jacket shall be as specified herein, except that the kraft paper shall be light colored with the kraft paper exposed. Field applied vapor barrier jacket shall conform to the above conditions where finish painting is required.

Piping	Type	Pipe Size (inch)	Thickness (inch)
Domestic Hot Water Supply/Recirculation	A/B	all	1
Domestic Cold Water	A/B	all	1
Copper Water Piping Below Slab and Inside Walls	B	all	½
Chrome Plated Piping to Handicapped Lavatories	C	all	½
Chrome Plated Piping to Plumbing Fixtures		None	

END OF SECTION 220700

SUBMITTALS

In accordance with the requirements of the General Conditions and Supplementary General Conditions, the following information is required to be submitted for this Section. The Contractor shall submit 11 copies of the required information to Architect for approval within 30 days after notice to proceed.

ITEM DESCRIPTION	SHOP DRAWINGS	CATALOG DATA	PARTS LISTS	OPERATING MANUAL	WIRING DIAGRAM	CERTIFICATION	SAMPLES	OTHER
Pipe Insulation	X	X					X	
Fitting Insulation	X	X						
Insulation Block Inserts		X					X	

SECTION 221000 - PLUMBING PIPING AND VALVES

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Pipe and Pipe Fittings

B. Valves

C. Sanitary Sewer Piping

D. Domestic Water Piping

1.2 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents (ESPECIALLY DIVISIONS 21, 22, 23 AND 26) are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 220100 - GENERAL PROVISION FOR MECHANICAL WORK

C. Section 220500 - COMMON WORK RESULTS FOR MECHANICAL SYSTEMS

D. Section 220553 - IDENTIFICATION FOR MECHANICAL PIPING AND EQUIPMENT

E. Section 220700 - PIPING INSULATION

F. Section 223000 - PLUMBING SPECIALTIES

G. Section 224000 - PLUMBING FIXTURES

1.3 QUALITY ASSURANCE

A. Valves: Manufacturer's name and pressure rating marked on valve body.

B. Welding Materials and Procedures: Conform to ASME Code.

C. Welders Certification: In accordance with ANSI/ASME Section 9.

D. Cast Iron Pipe: All cast iron pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute (CISPI) and shall be listed by NSF International.

E. Hubless Cast Iron Couplings: All couplings for Hubless cast iron soil pipe and fittings shall conform to CISPI 310 and be certified by NSF International.

F. **All drinking water system components that convey or dispense water for human consumption through drinking or cooking shall be "lead-free" in accordance with NSF/ANSI 61 and/or NSF/ANSI 372 standards and any and all state and local requirements.**

PART 2 - PRODUCTS

2.1 SANITARY SEWER PIPING, BURIED INSIDE AND OUTSIDE OF BUILDING.

A. Cast Iron Pipe: ASTM A74, extra heavy or service weight. Fittings: Cast iron. Joints: ASTM C564, neoprene gasketing system.

B. PVC Pipe (House Line): ASTM D2665. Fittings: PVC. Joints: ASTM D2855, solvent weld.

2.2 SANITARY SEWER PIPING, INTERIOR, ABOVE GRADE

A. Cast Iron Pipe: ASTM A74, service weight. Fittings: Cast iron. Joints: Hub-and-spigot, CISPI HSN compression type with ASTM C564 neoprene gaskets.

B. Cast Iron Pipe: CISPI 301, hubless, service weight. Fittings: Cast iron. Joints: Neoprene gaskets and stainless steel clamp-and-shield assemblies. Above grade only.

C. Copper Pipe: ASTM B306, DWV. Fittings: ANSI/ASME B16.3, cast bronze, or ANSI/ASME B16.29, wrought copper. Joints: ANSI/ASTM B32, solder, Grade 50B.

D. Steel Pipe: ASTM A53 or A120, Schedule 40 galvanized. Fittings: Galvanized malleable cast iron drainage pattern. Joints: screwed.

2.3 WATER PIPING, INTERIOR

A. Copper Tubing: ASTM B88, Type K below slab, Type L above slab. Fittings: ANSI/ASME B16.23, cast brass, or ANSI/ASME B16.29, wrought copper. Joints: ANSI/ASTM B32, solder, Grade 95TA.

B. Galvanized Steel Pipe: ASTM A53 or A120, Schedule 40. Fittings: Cast iron. Joints: Grooved mechanical couplings. For equipment connections only.

2.4 FLANGES, UNIONS, AND COUPLINGS

A. Pipe Size 2 Inches and Under: 150 psig, malleable iron unions for threaded ferrous piping; Schedule 40 250 psig malleable iron unions for threaded ferrous piping, Schedule 80 malleable unions for copper pipe, soldered joints.

B. Pipe Size Over 2 Inches: 150 and 300 psig as required by equipment , forged steel slip-on flanges for ferrous piping; bronze flanges for copper piping; neoprene gaskets for gas service; 1/16 inch thick preformed neoprene bonded to asbestos.

C. Grooved and Shouldered Pipe End Couplings: Malleable iron housing clamps to engage and lock, designed to permit some angular deflection, contraction, and expansion; "C" shape composition sealing gasket; steel bolts, nuts, and washers; galvanized couplings for galvanized pipe.

D. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.5 BALL VALVES

A. Up to 2 Inches: Bronze body, stainless steel ball, teflon seats and stuffing box ring, lever handle and balancing stops, threaded ends with union.

B. Over 2 Inches: Cast steel body, chrome plated steel ball, teflon seat and stuffing box seals, lever handle or gear drive handwheel for sizes 10 inches and over, flanged.

C. Manufactured by Apollo, Crane, Nibco, Stockham and Watts.

2.6 BUTTERFLY VALVES (150# WOG)

A. Iron body, bronze disc, resilient replaceable seat for service to 180 degrees F, water or lug ends, infinite position lever handle with memory stop.

B. Manufactured by Apollo, Crane, Nibco, Stockham and Watts.

2.7 SWING CHECK VALVES (150# WOG)

A. Up to 2 Inches: Bronze 45 degree swing disc, solder or screwed ends.

B. Over 2 Inches: Iron body, bronze trim, 45 degree swing disc, renewable disc and seat, flanged ends.

C. Manufactured by Apollo, Crane, Nibco, Stockham and Watts.

2.8 SPRING LOADED CHECK VALVES

A. Iron body, bronze trim, spring loaded, renewable composition disc, screwed, wafer, or flanged ends.

B. Manufactured by Apollo, Crane, Nibco, Stockham and Watts.

2.9 WATER PRESSURE REDUCING VALVES

A. Bronze body, stainless steel and thermoplastic internal parts, fabric reinforced diaphragm, strainer, threaded ends.

B. Manufactured by Apollo, Consolidated, Kunkel, Watts and Zurn.

2.20 RELIEF VALVES

A. Bronze body, teflon seat, steel stem and springs, automatic, direct pressure actuated, capacities ASME certified and labeled.

B. Manufactured by Apollo, Consolidated, Kunkel, Watts and Zurn.

PART 3 - EXECUTION

3.1 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.2 INSTALLATION

A. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

B. Route piping in orderly manner and maintain gradient.

C. Install piping to conserve building space and not interfere with use of space. Do not change the designed path of piping, add excessive turns or offsets, or change pipe sizes without first consulting the Engineer.

D. Group piping whenever practical at common elevations.

E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

F. Provide clearance for installation of insulation and access to valves and fittings.

G. Provide access where valves and fittings are not exposed.

H. Slope water piping and arrange to drain at low points.

I. Establish elevations of buried piping outside the building to ensure not less than 3 feet of cover.

J. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

K. Prepare pipe, fittings, supports, and accessories not prefinished, ready for finish painting.

L. Establish invert elevations, slopes for drainage to be 1/8 inch per foot one percent minimum. Maintain gradients.

M. Excavate in accordance with Section 220100 for work of this Section.

N. Backfill in accordance with Section 220100 for work of this Section.

O. Install bell and spigot pipe with bell end upstream.

P. Install valves with stems upright or horizontal, not inverted.

3.3 APPLICATION

A. Use grooved mechanical couplings and fasteners only in accessible locations.

B. Install unions downstream of valves and at equipment or apparatus connections.

C. Install brass male adapters each side of valves in copper pipe system. Sweat solder adapters to pipe.

D. Install ball and/or butterfly valves for shut-off and to isolate equipment, parts of systems, vertical risers and branch piping serving fixtures without a means of shut-off. Valves to be located in such a manner to be accessible for service personnel. Provide access panel(s) if required to access valves.

E. Install ball valves for throttling, bypass, or manual flow control services.

F. Provide spring loaded check valves on discharge of water pumps.

G. Do not install above grade piping in areas subject to freezing. Where such an area is encountered, notify the engineer for instruction.

3.4 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

A. Prior to starting work, verify system is complete, flushed and clean.

B. Ensure PH of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).

C. Inject disinfectant, free chlorine in liquid, powder, tablet or gas form, throughout system to obtain 50 to 80 mg/L residual.

D. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.

E. Maintain disinfectant in system for 24 hours.

F. If final disinfectant residual test less than 25 mg/L, repeat treatment.

G. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.

H. Take samples no sooner than 24 hours after flushing, from outlets and from water entry, and analyze in accordance with AWWA C601.

3.5 SERVICE CONNECTIONS

A. Provide new sanitary sewer service. Before commencing work check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.

B. Provide new water service complete with reduced pressure backflow preventor.

END OF SECTION 221000

SUBMITTALS

In accordance with the requirements of the General Conditions and Supplementary General Conditions, the following information is required to be submitted for this Section. The Contractor shall submit 11 copies of the required information to Architect for approval within 30 days after notice to proceed.

ITEM DESCRIPTION	SHOP DRAWINGS	CATALOG DATA	PARTS LISTS	OPERATING MANUAL	WIRING DIAGRAM	CERTIFICATION	SAMPLES	OTHER
Sanitary Piping	X	X						
Domestic Water Piping	X	X						
Valves	X	X						

SECTION 224000 - PLUMBING FIXTURES AND EQUIPMENT

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Water Closets
B. Lavatories
C. Showers
D. Shower Trim
E. Floor Drains

1.2 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents (ESPECIALLY DIVISIONS 21, 22, 23 AND 26) are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 220100 - GENERAL PROVISION FOR MECHANICAL WORK

C. Section 220500 - COMMON WORK RESULTS FOR MECHANICAL SYSTEMS

1.3 GENERAL REQUIREMENTS

A. All plumbing fixtures and their installation shall conform to the requirements of the Kentucky State Plumbing Code.

B. Exposed metal work shall be bright chrome-plated brass except as noted.

C. All fixtures shall be by the same manufacturer.

D. All ADA accessible water closets provided with manual flush valve/trip lever shall have the flush valve handle/trip lever mounted on the wide(open) side of the water closet.

E. **All drinking water system components that convey or dispense water for human consumption through drinking or cooking shall be "lead-free" in accordance with NSF/ANSI 61 and/or NSF/ANSI 372 standards and any and all state and local requirements.**

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Acorn, Ancorn Aqua, American Standard, Bemis, Briggs/Proflo, Chicago, Clarion Bathware, Church, Component Hardware, Crane, Delany, Delta, Eljer, Elkay, Encon, Fiat, Guardian, Haws, Intersan, Jay R. Smith, Just, Kohler, Lawler, Leonard, Moen, Murdock, Mustee, Oasis, Olsonite, Powers, Sioux Chief, Sloan, Speakman, Stearn-Williams, Stingray Systems, Symmons, T&S Brass, Toto, Willoughby, Watersaver, Watts and Zurn. SEE SCHEDULES ON DRAWINGS.

2.2 Products listed in schedule on drawings shall determine quality and grade required. If other than those listed in schedule are to be used, equivalent or parallel grade shall be used.

2.3 All drains shall be constructed of the finest quality cast iron, coated with the manufacturer's standard protective paint and furnished with all items specified. Drain shall be as manufactured by Josam, Sioux Chief, Smith, Wade, Watts and Zurn.

PART 3 - INSTALLATION

3.1 Install each fixture with traps, easily removable for servicing and cleaning.

3.2 Provide bright chrome plated annealed copper supplies to fixtures with screwdriver stops, reducers and escutcheons.

3.3 All wall-hung fixtures shall be furnished with carriers.

3.4 Work shall be accurately laid out and roughed-in so that all piping will be straight and true without bends and offsets and no such bends and offsets will be acceptable unless they are unavoidable and are allowed by the Architect.

3.5 Seal fixtures to wall and/or floor surfaces with sealant, color to match fixtures.

3.6 If fixture mounting surfaces do not allow mounting to be level and plumb, surfaces are to be grounded smooth and flat.

3.7 Install ADA accessible water closets with flush valve handle/trip lever mounted on the wide(open) side of the water closet.

END OF SECTION 224000

SUBMITTALS

In accordance with the requirements of the General Conditions and Supplementary General Conditions, the following information is required to be submitted for this Section. The Contractor shall submit 11 copies of the required information to Architect for approval within 30 days after notice to proceed.

ITEM DESCRIPTION	SHOP DRAWINGS	CATALOG DATA	PARTS LISTS	OPERATING MANUAL	WIRING DIAGRAM	CERTIFICATION	SAMPLES	OTHER
Water Closets	X	X						
Lavatories	X	X		X				
Showers	X	X		X				
Shower Trim	X	X		X				
Floor Drains	X	X		X				

SECTION 233423 - POWER VENTILATORS

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Ceiling Exhaust Fans

1.2 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents (ESPECIALLY DIVISIONS 21, 22, 23 AND 26) are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 220500 - COMMON WORK RESULTS FOR MECHANICAL SYSTEMS

1.3 REFERENCES

A. AMCA 99 - Standards Handbook.

B. AMCA 210 - Laboratory Methods of Testing Fans for Rating Purposes.

C. AMCA 300 - Test Code for Sound Rating Air Moving Devices.

D. AMCA 301 - Method of Publishing Sound Ratings for Air Moving Devices.

E. SMACNA - Low Pressure Duct Construction Standard.

1.4 QUALITY ASSURANCE

A. Performance Ratings: Conform to AMCA 210.

B. Sound Ratings: AMCA 301, tested to AMCA 300.

C. Fabrication: Conform to AMCA 99.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Greenheck, Penn, Carnes, Loren Cook, Jenn-Aire, Acme, Adco, ILG, Shipman, Breident, Venmar, Spinnaker.

2.2 GENERAL

A. Provide all fans with disconnect.

B. Provide all fans with motor starters. See Section 220100 for details.

C. Integral phase relay shall be provided as a part of all three phase motor starters. Relay shall shut motor down on phase loss or phase unbalance and automatically reset when normal phasing is restored. Phase failure relay shall have adjustable restart time capabilities. Mechanical contractor shall coordinate staggered restart times as required.

2.3 CEILING EXHAUST FANS

A. Centrifugal Fan Unit: V-belt or direct drive, with galvanized steel housing lined with 1/2 inch acoustic insulation resilient mounted motor, gravity backdraft damper in discharge.

B. Disconnect Switch: Factory wired, non-fusible, in housing for thermal overload protected motor and wall mounted multiple speed switch/solid state speed controller.

C. Grille: Molded white plastic or aluminum with baked white enamel finish.

D. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed, variable and adjustable pitch motor sheaves selected so required rpm is obtained with sheaves set at mid-position, fan shaft with self-aligning pre-lubricated ball bearings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install equipment in a manner to provide required clearances for proper operation and maintenance.

C. Secure roof exhausters with lag screws to roof curb.

END OF SECTION 233423

SUBMITTALS

In accordance with the requirements of the General Conditions and Supplementary General Conditions, the following information is required to be submitted for this Section. The Contractor shall submit 11 copies of the required information to Architect for approval within 30 days after notice to proceed.

ITEM DESCRIPTION	SHOP DRAWINGS	CATALOG DATA	PARTS LISTS	OPERATING MANUAL	WIRING DIAGRAM	CERTIFICATION	SAMPLES	OTHER
Ceiling Exhausters	X	X	X	X	X			

SECTION 260500 - COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

1.2 SCOPE

A. Include furnishing of all labor, materials, equipment and other related items required to complete the work called for and indicated on the Contract Drawings and specified for a complete system.

B. The work covered by this section of the contract shall include the furnishing of all labor, materials, tools and equipment necessary to complete the electrical work as herein specified, or implied and as shown or implied on the contract drawings.

C. All materials shall be new and the best of their respective kinds unless otherwise specified and shall be listed by UL and shall be so labeled. All equipment shall conform to the latest approved standards of the IEEE, NEMA, ANSI and OSHA.

1.3 ABBREVIATIONS OF ORGANIZATIONS AND PUBLICATIONS

NEC	- National Electrical Code
UL	- Underwriters Laboratories, Inc.
IPCEA	- Insulated Power Cable Engineers Association
ANSI	- American National Standards Institute
OSHA	- Occupational Safety Health Act
IMC	- International Mechanical Code

1.4 DRAWINGS AND SPECIFICATIONS

A. The contract drawings and specifications are intended to cover all work enumerated under the respective headings. Examine all contract drawings and specifications to determine any references to work of an electrical nature and be guided accordingly in prosecuting the electrical work. The contract drawings are diagrammatic only, as far as final location is concerned. Any item of work not clearly included, specified or shown, and any errors or conflict between contract drawings, specifications, codes and field conditions shall be clarified by a written request to the architect prior to bidding; otherwise all labor and materials required to make good any damage or defect in finished work caused by such error, omission or conflict shall be provided at no additional cost to the Owner.

1.5 CODE COMPLIANCE

A. The minimum standards for all electrical work shall be the 2011 revision of the NEC. Whenever and wherever OSHA and/or federal, state, and/or local laws or regulations and/or design require higher standards than the NEC, then these laws and/or regulations and/or design shall be followed.

1.6 "OR EQUAL" CLAUSE

A. The specifications covering this work are open; wherever a specific manufacturer's item is specified, it is intended as a standard to be met and items which are approved equal or superior will be accepted.

1.7 WARRANTY

A. All equipment shall be warranted for a period of at least one (1) year from the date of acceptance, as evidenced by date of substantial completion for the entire project of for the last phase of the project, whichever occurs later, against defective materials, design, and workmanship. In addition to the equipment warranty, the Contractor shall provide all repair and adjustment service necessary for the proper operation of the entire system for the length of the entire warranty period.. Upon receipt of notice from the Owner's representative of failure of any part of the warranted system or equipment during the warranty period, the affected part shall be replaced promptly with a new part without cost to the Owner. Upon failure to take action within 24 hours after being notified, the work will be accomplished by the Engineer at the expense of the Contractor. See General Conditions and individual equipment specifications. Note that the warranty period of time specified in this section represents the minimum warranty period required for work performed under specification Divisions 260000, 270000, and 280000. Where the General Conditions and/or individual equipment/system specifications require a warranty period of longer duration or earlier start date than specified in this paragraph, the longer duration/earlier start date shall supercede for those portions of work covered by that specification. In the event the contractor is notified of warranty issues but does not correct or address the warranty issues prior to the end of the specified warranty period, the contractor will not be relieved of the responsibility to correct the deficient items after the warranty end date has passed.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.1 COOPERATION

A. Check with other trades on the scope of their work and coordinate on all locations of

various items of equipment and outlets before they are finally placed and connected. Any relocation of material or equipment necessitated by failure to coordinate work shall be at no cost to the Owner.

B. Do not cut the work of any other trade without first consulting the Architect's representative. Repair any work damaged employing the services of the trade whose work is damaged.

3.2 INSPECTION AND CERTIFICATES

A. Furnish electrical inspection by a licensed electrical inspector. Notify the electrical inspector in writing, immediately upon the start of the work with a copy of the notice to the architect. The inspector shall be scheduled for rough as well as finished work. Approval from the electrical inspector will not be allowed as reason for deviation from the contract drawing and specifications. All cost incidental to the electrical inspection shall be borne by the contractor.

3.3 CLEANING

A. At the completion of the work required under this contract and just prior to acceptance by the Owner, thoroughly clean all exposed equipment fittings, fixtures and accessories.

3.4 CONNECTIONS TO EQUIPMENT BY OTHERS

A. Provide all conduit, boxes and wire with required connections, including any disconnect switches called for by NEC to all electrically powered or controlled equipment furnished and set in place by others. Examine all divisions of the specifications and all contract drawings to determine location and size of all electrically powered or controlled equipment.

3.5 SPECIAL NOTE

A. All openings in electrical equipment, enclosures, cabinets, outlets and junction boxes shall be by means of standard knockouts or shall be sawed or drilled. The use of a cutting torch is prohibited.

3.6 PIPE SLEEVES AND FIRE RATING OF OPENINGS

A. Holes through walls and ceilings, chases, shafts, etc., for the passage of cable or conduit shall be made so as to substantially preserve the integrity of the fire rating of such surfaces or passages in accordance with NEC 300-21.

3.7 OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS

A. At completion of the contract, the Owner shall be provided with three (3) bound copies of operations and maintenance instructions for the various items of the electrical equipment.

B. In addition to manufacturer's approved shop drawings, manual shall include a listing of equipment and distribution or supplier of the equipment. In case of lighting fixtures, the type replacement lamp including voltage and other necessary designation shall be included.

3.8 SHOP DRAWINGS

Submit the required number of copies of Shop Drawings including, but not limited to the following items:

1. Lighting Fixtures

2. Switches and Receptacles

END OF SECTION 260500

SECTION 260510 - ELECTRICAL DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

1.2 SCOPE

A. Electrical demolition is required in the existing building as indicated on the architectural drawings. Where circuits or other electrical items feed through to adjoining spaces they shall be maintained or re-routed as required to be compatible with new work. See architectural drawings for more information on areas to demolish.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

A. The contractor shall visit the site, prior to submitting bids and familiarize himself with existing field conditions relative to demolition work and routing, interferences and all other difficulties that may be encountered relative to this contract. Failure to visit the site shall not constitute sufficient reason to warrant a change order for difficulties not apparent in the contract documents.

B. The contractor shall seal floor openings from removed conduits with thermo setting fire resistive compound.

C. Any outlet boxes left empty after demolishing a device may be reused for installation of a new device if in close proximity to a new device going in, if box is at correct mounting height, and if outlet box and conduit are of sufficient size for new device. Otherwise, cover empty box with blank plate.

D. If circuitry within the area of demolition serves equipment located outside the boundaries of the demolition, the continuity of the circuits shall be maintained as required to keep the equipment operational.

E. The electrical contractor shall be responsible for damage caused by said contractor to existing-to-remain materials. Repair or replace damaged material or equipment as directed at no additional cost.

F. Repairing, painting and patching of walls shall be by others, as described in other sections of the specifications.

G. The owner has the option of retaining or rejecting all demolished materials. The electrical contractor shall be responsible for removing from the site any electrical-related material not claimed by the owner.

END OF SECTION 260510

SECTION 260526 - GROUNDING AND BONDING OF ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 260500 - Common Work Results for Electrical Systems is applicable to work under this section of the specifications.

1.2 SCOPE

A. The conduit system and neutral conductors of the wiring system shall be grounded in accordance with NEC.

PART 2 - PRODUCTS

2.1 CONDUCTORS

A. Conductors shall be copper unless otherwise noted. Conductors shall be rated for 600V. Conductors must meet ASTM and NEC requirements.

PART 3 - EXECUTION

A. The entire grounding system shall be installed in a workmanlike manner and shall be inconspicuous.

B. Continuity of the ground shall be maintained throughout the building. Continuity of equipment and raceway ground shall be insured by the use of double locknuts and insulated grounding bushings bonded to enclosures at service equipment, at all panelboards, safety switches, pull boxes, etc., and at the terminations of all conduit which (1) house the supply conductors to the main bus or main breaker of a panelboard; (2) house the conductors of any branch or feeder circuit protected at 60 amperes or more. Convenience outlets shall be grounded by means of a bonding wire attached to the outlet box in a manner approved by NEC Article 250-148.

C. All equipment or device grounds at panelboards, service or distribution equipment shall be connected to ground bars in such equipment with set screw connectors.

D. Whether shown on the drawings or not, all equipment and device feeders (receptacles, light fixtures, motor connections, etc.) shall include a green ground wire, sized per NEC, to be run in conduit with power conductors. Provide grounding

connections per NEC 250.

END OF SECTION 260526

SECTION 260533 - GENERAL MATERIALS AND INSTALLATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 260500 - Common Work Results for Electrical Systems is applicable to work under this section of the specifications.

PART 2 - PRODUCTS

2.1 CONDUIT

A. In general, conduit shall be zinc-coated, steel conduit and shall meet in all respects, the UL Standards for Rigid Steel Conduit.

B. Electrical metallic tubing (EMT) may be used in all places unless otherwise noted.

2.2 OUTLET BOXES

A. Only zinc-coated or cadmium plated, sheet-steel boxes according to NEC, of a class to satisfy the conditions for each outlet shall be used in concealed work.

B. For masonry or drywall construction, square cornered boxes measuring 3-3/4" high by approximately 2" wide and having interior device mounting holes shall be used.

C. Single gang boxes for devices shall be not less than 2-1/2" deep unless limited by depth of construction and shall accommodate up to five #12 conductors. When construction depth permits, 3-1/2" deep boxes shall be used for devices where the number of conductors entering a single gang outlet is 6 to 8. Where more than 8 conductors enter an outlet housing a single device, boxes shall be 4" square by 2-1/8" deep to accommodate a maximum of 14 conductors and shall be provided with single device, square cornered tile wall covers of a suitable depth. Where construction depth is limited or to facilitate installation in cavity walls, 4" square boxes 1-1/2" deep may be used with single gang square cornered tile wallcovers in lieu of single gang, 2-1/2" or 3-1/2" deep boxes. Such installation shall be increased to conform with NEC requirements for conductors larger than #12 AWG.

D. Where two or more devices are to be ganged at one outlet, 3-3/4" high boxes as specified above and with the required number of gangs shall be used. Each gang

shall be subject to the same "fill" limitations as for single gang installation.

2.3 WIRES AND CABLES (CONDUCTORS)

A. LOW VOLTAGE (0 - 600V)

1. All conductors shall be copper unless otherwise specified.

2. Insulation unless otherwise noted shall be thermoplastic Type THHN-THWN. The color code shall be in accordance with the National Electric Code.

3. Branch circuit conductors shall be not smaller than No. 12 A.W.G. Branch circuits longer than 100' shall be run with minimum No. 10 A.W.G. Conductors for signal and pilot control circuits may be No. 14 A.W.G.

4. All building wires shall be as manufactured by Capital, General Electric, General Cable, American, Southwire, US Wire or approved equal.

2.4 JUNCTION BOXES AND TERMINAL CABINETS

A. All junction and terminal cabinets used under this contract shall be constructed of code gauge, galvanized steel and shall be as manufactured by Steel City, Appleton, O-Z/Gedney, RACO, Killark, or approved equal.

2.5 SURFACE RACEWAY

A. Where existing conduit and backboxes cannot be used, contractor shall utilize surface raceway equal to Wiremold V700 series, but sized accordingly. Provide base, cover, 2-hole support straps, backboxes, etc. as required.

PART 3 - EXECUTION

3.1 CONDUIT

A. All thick wall terminals shall be capped with insulating bushings. Electrical metallic tubing shall be terminated with connectors with insulated throat. Metallined terminating fittings will not be acceptable. All terminating fittings shall be secured to box or cabinet with double lock-nut type of construction.

B. Couplings and connectors for electrical metallic tubing shall be steel and shall be of the compression type. Set screw and indentation type connectors will not be acceptable, except that approved type steel set screw connectors may be used on EMT 2-1/2" or larger an on rigid conduit unless otherwise noted.

C. Runs of conduit or tubing shall have supports spaced in accordance with the NEC,

and exposed conduit shall be installed with runs parallel or perpendicular to walls, structural members or intersections of vertical planes and ceilings, with right angle turns consisting of cast metal fittings or symmetrical bends. Bends or offsets shall be avoided were possible but where necessary shall be made with an approved conduit bending machine. Conduit or tubing which has been crushed or deformed in any way shall not be installed. Expansion fittings or other approved devices shall be used to provide for expansion or contraction where conduit or tubing crosses expansion joints. Conduit and tubing shall be supported on an approved type of ceiling trapeze, beam clamps, strap hangers, or pipe straps, secured by means of toggle bolts on hollow masonry units, expansion shields in concrete or brick and machine screws on metal surfaces. The use of tie wire for suspending conduits or securing same to joists, purlins, beams, etc., will not be allowed. Conduit shall be securely fastened to all sheet metal outlets, junction and pull boxes with double galvanized locknuts and insulating bushings.

D. Conduit and tubing shall be installed in such manner as to insure against trouble from the collection of trapped condensation, and all runs shall be arranged so as to be devoid of traps wherever possible.

E. The final 18 inch section of conduit connecting each motor shall be liquid tight flexible type.

F. All conduit shall be installed concealed unless otherwise noted or shown on the drawings.

G. No conduit smaller than 3/4" shall be used except as noted. No flexible conduit smaller than 1/2" shall be used except as permitted by NEC 348. Flexible conduit shall be used only for light fixture whips unless otherwise noted.

3.2 OUTLET BOXES

A. Outlets shall be installed in the locations shown on the contract drawings. The general building plans shall be studied in relation to the spaces surrounding each outlet in order that work under this division of the specifications may fit the work required under other divisions. When necessary, outlets shall be relocated so that when fixtures or other fittings are installed they will be symmetrically located according to room layout and will not interfere with other work or equipment.

B. Boxes shall be installed in a rigid and satisfactory manner either by wood screws on wood, expansion shields on masonry, or machine screws on steel.

C. All supports required for outlet boxes in addition to that furnished under the general building construction, shall be furnished and installed under this division of the specifications. All supports shall be steel.

D. Partitions shall be provided in ganged boxes as required for conformity with NEC

380-8.

E. Where tile covers are used, they shall be of sufficient depth to bring the box opening within 1/4" of the finished wall surface.

F. Provide and install blank metal cover plates for all boxes which do not receive devices.

3.3 WIRES AND CABLES (CONDUCTORS)

A. LOW VOLTAGE (0 - 600V)

1. Conductors shall be continuous from outlet to outlet and no splices shall be made except within outlet or junction boxes. Junction boxes may be utilized where required.

2. Wire connectors of insulating materials or solderless pressure connectors properly insulated shall be utilized for all splices and wiring where possible. Rubber and friction tape shall conform to NEC and be UL approved. Vinyl plastic tape will be acceptable in lieu of rubber and friction tape. For branch circuit wires sizes #6 and smaller, and for fixture wiring, all splices shall be made with approved type crimp-on sleeves with separate outer insulating cap. In lieu of this, preinsulated, twist on torsion spring type connectors equal to "Scotchlok" may be utilized. The use of threaded connectors with integral insulation of bakelite or other material will not be allowed.

3.4 SURFACE RACEWAY

A. Paint raceway to match wall.

END OF SECTION 260533

SECTION 262700 - WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 260500 - Common Work Results for Electrical Systems is applicable to work under this section of the specifications.

PART 2 - PRODUCTS

2.1 SWITCHES

A. All switches shall be of the flush tumbler type. All wall switches shall be rated at 20 ampere, 120 volts.

B. Switches shall be specification grade and shall be as follows, or approved equal:

	HUBBELL	PASS & SEYMOUR	LEVITON
20A Single Pole	1221	20AC1	1221-2

2.2 RECEPTACLES

A. Convenience outlets shall be 20 amp rated, Hubbell No. 5352, Leviton No. 5362-1, or Pass & Seymour No. 5362-A, of the grounding type.

B. GFI duplex outlets shall be fully UL 943 compliant, equivalent to Hubbell No. GF 5352A, or equal by Pass & Seymour or Leviton.

2.3 PLATES

A. All plates for concealed devices shall be jumbo sized, ivory, nylon type.

2.4 All wiring devices shall be of one manufacturer and shall be ivory.

END OF SECTION 262000

SECTION 265000 - LIGHTING SYSTEMS AND FIXTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 260500 - Common Work Results for Electrical Systems is applicable to work under this section of the specifications.

PART 2 - PRODUCTS

2.1 LIGHT FIXTURES

A. Furnish and install the lighting fixtures complete with lamps, as shown on the Contract Drawings. Proposed substitutions for lighting fixtures shall be submitted to the Engineer no later than ten (10) days prior to bid date.

B. The proper number and type of fixture shall be provided for each lighting outlet. See below for Light Fixture Schedule.

2.2 LIGHT FIXTURE SCHEDULE

LF-1 Wall mounted 38" vanity light with 20-gauge steel housing, translucent acrylic diffuser, brushed aluminum trim, polished end caps, 120V programmed start electronic ballast, UL listing, and two (2) F25T8 lamps.
ASL #DRBV-225T8-120-3500K-FBE-CLE
Original Cast and Lightolier equal

LF-2 Surface mounted 4' architectural ceiling mount fixture with 20-gauge steel housing, translucent acrylic lens, decorative end caps, 120V programmed start electronic ballast, UL listing, and two (2) F32T8 lamps.
Lithonia #10521RE-WH
Lightolier and Williams equal

LF-3 Recessed LED downlight with 16-gauge galvanized steel mounting frame, torsion spring brackets, vertically adjustable mounting brackets, 16-gauge flat bar hangers, height adjustment, one-piece die cast trim, finned heat sink, wet location rated lens, elliptical upper reflector, micro-prism lens, matt-white splay, thermal protection, 70% lumen output for more than 50,000 hours, 1000 delivered lumens, 14.2 input watts, wet location listed and 5-year limited warranty.

Lithonia #REALC-D6MW-1000L-35K-.95SC
Omega and Pathway equal

2.3 LAMPS AND BALLASTS

A. All lamps shall be rated at 120 volts. All lamps shall be as manufactured by General Electric, Osram, Phillips, or approved equal. All ballasts shall be Advance, Motorola, General Electric or approved equal. Ballasts to be energy-saving magnetic or electronic, as specified with each fixture type. All lamps shall be of the same manufacture. All fluorescent and compact fluorescent lamps shall have a minimum CRI of 82.

PART 3 - EXECUTION

2.1 LIGHT FIXTURES

A. All steel supports required for lighting fixtures, in addition to those furnished and installed under the general building construction, shall be furnished and installed under this section of the specifications.

B. Fixtures in suspended ceilings shall be independently secured to framing members in accordance with NEC 410-16. Electrical contractor is responsible for the installation of a minimum of two grid support wires at opposing corners of each light fixture installed in a lay-in or gypsum ceiling, from the fixture to the structure. Each grid light fixture shall be installed with grid-clips.

END OF SECTION 265000

Technical Specifications

Rest Room Construction Station #14
530 Roanoke Road
Lexington, KY

Lexington Fire Department
Division o Fire and Emergency Services
Facilities Maintenance Bureau
219 East Third St.
Lexington, KY 40508

Bid No. 57-2014

Prepared by: Fitzsimons Office of Architecture
112 West Third St.
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Lexington, KY 40511
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Technical Specifications Contents

SECTION 010000 - Special Requirements

1.1 SECTION INCLUDES:
This Section includes information which supplements the General Conditions:

1. Scope
2. Time for Completion
3. Ordering Materials
4. Storage of Materials
5. Protection of Existing Facilities
6. Project Closeout and Record Drawings.
7. Access to Site and Building
8. Temporary Parking
9. Owner Occupancy
10. Interruption and Protection of Utilities
11. Progress Meetings
12. Work by Owner
13. Field Office
14. Communications Service
15. Staging and Storage
16. Sanitary Facilities
17. Utilities
18. Final Cleaning
19. Substantial Completion, Final Inspections and Subsequent Inspections
20. Divisions of Specifications
21. Disputes
22. Allocation of Work
23. Codes and Ordinances
24. Conduct of Employees
25. Contractor Coordination
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28. Submittal Procedure
29. Construction Photographs
30. Proposed Materials and Equipment List
31. Interior Enclosures
32. Progress Cleaning
33. Hazardous Materials

1. SCOPE

A. Project Description: This project involves the construction of a new rest room with shower in the existing locker room. Fire Station #14 has a concrete slab floor cast over pre-cast concrete T sections, over a crawl space. The new rest room is to attach on to existing utilities. Existing utilities are to be extended to the new location for piping, electric and HVAC.

B. Bidders, subcontractors and suppliers, before submitting proposals, shall visit and examine the site to satisfy themselves as to the nature and scope of the existing conditions at the site. The submission of a proposal will be construed as evidence that a visit and examination have been made. Later claims for labor equipment, or materials required for difficulties encountered which could have been foreseen had such an examination been made will not be recognized.

C. The Work under this contract does not include any items marked N.I.C. on the Drawings (Not In Contract).

D. It shall be the responsibility of all Contractors and Subcontractors to carefully examine all Drawings, Specifications and Contract Documents pertaining to all phases of the construction in order that Contractor and Subcontractor may foresee all requirements for coordination of their work. Submission of a bid shall be construed as evidence that such an examination has been made. Claims based on unforeseen requirements will not be

considered.

E. Should any error or inconsistency appear in Drawings or Specifications, the Contractor, before proceeding with the work, must make mention of the same to the Architect for proper adjustment, and in no case proceed with the work in uncertainty or with insufficient drawings.

F. The Contractor and each Subcontractor shall be responsible for verification of all measurements at the building before ordering any materials or doing any work. No extra charge or compensation shall be allowed due to differences between actual dimensions and dimensions indicated on the Drawings. Any such discrepancy in dimensions which may be found shall be submitted to the Architect for his consideration before the Contractor proceeds with the work in the affected areas.

G. Contractors shall follow sizes in Specification or figures on Drawings, in preference to scale measurements and follow detail drawings in preference to general drawings.

2. TIMES FOR COMPLETION:

A. Substantial Completion: Subject to the conditions of the General Conditions, the total work to be done under this Construction Contract shall be commenced at the time stipulated in the Work Order to the Contractor and shall be substantially completed within: ***90 calendar days*** for entire project.

B. The date of Substantial Completion, to be determined, shall be the date certified by the Architect when the work is sufficiently complete, in accordance with the Contract Documents, so the Owner may conditionally accept, and beneficially occupy and use, all of the facilities provided under this Construction Contract.

C. Final Completion: Subject to the conditions of the General Conditions, the total work to be done under this Construction Contract shall be fully completed within thirty (30) consecutive calendar days after the Date of Substantial Completion.

D. The Date of Final Completion shall be the date that the work is complete and all Contract requirements have been fulfilled by the Contractor.

3. ORDERING MATERIALS

A. Immediately following Award of Contract for this work, Contractor shall determine source of supply for all materials and length of time required for their delivery, including materials of subcontractors, and order shall be placed for such materials based on the project schedule.

B. If, for any reason, any item specified will not be available when needed and Contractor can show that he has made a reasonably persistent effort to obtain item in question, the Architect is to be notified in writing within 15 days after Contract is signed; otherwise the Contractor will not be excused for delays in securing materials specified and will be held accountable if completion of building is thereby delayed.

4. STORAGE OF MATERIALS

A. Each Contractor providing materials and equipment shall be responsible for the proper and adequate storage of his materials and equipment, and for the removal of same upon completion of his work. Storage of materials at the site shall be confined to areas within Contract Limits or as otherwise designated by the Owner at the Pre-Construction Conference. Coordinate with Architect. Storage will be limited to the site.

5. PROTECTION OF EXISTING FACILITIES

A. The General Contractor shall repair and/or replace, at no expense to the Owner, any sections of existing roads, streets, sidewalks, curbs, grassed areas, shrubs, trees, utilities, buildings, automobiles, trucks and other structures or vehicles damaged by reason of work performed under this Contract or incidental thereto, whether by his own forces or by his subcontractors or his material suppliers.

Care should be taken by the Contractor to protect from injury any persons and vehicles that will use the building during construction. The Contractor, at the Construction Conference will outline his proposed procedures of construction, determine degrees of potential dangers and outline protective measures he will take during various construction phases.

B. Exterior Enclosures. Provide temporary weather-tight closures to exterior openings to protect the interior at all times for all types of weather.

C. Security. Provide security to protect work and existing facilities from unauthorized entry, vandalism or theft. Verify with Owner the schedule for opening and closing the building.

6. PROJECT CLOSEOUT AND RECORD DRAWINGS

A. The Owner will furnish one (1) set of blue line prints which the Contractor shall keep on file in the field office. The Contractor shall record on these prints from day to day as the work progresses, all changes and deviations from the contract Drawing, with special emphasis on the exact location of all work concealed from view by offset distances to surface improvements such as building corners, curbs, etc. Entries and notations shall be neat, legible and permanent. These prints shall be delivered to the Architect upon completion of this project. Approval of final payment will be contingent upon compliance with these provisions.

B. Provide a minimum of three (3) bound final installation, training, operation, maintenance and repair manuals to be turned over to the LFUCG's Project Manager and approved for content by the Owner prior to acceptance of substantial completion.

C. Manuals provided must be of sufficient detail to enable customer to install, calibrate, train, operate, maintain, service and repair every system, subsystem, and/or piece of equipment installed on or as part of this contract. Manual must contain:

1. Project Title, Project number, Location, dates of submittals, names of Design Consultant, Engineer, Contractor, and Contractor's Subs. Provide phone numbers and addresses for Contractor and Subs.

2. An Equipment Index that includes vendors name, address, and telephone number for all equipment purchased on the project.

3. Emergency instructions with phone numbers and names of contact persons on warranty items.

4. All manuals in binders shall be original copies provided by the manufacturer. At minimum these binders must include:

Installation manuals	Calibration manuals
Training manuals	Repair manuals
Service Manual	Parts list

Reviewed shop drawings

5. Included in the front of the "Operation and Maintenance Manual" shall be a copy of the Interior and Exterior Finish plan and Schedule listing all finish materials, the manufacturer, the finish color, and the manufacturer's paint number.

D. Submission of final set of record drawings.

1. The Contractor, on copies of the Contract Documents provided by the contractor, shall submit a Record Set of Drawings indicating all deviations of construction as originally specified in the contract documents. These Record Drawings will compile information from the General Contractor as well as all sub-contractors. The Contractor shall provide a qualified representative to update the Record Set of Drawings as construction progresses.

2. Approval of the final payment request will be contingent upon compliance with these provisions. The Contractor's Record Set of Drawings shall be delivered to the Design Consultant at their completion so that the Design Consultant may make any changes on the original contract drawings.

7. ACCESS TO SITE AND BUILDING

A. Contact the architect for arrangements to visit the building.

8. TEMPORARY PARKING

A. Parking is limited to existing parking lot, coordinate with owner.

9. OWNER OCCUPANCY:

A. The site will be occupied during construction.

B. The contractor shall confine his operations, including delivery and unloading of materials and equipment, to the areas within the designated Contract Limits.

10. INTERRUPTION AND PROTECTION OF UTILITIES:

A. Utilities on the site are not to be interrupted without 48 hour notice to the Owner.

B. The contractor shall protect all utilities during construction.

11. PROGRESS MEETINGS

A. With the express purpose of expediting construction and providing the opportunity for cooperation of affected parties, meetings may be called which shall be attended by representatives of:

(1) Project Manager LFUCG, Fire Department, other
(2) the Architect and Consultants
(3) the General Contractor
(4) all Subcontractors

A location on or near the site will be designated where such meetings will be held. The frequency of meeting shall be twice a month for a formal meeting.

12. WORK BY OWNER

A. The owner may under take minor construction projects related to this project. The owner will coordinate any projects with the contractor and not disrupt the construction project.

13. FIELD OFFICE

A. Field office is not required, contractor cannot leave any items on site without permission of Station.

14. COMMUNICATIONS SERVICE

A. Contractor to arrange for and provide direct on-site communication by telephone during the construction of this project. Cellular phone is acceptable.

15. STAGING AND STORAGE AREA

A. All staging and storage is to occur within the site limits.

16. SANITARY FACILITIES

A. Restroom facilities are to be provided by the contractor for his workers and subcontractors. Drinking water shall be provided from an approved safe source, so piped or transported as to be kept clean and fresh and served from single service containers or satisfactory types of sanitary drinking stands or fountains. All such facilities and services shall be furnished in strict accordance with existing governing health regulations.

17. UTILITIES

A. The Contractor to provide can connect to existing electric service for construction power.

B. The Contractor to provide can connect to existing water service for construction water.

18. FINAL CLEANING:

A. Execute prior to final inspection. Clean building according to general conditions final cleaning. The intent is to clean and vacuum the entire building to keep dirt from being drawn into the HVAC system.

B. Clean interior and exterior surfaces exposed to view.

C. Clean debris from site, roofs, gutters, downspouts and drainage systems.

D. Remove waste and surplus materials, rubbish and construction facilities from the site.

19. SUBSTANTIAL COMPLETION, FINAL INSPECTION & SUBSEQUENT INSPECTIONS:

A. In as much as all parties with and intend to prosecute the work in a diligent and good faith manner, and to complete the work in a timely fashion, the Contractor shall notify the Architect when the Contractor believes he has attained Substantial Completion. Notification shall be made at least five (5) calendar days prior to the date set to the Substantial Completion inspection. The Contractor shall comply with the prerequisite

requirements for Substantial Completion as set forth in General Conditions.

B. Upon receipt of the Contractor's request, the Architect will either proceed with inspection or advise Contractor of prerequisites not fulfilled. Following initial inspection, the Architect will either prepare a certificate of substantial completion, or advise the Contractor of work which must be performed prior to issuance of the certificate of substantial completion. The Architect will repeat the inspection when requested and assure that the work has been substantially completed. Results of the completed inspection will form the initial "punch list" for final acceptance.

C. The Architect will re-inspect the work upon the receipt of the Contractor's notice that he believes in good faith that except for those items whose completion has been delayed due to circumstances that are acceptable to the Architect, the work has been completed, including punch list items from earlier inspections. Punch List shall be completed within 30 working days or Liquidated Damages can be assessed. Upon completion of re-inspection, the Architect will either recommend final acceptance and final payment, or will advise the Contractor of work not completed or obligations not fulfilled as required for final acceptance by issuance of another punch list. The architect will inspect for punch list completion only twice.

D. The Contractor, upon completion of all outstanding items set forth on the punch list, shall notify the Architect of the completion of the work. The Architect shall verify completion of the work by an on-site inspection.

E. If at this final inspection items remain on the punch list the general contractor shall be responsible for the cost of re-inspection by the architect and engineer. The cost is to be determined prior to the inspection but will not be less than hourly amounts noted on the Architect and Owner contract.

20. DIVISION OF SPECIFICATIONS:

A. Division of Specification into sections is done for convenience of reference and is not intended to control contractors in dividing work among subcontractors or to limit scope of work performed by any trade under any given section.

21. DISPUTES:

A. Contractor is hereby put on notice that it is his contractual obligation to adjust differences between his several subcontractors. Attempts to have the Architect or Owner settle disputes between Prime Contractor and his subcontractors, will not be given consideration.

22. ALLOCATION OF WORK:

A. Where certain materials are specified to be installed under various headings, it shall be the responsibility of the General Contractor to reallocate such work under the proper subcontractor if the specification is in conflict with local jurisdiction.

23. CODES AND ORDINANCES:

A. All branches of the work shown on the Plans or specified, whether specifically mentioned or not, shall be executed in strict compliance with all local or state regulations and codes and shall be in compliance with all national codes, when same have jurisdiction.

24. CONDUCT OF EMPLOYEES:

A. No Smoking is allowed on the job site.

B. The Contractor shall post signs conspicuously on the site to prohibit the use or possession of alcoholic beverages by any of his employees while they are on the grounds of this project. The Contractor is responsible for reporting violations of the provisions of KRS 244 to the proper authorities and for taking the necessary action to insure that the intent of this paragraph is carried out

25. CONTRACTOR COORDINATION:

A. The General Contractor and all Subcontractors shall cooperate and coordinate their work to expedite the progress of the project. All Subcontractors shall review and refer to the Drawings and Specifications of other trades involved with their particular work before proceeding. Any work installed which conflicts with another trade and had not been brought to the attention of the Architect prior to installation shall be removed at no additional expense to the Owner.

26. CUTTING AND PATCHING:

A. This is a historic building. All craftsmen are to be skilled in working on historic building. Extra time and care is needed to properly selectively demolish and rebuild this project. Matching new materials to the existing will require test patches to be approved before entire work is started. There will be discussion of the construction techniques and methods to make sure that the finished product will meet the required standards.

B. Employ a skilled and experienced installer to perform cutting and patching; replace materials ONLY if existing materials cannot be restored by splicing, filling and other appropriate restoration procedures.

C. Fit work tight to adjacent elements. Seal voids and gaps with appropriate sealant as indicated in plans and specifications. Consult the architect for detailing questions.

27. FIRE-SMOKE DETECTORS - EXISTING:

A. Existing systems are to remain in operation at all times except when construction will cause false alarms. Devise methods to cover and protect existing equipment during construction. Remove to keep system operational while no construction underway.

28. SUBMITTAL PROCEDURES:

A. Submittal form to identify Project, Contractor, Subcontractor Supplier and pertinent Contract Document Reference Numbers.

B. Apply Contractor's stamp or signature, certifying that review, verification of products required, field dimensions, adjacent work and coordination of information is in accordance with the requirements of the Work and Contract Documents.

C. Identify variations from Contract Documents and Product Specifications which may be detrimental to successful performance of the completed work.

D. Revise and resubmit submittals as required; identify all changes made since previous submittal.

E. Product Data. Submit the number of copies which the Contractor requires plus two copies to be retained by the Architect/Engineer. Mark each copy to identify applicable product, model, options, etc. Supplement manufacturers' standard data to provide information unique to this project.

F. Samples. Submit samples to illustrate functional and aesthetic characteristics of the product. Submit samples of projects from the full range of manufacturers' standard colors or in custom colors selected,

textures, and patterns for Architect/Engineer's selection.

29. CONSTRUCTION PHOTOGRAPHS:

A. Provide digital photographs of all uncovered conditions, and prior to covering any detail of construction.

30. PROPOSED MATERIALS AND EQUIPMENT LIST:

A. Within one hour of bid opening the successful low bidder must submit complete list of major Products proposed for use, with name of manufacturer, trade name, and model number of each Product.

31. INTERIOR ENCLOSURES:

A. Provide interior enclosures to control duct while performing demolition or cutting plaster, concrete, terrazzo, masonry or other material that generates dust.

B. Provide interior enclosures as required by hazardous materials rules and regulations.

32. PROGRESS CLEANING:

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

33. HAZARDOUS MATERIALS:

A. The owner has tested suspect materials in the building and there are no currently known hazardous materials on site.

B. The architect and architect's consultants shall have no responsibility for the discovery, presence, handling, removal or disposal of or exposure of persons to hazardous materials in any form at the project site, including but not limited to asbestos, asbestos products, polychlorinated biphenyl (PCB) or other toxic substances.

C. If the work which is to preformed under this contract interfaces in any way with existing components which contain hazardous materials, it shall be the contractor's responsibility to contact the Owner or Owner's environmental consultant regarding the proper means and methods to be utilized in dealing with the hazardous materials.

D. By execution of the contract for construction, the Contractor hereby agrees to bring no claim for negligence, breach of contract, indemnity, or otherwise against the Architect, his principals, employees, agents, and consultants if such claim in any way would involve the investigation of or remedial work related to hazardous materials in any form at the project site, including but not limited to asbestos, asbestos products, polychlorinated biphenyl (PCB) or other toxic substances. The contractor further agrees to defend, indemnify, and hold the Architect and his principals, employees, agents, and consultants harmless from any such claims related to hazardous materials that may be brought by the Contractor's Subcontractors, Suppliers, or other third parties who may be acting under the direction of the Contractor pursuant to this project.

END OF SECTION 010000 - Special Requirements

SECTION 020700 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. The construction of a new rest room should have very little impact on existing conditions. Only minor demolition is needed install new partitions, plumbing, HVAC to a single restroom.
2. Relocation of existing attic opening.
3. Patching and repairs are to be completed under other sections of the specifications but coordination between demolition and renovation must be considered and planned for.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section 01001 "Summary of Work" for use of the building requirements.
2. Division 1 Section 01001 "Cutting and Patching" for cutting and patching procedures for selective demolition operations.
3. Division 1 Section 01001 "Contract Closeout" for record document requirements.

1.3 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.

1.4 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 with further disposition at the Contractor's option.

1.5 QUALITY ASSURANCE

A. Demolition Firm Qualifications: Engage an experienced (min. five years experience) 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.

1.6 PROJECT CONDITIONS

A. Owner assumes no responsibility for actual condition of buildings to be selectively demolished.
   1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

B. Asbestos: It is not expected that asbestos will be encountered in the Work. If any materials suspected of containing asbestos are encountered, do not disturb the materials. Immediately stop all work. Remove workmen from the area. Immediately notify the Architect and the Owner.

PART 2 - PRODUCTS

2.1 REPAIR MATERIALS

A. Use repair materials identical to existing materials.

   1. Where identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
   2. Use a material whose installed performance equals or surpasses that of existing materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. 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.

3.2 UTILITY SERVICES

A. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services serving building to be selectively demolished.

1. Arrange to shut off indicated utilities with LFUCG Division of Fire and Emergency Services.

B. Utility Requirements: A licensed electrical contractor shall be employed for shutting off, disconnecting, removing, and sealing or capping utility services. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 PREPARATION

A. Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.

B. Employ a certified, licensed exterminator to treat building and to control rodents and vermin before and during selective demolition operations.

C. Conduct demolition operations and remove debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

D. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and 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.
2. Cover and protect furniture, furnishings, and equipment that have not been removed.

F. Coordinate new openings in the existing concrete slab with existing structural system.

3.4 POLLUTION CONTROLS

A. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.

1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

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.

3.5 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. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition work above each floor or tier before disturbing supporting members on lower levels.
2. 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.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

3.6 PATCHING AND REPAIRS

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

B. Patching is specified in Division 1 Section "Cutting and Patching."

C. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.

D. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction to remain in a manner that eliminates evidence of patching and refinishing.

E. Patch and repair floor and wall surfaces in the new space where demolished walls or partitions extend one finished area into another. Provide a flush and even surface of uniform color and appearance.

1. Closely match texture and finish of existing adjacent surface.
2. Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
3. Where patching smooth painted surfaces, extend final paint coat over entire unbroken surface containing the patch after the surface has received primer and second coat.
4. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
5. Inspect and test patched areas to demonstrate integrity of the installation, where feasible.

F. Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site. Remove debris daily from the site.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them. The disposal of any materials removed by the contractor must be in compliance with all building codes, local, city, state and federal requirements.

3.8 CLEANING

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

END OF SECTION 020700

SECTION 061000 - GENERAL CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
1. Wall framing for new partitions and wood nailers, framing and blocking.
2. Finish carpentry, miscellaneous trim work.
3. Interior architectural woodwork.
4. Solid surface counter top, substrate, backsplash, coordinated with ADA under-counter piping protection panels.

B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Division 9 Section "Painting" for back priming and finishing of finish carpentry.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for each type of factory-fabricated product and process specified, including details of construction relative to materials, dimensions of individual components, profiles, finishing and installation.

C. Material certificates for dimensional lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use as well as design values approved by the Board of Review of American Lumber Standards Committee (ALSC).

D. Wood treatment data as follows including chemical treatment manufacturer's instructions for handling, storing, installation, and finishing of treated material:
1. For each type of preservative treated wood product include certification by treating plant stating type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards.
2. Warranty of chemical treatment manufacturer.

E. Shop drawings showing location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

F. Lumber and panel products with non-factory applied finish, 50 sq. in. (300 sq. cm) for lumber and 8 by 10 inches (203 by 250 mm) for panels for each species and cut, with one-half of exposed surface finished.

G. Mockup: Prior to fabricating or installing interior architectural woodwork, cabinetry, construct mockup to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution. Build mockup of the size indicated, using materials indicated for final unit of work, and complying with the following requirements.

1. Locate mockup on site in the location indicated or, if not indicated, as directed by Architect.
2. Notify Architect one week in advance of the date and time when mockup will be installed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain architect's acceptance of mockup before start of final unit of Work.
5. Retain and maintain mockup during construction in an undisturbed condition as a standard for judging the completed Work.
   a. Accepted mockup in an undisturbed condition at the time of Substantial Completion may become part of the completed Work.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Arrange for installation of carpentry items by firms that can demonstrate successful experience in installing carpentry items similar in type and quality to those required for this Project.

B. Source Quality Control: Obtain trim, paneling and siding each from a single manufacturer to ensure a match of quality, color, pattern and texture.

C. Comply with the AWI Quality Standards of the Architectural Woodwork Institute for grades of interior architectural woodwork, construction, finishes and other requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Storage: Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber; provide for air circulation within and around stacks and under temporary coverings including polyethylene and similar materials.
   1. For lumber pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.

B. Do not deliver interior finish carpentry until concrete, plaster, masonry, ceramic tile, and other wet work is complete and cured to a condition of equilibrium and temperature and humidity are maintained at or near occupancy levels.

1.6 PROJECT CONDITIONS

A. Environmental Conditions: Obtain and comply with finish carpentry manufacturer's and installer's coordinated advice for optimum temperature and humidity conditions for finish carpentry during its storage and installation.

B. Weather Conditions: Proceed with finish carpentry only when existing and forecasted weather conditions will permit exterior finish carpentry to be installed in compliance with manufacturer's recommendations and when substrate is completely dry.

C. Open sealed packages of wood to permit natural adjustment of moisture content and allow wood to acclimate to the room conditions.

D. Field Measurements: Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Verify locations of concealed framing, blocking, reinforcements, and furring that support woodwork by accurate field measurements before being enclosed. Record measurements on final shop drawings.

1.7 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

1.8 EXTRA MATERIAL

A. Deliver extra material to owner. Before installation begins, furnish not less than 1.0 percent of the quantity of each type of wood trim profile installed on the project packaged with protective covering for storage and identified with labels clearly describing contents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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:
1. Solid Surface Material: NEMA LD 3, grades as indicated, or if not indicated, as required by woodwork quality standard.
a. Ralph Wilson Plastics Co.
b. Formica
c. Pionite
d. Substitutions as per Section 01001.

2.2 MATERIALS

A. General: Provide materials that comply with requirements of the AWI quality standard for each type of woodwork and quality grade indicated and, where the following products are part of interior woodwork, with requirements of the referenced product standards that apply to product characteristics indicated:
1. Hardboard: AHA A135.4.
2. Particleboard: ANSI A208.1, Grade M-2.
3. Softwood Plywood: PS 1.
4. Hardwood Plywood and Face Veneers: HPVA HP-1.

2.3 LUMBER, GENERAL

A. Lumber Standards: Furnish lumber manufactured to comply with DOC PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.

B. Inspection Agencies: Inspection agencies and the abbreviations used to reference them with lumber grades and species include the following:
1. NELMA - Northeastern Lumber Manufacturers Association.
2. SPIB - Southern Pine Inspection Bureau.
3. NHLA - National Hardwood Lumber Association.

C. Grade Stamps: Provide lumber with each piece factory-marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
1. For exposed lumber furnish pieces with grade stamps applied to ends or back of each piece; or omit grade stamps entirely and provide certificates of grade compliance issued by inspection agency.

D. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.

1. Provide dry lumber with 19 percent maximum moisture content at time of dressing and shipment for sizes 2 inches or less in nominal thickness, unless otherwise indicated.

2.4 DIMENSION LUMBER

A. General: Provide dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.

B. For light framing (2 to 4 inches thick, 2 to 4 inches wide) provide the following grade and species:
1. "Construction" grade.
2. Southern Pine graded under SPIB rules.

2.5 MISCELLANEOUS LUMBER

A. General: Provide lumber for support or attachment of other construction, including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members.

B. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shapes shown.

C. Moisture Content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.

D. Grade: For dimension lumber sizes, provide No. 3 or Standard grade lumber per ALSC's NGRs of any species. For board-size lumber, provide No. 3 Common grade per NELMA, NLGA, or WWPA; No. 2 grade per SPIB; or Standard grade per NLGA, WCLIB or WWPA of any species.

2.6 FASTENERS

A. General: Provide fasteners of size and type required for application indicated to provide secure attachment.
1. Provide noncorrosive aluminum fasteners or fasteners with a hot dipped zinc coating per ASTM A 153 or of QISI Type 304 stainless steel.
2. For finish carpentry, countersink nails and fill surface where face nailing is unavoidable.
3. Nails, Wire, Brads, and Staples: FS FF-N-105.
4. Power-Driven Fasteners: CABO NER-272.
5. Wood Screws: ASME B18.6.1.
6. Lag Bolts: ASME B18.2.1. (ASME B18.2.3.8M)
7. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

B. Adhesives: Comply with manufacturer's recommendations for adhesives.

C. Flashing: Comply with requirements of Division 7 Section "Flashing and Sheet Metal" for flashing materials installed in finish carpentry.

D. Sealants: Comply with requirements of Division 7 Section "Joint Sealants" for materials required for sealing.

2.7 ENGINEERED WOOD PRODUCTS

A. General: Provide engineered wood products for which current model code evaluation/research reports exist that are acceptable to authorities having jurisdiction and that evidence compliance for the application indicated with specified requirements and the building code in effect for this Project.

B. Laminated Veneer Lumber: Lumber manufactured by laminating wood veneers in a continuous press using an exterior-type adhesives complying with ASTM D 2559 to produce members with grain of veneers parallel with their lengths and complying with the following requirements:
   1. Veneer Characteristics: Douglas fir or southern pine veneers of varying thickness by widths and lengths standard with manufacturer, end-jointed with a lap-joint, butt joint, or scarf joint.
   2. Allowable Design Stresses: As published by manufacturer, determined from empirical data or by rational engineering analysis, and demonstrated by comprehensive testing performed by a qualified independent testing laboratory.
   3. Sizes: 1-3/4 inches thick by depth and length indicated.
   4. Sizes: As indicated.

C. Prefabricated Wood I Joists: Units manufactured by bonding stress-graded lumber flanges to APA-Performance-Rated panel webs with exterior-type adhesives complying with ASTM D 2559, to produce I-shaped joists complying with the following requirements:
   1. Flange Material: Spruce-pine-fir dimension lumber.
   2. Web Material: Oriented strand board.
   3. Web Material: Plywood complying with PS 1.
   4. Web Material: Either material indicated above, as standard with joist manufacturer.
   5. Allowable Design Stresses: As published by manufacturer, determined according to ASTM D 5055, and demonstrated by comprehensive testing performed by a qualified independent testing laboratory.
   6. Sizes: Depths and widths as indicated, with flanges not less than 1-1/2 inches wide.

D. Composite Joists and Headers: Lumber manufactured by laminating visually graded wood veneers, whose thicknesses range from 0.15 to 0.25 inches in thickness and grain runs parallel to long axis, to narrow faces of oriented strand board to produce rectangular members with veneers making up not less than 32 percent of total cross section.
   1. Wood Species: Veneers and board composed of a random mix of yellow-poplar, sweetgum, red maple, and southern pine; with a minor amount of ash, elm, sycamore, and black gum not to exceed 15 percent of finished product.
   2. Adhesives: Melamine formaldehyde adhesive for gluing veneers to each other and phenol formaldehyde adhesive for gluing veneers to oriented flakeboard.
   3. Allowable Design Stresses: As follows, determined from empirical data or by rational engineering analysis, and demonstrated by comprehensive testing performed by a qualified independent testing laboratory:
      a. Extreme Fiber Stress in Bending (Fb): 1950 psi for single member uses, 2250 psi for multiple member uses.
      b. Modulus of Elasticity in Edgewise Bending (Eb): 1,500,000 psi.
      c. Compression Perpendicular to Veneer Face: 550 psi.
      d. Horizontal Shear of Flakeboard (Fv): 500 psi.
   4. Sizes: 1-1/2 inches thick by depth and length indicated.

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

F. Products: Subject to compliance with requirements, provide one of the following:
1. Laminated Veneer Lumber:
a. "Micro=Lam L.V.L Headers and Beams," Trus Joist Corporation.
b. "Gang-Lam Laminated Veneer Lumber," Mitek Wood Products, Inc.
2. Prefabricated Wood I Joists:
a. "Alpine Structures I-Beams and Headers," Wood Products Division, Alpine Engineered Wood Products, Inc.
b. "Wood I-Beam Prefabricated Wooden I Joists and Headers," Georgia Pacific Corp.
c. "TJI Joists," Trus Joist Corporation.
3. Composite Joists and Headers:
a. "Arrowood Joists VJ1," Fibreboard Technology Corp.

2.8 CONSTRUCTION PANELS, GENERAL

A. Construction Panel Standards: Comply with PS 1 "U.S. Product Standard for Construction and Industrial Plywood" for plywood construction panels and, for products not manufactured under PS 1 provisions, with APA PRP-108.

B. Trademark: Furnish construction panels that are each factory-marked with APA trademark evidencing compliance with grade requirements.

2.9 CONCEALED PERFORMANCE-RATED CONSTRUCTION PANELS

A. General: Where construction panels are indicated for the following concealed types of applications, provide APA Performance-Rated Panels complying with requirements designated under each application for grade designation, span rating, exposure durability classification, edge detail (where applicable), and thickness.

2.10 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, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of AISI Type 304 stainless steel.

B. Nails, Wire, Brads, and Staples: FS FF-N-105.

C. Power Driven Fasteners: National Evaluation Report NER-272.

D. Wood Screws: ANSI B18.6.1.

E. Lag Bolts: ANSI B18.2.1.

F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and where indicated, flat washers.

2.11 METAL FRAMING ANCHORS

A. General: Provide metal framing anchors of type, size, metal, and finish indicated that comply with requirements specified including the following:
1. Current Evaluation/Research Reports: Provide products for which model code evaluation/research reports exist that are acceptable to authorities having jurisdiction and that evidence compliance of metal framing anchors for application indicated with the building code in effect for this Project.
2. Allowable Design Loads: Provide products for which manufacturer publishes allowable design loads that are determined from empirical data or by rational engineering analysis and that are demonstrated

by comprehensive testing performed by a qualified independent testing laboratory.

B. Galvanized Steel Sheet: Steel sheet zinc-coated by hot-dip process on continuous lines prior to fabrication to comply with ASTM A 525 for Coating Designation G60 and with ASTM A 446, Grade A (structural quality); ASTM A 526 (commercial quality); or ASTM A 527 (lock-forming quality); as standard with manufacturer for type of anchor indicated.

1. Use galvanized steel framing anchors for rough carpentry exposed to weather, in ground contact, or in area of high relative humidity, and where indicated.

C. Painted Steel Sheet: ASTM A 366 (commercial quality) cold rolled steel sheet or ASTM A 570, Grade 33 (structural quality) hot-rolled steel sheet, as standard with manufacturer for type of anchor indicated, coated after fabrication with manufacturers standard, fast-curing, lead-free "universal primer" resistant to normal atmospheric corrosion.
1. Use painted steel framing anchors for rough carpentry not exposed to weather, in ground contact, or in area of high relative humidity.

2.12 MISCELLANEOUS MATERIALS

A. Sill Sealer Gaskets: Glass fiber resilient insulation fabricated in strip form for use as a sill sealer; 1 inch nominal thickness compressible to 1/32 inch; selected from manufacturer's standard widths to suit width of sill members indicated; in rolls of 50 feet or 100 feet in length.

B. Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by both adhesive and panel manufacturer.

C. Water Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbonate (IPBC) as its active ingredient.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Discard units of material with defects that impair quality of carpentry construction and that are too small to use in fabricating carpentry with minimum joints or optimum joint arrangement.

B. Set carpentry to required levels and lines, with members plumb and true to line and cut and fitted.

C. Fit carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.

D. Securely attach carpentry work to substrate by anchoring and fastening as required to securely attach.

E. Countersink nail heads on exposed carpentry work and fill holes.

F. Use common wire nails for rough carpentry work, unless otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners

3.2 WOOD FRAMING, GENERAL

A. Framing Standard: Comply with N.F.P.A. "Manual for Wood Frame Construction," unless otherwise indicated.

B. Install wall framing members of nominal 2" x 4"'s at 16" on center or as required to match existing.

C. Install roof framing members of nominal 2" x (x)"'s as noted on drawings at 16" on center or as required to match existing.

D. Anchor and nail as required to securely attach, and to comply with the following:
   1. "Appendix C - Recommended Nailing Schedule" of the BOCA National Building Code.

E. Do not splice structural members between supports.

F. Firestop concealed spaces of wood framed walls and partitions at each floor level and at the ceiling line of the top story. Where firestops are not automatically provided by the framing system used, use closely fitted wood blocks of nominal 2-inch-thick lumber of the same width as framing members.

3.3 FINISH CARPENTRY EXAMINATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting installation and performance of finish carpentry. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.4 FINISH CARPENTRY PREPARATION

A. Clean substrates of projections and substances detrimental to application.

B. Condition finish carpentry to average prevailing humidity conditions in installation areas before installation for a minimum of 24 hours unless longer conditioning recommended by manufacturer.

C. Backprime lumber for painted finish exposed on the exterior. Comply with requirements for surface preparation and application in Section "Painting."

3.5 FINISH CARPENTRY INSTALLATION, GENERAL

A. Do not use finish carpentry materials that are unsound, warped, bowed, twisted, improperly treated or finished, not adequately seasoned, or too small to fabricate with proper jointing arrangements.
   1. Do not use manufactured units with defective surfaces, sizes, or patterns.

B. Install finish carpentry plumb, level, true, and aligned with adjacent materials. Use concealed shims where required for alignment.
   1. Scribe and cut finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
   2. Install to tolerance of 1/8 inch in 8 feet for plumb and level. Install adjoining finish carpentry with 1/16 inch maximum offset for flush installation and 1/8 inch maximum offset for reveal installation.
   3. Coordinate finish carpentry with materials and systems that may be in or adjacent to standing and running trim and rails. Provide cutouts for mechanical and electrical items that penetrate exposed surfaces of trim and rails.

C. Finish in accordance with specified requirements.

D. Refer to Division 9 Sections for final finishing of finish carpentry.

3.6 FINISH CARPENTRY, STANDING AND RUNNING TRIM AND RAILS

A. Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Stagger joints in adjacent and related standing and running trim and rails. Cope at returns and miter at corners to produce tight-fitting joints with full-surface contact throughout length of joint. Use scarf joints for end-to-end joints. Plane back of casings to provide uniform thickness across joints if required.
   1. Match grain pattern across joints.
   2. Drill pilot holes in hardwood prior to nailing or fastening to prevent splitting. Fasten to prevent movement or warping. Countersink nail heads on exposed carpentry work and fill holes.
   3. Fit exterior joints to exclude water. Apply flat grain lumber with bark side exposed to weather.

B. Condition woodwork to average prevailing humidity conditions in installation areas prior to installing.

3.7 ADJUSTING

A. Repair damaged or defective finish carpentry where possible to eliminate functional or visual defects. Where not possible to repair, replace finish carpentry. Adjust joinery for uniform appearance.

3.8 CLEANING

A. Clean finish carpentry on exposed and semiexposed surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.

3.9 PROTECTION

A. Provide final protection and maintain conditions that ensure finish carpentry is without damage or deterioration at time of Substantial Completion.

3.10 INTERIOR ARCHITECTURAL WOODWORK

A. PREPARATION
   1. Condition woodwork to average prevailing humidity conditions in installation areas prior to installing.
   2. Prior to installation of architectural woodwork, examine shop fabricated work for completion, and complete work as required, including back priming and removal of packing.

B. INSTALLATION
   1. Install woodwork 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 (including tops); and with no variations in flushness of adjoining surfaces.
   2. Scribe and cut work to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.
   3. Pressure treated wood: Handle, store, and install pressure treated wood in compliance with recommendations of chemical treatment manufacturer including those for adhesives, where required for installation.
   4. Anchor woodwork to anchors or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as

required for a complete installation. Except where prefinished matching fasteners heads are required, use fine finishing nails for exposing nailing, countersunk and filled flush with woodwork, and matching final finish where transparent finish is indicated.

5. 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 and comply with referenced Quality Standards for joinery.
6. Cabinets: install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated. Maintain veneer sequence matching (if any) of cabinets with transparent finish.
7. Tops: Anchor securely to base units and other support systems as indicated.
8. Secure backsplashes to tops with concealed metal brackets at 16" 0.0.
9. Wood storage shelving: Complete the assembly of units and install in the areas indicated, including hardware and accessories as indicated.
10. Paneling: Anchor paneling to supporting substrate with concealed panel-hanger clips and by blind nailing on backup strips, splined-connection strips, and similar associated trim and framing. Do not face nail unless otherwise indicated.
    a. Install flush paneling with no more than 1/16 inch in 96-inch (1.5 mm in 2400-mm) vertical cup or bow and 1/8 inch in 96-inch (3 mm in 2400-mm) horizontal variation from a true plane.

3.11 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork where possible to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean woodwork on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

3.12 INSTALLATION

A. Quality Standard: Install woodwork to comply with WIC Section 26 for the same grade specified in Part 2 of this Section for type of woodwork involved.

B. Install woodwork plumb, level, true, and straight with no distortions. Shim as required with concealed shims. Install to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm) for plumb and level (including tops).

C. Scribe and cut woodwork to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.

D. Cabinets: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.
   1. Install cabinets with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
   2. Maintain veneer sequence matching of cabinets with transparent finish.

E. Tops: Anchor securely to base units and other support systems as indicated. Caulk space between backsplash and wall with specified sealant.
   1. Install countertops with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.

F. Complete the finishing work specified in this Section to the extent not completed at shop or before installation of woodwork. Fill nail holes with matching filler where exposed. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats were applied in the shop.

3.13 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork where possible to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean woodwork on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 061000

SECTION 079000 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes joint sealants for the following locations:
   1. Interior joints where rest room installed.

B. Related Sections: The following sections contain requirements that relate to this Section:
   1. Division 6 Section "Woodwork" for sealing all woodwork and carpentry.
   2. Division 9 Section "Painting."

1.3 SYSTEM PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that have been produced and installed to establish and to maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.

1.4 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data from manufacturers for each joint sealant product required.
   1. Certification by joint sealant manufacturer that sealants plus the primers and cleaners required for sealant installation shall contain no volatile organic compounds.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has completed joint sealant applications similar in material, design, and extent to that indicated for Project that have resulted in construction with a record of successful in-service performance.

B. Conform to Sealant and Waterproofers Institute requirements for materials and installation.

C. Product Testing: Provide comprehensive test data for each type of joint sealant based on tests conducted by a qualified independent testing laboratory on current product formulations within a 24-month period preceding date of Contractor's submittal of test results to Architect.
   1. Test elastomeric sealants for compliance with requirements specified by reference to ASTM C 920. Include test results for hardness, stain resistance, adhesion and cohesion under cyclic movement (per ASTM C 719), low-temperature flexibility, modulus of elasticity at 100 percent strain, effects of heat aging, and effects of accelerated weathering.

D. Field-Constructed Mock-Ups: Prior to installation of joint sealants, apply elastomeric sealants as follows to verify selections made under

sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution:

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multi-component materials.

B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Conditions: Do not proceed with installation of joint sealants under the following conditions:
1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer.
2. When joint substrates are wet.

B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than allowed by joint sealant manufacturer for application indicated.

C. Joint Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.

1.8 SEQUENCING AND SCHEDULING

A. Sequence installation of joint sealants to occur not less than 21 nor more than 30 days after completion of waterproofing, unless otherwise indicated.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, joint fillers, 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: Provide color of exposed joint sealants to comply with the following:
1. Provide selections made by Architect from manufacturer's full range of standard colors for products of type indicated.

2.2 ELASTOMERIC JOINT SEALANTS

A. Exterior sealant, except paving joints, shall be Sonolastic NP-I by Sonneborn, Dymetric by Tremco, Synthacalk GC-5 by Pecora, or approved equal.

B. Interior sealant shall be Pecora AC-20 acrylic or equal by Sonneborn or Tremco.

C. Joint fillers and back-up materials, solvents, primers, bond breakers, and cleaners shall be as recommended by sealant manufacturer for various conditions encountered and shall be non-bituminous material.

2.3 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from pre-construction 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 in any way joint substrates and adjacent nonporous surfaces, and formulated to promote optimum adhesion of sealants with joint substrates.

C. Masking Tape: Non-staining, non-absorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance. Do not proceed with installation of joint sealants until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturer and the following requirements:
   1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
   2. Clean concrete, masonry, unglazed surfaces of ceramic tile, and similar 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 from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
   3. Remove laitance and form release agents from concrete.
   4. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile, and other 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.

B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealant manufacturer based on pre-construction joint sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's recommendations. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. 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.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

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

C. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:
   1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
      a. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width.
      b. Do not stretch, twist, puncture, or tear joint fillers.
      c. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.
   2. Install bond breaker tape between sealants where backer rods are not used between sealants and joint fillers or back of joints.

D. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.

E. Tooling of Non-sag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
   1. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

3.4 CLEANING

A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so that and installations with repaired areas are indistinguishable from original work.

END OF SECTION 079000

SECTION 08 11 00 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
B. Door Schedule see: one hollow metal door frame.

1.2 SUMMARY

A. This Section includes the following:
1. Non-rated rolled steel frame, no hollow metal door in project, frame for drywall partition, 2x4 wood stud wall, to receive solid core wood door.

B. Relates Sections: The following Sections contain requirements that relate to this section
1. Section 08710: Finish Hardware.
2. Section 09900: Painting (Field painting of doors and frames).

1.3 SUBMITTALS

A. Submit shop drawings and product data under provisions of Section 01001.
B. Indicate frame configuration, anchor types and spacings, location of cutouts for hardware, reinforcement, and finish.
C. Indicate door elevations, internal reinforcement, closure method, and cut outs for glazing.
D. Submit manufacturer's installation instructions under provisions of Section 01001.

1.4 QUALITY ASSURANCE

A. Conform to requirements of SDI-100.

1.5 REGULATORY REQUIREMENTS

A. Conform to applicable code for fire rated frames and doors.

1.6 DELIVERY, STORAGE AND PROTECTION

A. Protect products under provisions of Section 01001.

B. Protect doors and frames with resilient packaging sealed with heat shrunk plastic.

C. Break seal on-site to permit ventilation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Steelcraft, Inc.
B. Fenestra
C. Amweld Building Products, Inc.
D. Substitutions: Under provisions of Section 01001.

2.2 FRAMES

A. Interior Frames: 16 gage thick material.

2.3 ACCESSORIES

A. Rubber Silencers Resilient rubber, 3 on strike side.

2.5 PROTECTIVE COATINGS

A. Bituminous Coating: Fibered asphalt emulsion.

B. Primer: Zinc chromate type.

2.6 FABRICATION

A. Fabricate frames as welded unit for drywall slip-on type.

B. Mullions for Double Doors: Removable type. Provide metal T shaped astragals for double doors.

C. Fabricate frames and doors with hardware reinforcement plates welded in place. Provide mortar guard boxes.

D. Reinforce frames wider than 48 inches (1 200 mm) with roll formed steel channels fitted tightly into frame head, flush with top.

E. Prepare frame for silencers. Provide three single rubber silencers for single doors and mullions of double doors on strike side, and two single silencers on frame head at double doors without mullions.

F. Attach fire rated label to each frame and door unit.

G. Close top edge of exterior door flush with inverted steel channel closure. Seal joints watertight.

H. Fabricate frames for masonry wall coursing with 4 inch head member.

I. Galvanize all components of the door and frame. Galvanize the top and bottom cap inserts and all stiffeners or reinforcements. Touch up all welded areas, patched or repaired areas.

2.7 FINISH

A. Interior Units: 0.60 oz/sq ft galvanized.

B. Primer: Baked on.

C. Finish: Site applied. See Section 09900 - Painting.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install frames in accordance with SDI-105.

B. Coordinate with masonry and wallboard wall construction for anchor placement.

3.2 TOLERANCES

A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.3 ADJUSTING AND CLEANING

A. Adjust hardware for smooth and balanced door movement.

END OF SECTION 08 11 00

SECTION 08 21 00 WOOD DOORS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
B. Door Schedule: one new door for rest room.

1.2 SUMMARY

A. This Section includes the following:
1. Wood doors, non-rated and rated. See door schedule for location.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section 08110 - Hollow Metal Doors and Frames
2. Section 08710 - Hardware.

1.3 REFERENCES

A. ANSI/NWMA I.S.1 - Industry Standard For Wood Flush Doors (Includes Standards I.S.1.1 through I.I.S. 1.7).

B. ANSI A135.4 - Basic Hardboard.

C. AWI - Quality Standards of Architectural Woodwork Institute.

1.4 SUBMITTALS

A. Submit shop drawings and product data under provisions of Section 01001.

B. Indicate door elevations, stile and rail reinforcement, internal blocking for hardware attachment.

1.5 QUALITY ASSURANCE

A. Conform to requirements of AWI Quality Standard Custom Grade.

B. Fire-Rated Wood Doors: Provide wood doors that comply with NFPA 80; are identical in materials and construction to units tested in door and frame assemblies per ASTM E 152; and are labeled and listed by UL, Warnock Hersey, or another testing and inspection agency acceptable to authorities having jurisdiction.
1. Oversized, Fire-Rated Wood Doors: For door assemblies exceeding sizes of tested assemblies, provide manufacturer's certificate stating that doors conform to all standard construction requirements of tested and labeled fire-door assemblies except for size.
2. Temperature Rise Rating: At stairwell enclosures, provide doors that have a temperature rise rating of 450 deg F (232 deg C) maximum in 30 minutes of fire exposure.
3. Temperature Rise Rating: At stairwell enclosures, provide doors that have a temperature rise rating of 250 deg F (121 deg C) maximum in 30 minutes of fire exposure.

1.6 REGULATORY REQUIREMENTS

A. Conform to Kentucky Building Code.

1.7 DELIVERY, STORAGE, AND PROTECTION

A. Protect doors with resilient packaging, sealed with heat shrunk plastic. Break seal on site to permit ventilation.

1.8 WARRANTY

A. Provide five year manufacturer's warranty under provisions of Section 01001.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Weyerhauser Company
B. Cal-Wood Door Div.
C. Algoma Hardwood, Inc.
D. Eggers Industries
E. Glen-Mar Door
F. Graham
G. Substitutions: Under provisions of Section 01001.

2.2 DOOR TYPES

A. Strand Core Doors for Transparent Finish: Comply with the following requirements:
1. Faces: White birch, plain sliced.
2. Grade: Premium.
3. Construction: 7 plies.
4. Core: Glued-block core.
5. Bonding: Stiles and rails bonded to core, then entire unit abrasive planed before veneering.

2.3 DOOR CONSTRUCTION (AWI QUALITY STANDARD)

A. Solid, Non-Rated Core: AWI Section 1300, SLC-5 or SLC-7, glue blocked core, 7 plys. Provide solid wood hardware blocking.

2.4 FLUSH DOOR FACING

A. Facing Quality: AWI premium grade.

B. Flush Interior Door Veneer: oak, plain sliced with random matched grain for natural finish.

C. Face Panel: High density overlay plywood face veneer.

2.5 ADHESIVES

A. Interior Doors: AWI, Type II.

2.6 FABRICATION

A. Fabricate non-rated doors in accordance with AWI Quality Standards requirements.

B. Provide flush doors with 1/2 inch thick edge strips of wood species to match face veneer.

C. Pre-machine doors for finish hardware.

2.7 FACTORY FINISHING

A. Comply with referenced AWI quality standard including section 1500 "Factory Finishing". Pre-finish doors at factory.

B. Transparent finish system is to comply with AWI Premium Grade, System #3 alkyd-urea conversion varnish, filled finish, semi-gloss. Finish to match existing stained wood doors.

PART 3 EXECUTION

3.1 INSTALLATION

A. Manufacturer's Instructions: Install wood doors to comply with manufacturer's instructions and referenced quality standard and as indicated.
1. Install fire-rated doors in corresponding fire-rated frames according to requirements of NFPA 80.

B. Job-Fit Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted with fire-rated doors. Machine doors for hardware. Seal cut surfaces after fitting and machining.
1. Fitting Clearances for Non-Fire-Rated Doors: Provide 1/8 inch (3.2 mm) at jambs and heads, 1/16 inch (1.6 mm) per leaf at meeting stiles for pairs of doors, and 1/8 inch (3.2 mm) from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4-inch (6.4-mm) clearance from bottom of door to top of threshold.
2. Fitting Clearances for Fire-Rated Doors: Comply with NFPA 80.
3. Bevel non-fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock and hinge edges.
4. Bevel fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) on lock edge; trim stiles and rails only to extent permitted by labeling agency.

C. Machine cut relief for hinges and closers and coring for handsets and cylinders.

D. Trim door width by cutting equally on both jamb edges.

E. Trim door height by cutting equally on top and bottom edges to a maximum of 3/4 inch (19 mm).

F. Pilot drill screw and bolt holes. Use threaded through bolts for half surface hinges.

G. Prepare doors to receive finish hardware in accordance with AWI requirements.

H. Conform to AWI requirements for fit tolerances.

3.2 INSTALLATION TOLERANCES

A. Maximum Diagonal Distortion: 1/8 inch measured with straight edge, corner to corner.

3.3 ADJUSTING AND CLEANING

A. Adjust for smooth and balanced door movement.

3.4 SCHEDULE: See Door Schedule

END OF SECTION 08 21 00

SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Commercial door hardware for the following swinging doors:
   a. Flush wood.

B. Related Sections include the following:

1. Division 08 Section "Hollow Metal Doors and Frames" for astragals provided as part of fire-rated labeled assemblies and for door silencers provided as part of hollow-metal frames.
2. Division 08 Section "Flush Wood Doors" for astragals provided as part of fire-rated labeled assemblies.

1.3 SUBMITTALS

A. Number of Submittals: All items listed in this section are to be included in one submittal prepared by one Supplier.

B. Product Data: Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.

C. Qualification Data:

1. Finish Hardware Installers
   a. Finish hardware, including electrified hardware, for wood, hollow metal, and aluminum doors to be installed by personnel trained and certified by the manufacturer of the product furnished.
   b. Provide manufacturer's certificates for installer as part of Contractor's bid information. Failure to supply certificates may result in rejection of bid.
2. Hardware Supplier
   a. Established contract hardware firm which maintains and operates an office, display, and stock in project area and which is a factory authorized distributor of the lock being furnished.
   b. Hardware scheduled and furnished by or under direct supervision an Architectural Hardware Consultant.
   c. All schedules submitted to the Architect for approval and job use must carry the signature and certified seal of this Architectural Hardware Consultant.
3. Architectural Hardware Consultant
   a. Currently certified by the Door and Hardware Institute.

b. Full-time employee of the Hardware Supplier or an individual having no contractual ties to any supplier/manufacturer entity.
c. Available at reasonable times to Architect, Owner, and Contractor during course of work.

D. Maintenance Data: For each type of door hardware. Include final hardware schedule, keying schedule, riser diagrams, and point-to-point wiring diagrams in 3-ring binder, labeled on spine with project name and "Door Hardware".

E. Warranty: Special warranty specified in this Section.

F. Other Action Submittals:

1. Door Hardware Sets: Prepared by or under the supervision of a DHI certified Architectural Hardware Consultant, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final door hardware sets with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

a. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule"; other formats will be rejected without review. Double space entries, and number and date each page.
b. Numerical Sequence of Sets and Headings: Submittal headings shall be in exact order as hardware sets in specification: one heading only per set. Submittal set numbers shall relate to specification set numbers, ie. if three headings are required for Set 12 due to door width differences, then the heading numbers should be 12.1, 12.2, and 12.3 or employing similar linking logic.
c. Door Numbers: Identical to those used in the contract documents.
d. Number of Copies: (5).
e. Content: Include the following information:

1) Identification number, location, hand, fire rating, and material of each door and frame.
2) Type, style, function, size, quantity, and finish of each door hardware item.
3) Complete designations of every item required for each door or opening including name and manufacturer.
4) Degree of opening for closer and overhead stop and holder installation.
5) Keying information.
6) Fastenings and other pertinent information.
7) Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
8) Explanation of abbreviations, symbols, and codes contained in schedule.
9) Mounting locations for door hardware.
10) Notes included with specification hardware sets transcribed verbatim into submittal hardware sets.
11) Door and frame sizes and materials.
12) List of related door devices specified in other Sections for each door and frame.

f. Submittal Sequence: Submit the final door hardware sets at earliest possible date, particularly where approval of the

door hardware sets must precede fabrication of other work that is critical in Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the door hardware sets.

2. Keying Schedule: Prepared by or under the supervision of Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.

1.4 QUALITY ASSURANCE

A. Furnish proper hardware types and quantities for door function, hardware mounting and clearances, and to meet applicable codes. Bring discrepancies to the attention of the Architect a minimum of (10) days prior to bid date so that an addendum may be issued. No additional compensation will be allowed after bidding for hardware changes required for proper function, hardware mounting or clearances, or to meet codes.

B. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

C. Source Limitations: All items listed in hardware sets are to be furnished by one supplier. Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.

D. Keying Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." In addition to Owner, Contractor, and Architect, conference participants shall also include Hardware Supplier's Architectural Hardware Consultant. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:

1. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
2. Preliminary key system schematic diagram.
3. Requirements for key control system.
4. Address for delivery of keys.

E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." In addition to Owner, Contractor, and Architect, conference participants shall also include Certified Installer, Hardware Supplier's Architectural Hardware Consultant, and Security Supplier. Review methods and procedures related to electrified door hardware including, but not limited to, the following:

1. Coordinate electrical roughing-in and other preparatory work to be performed by other trades.
2. Review sequence of operation for each type of electrified door hardware.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review required testing, inspecting, and certifying procedures.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

B. Tag each item or package separately with identification related to the final door hardware sets, and include basic installation instructions, templates, and necessary fasteners with each item or package.

C. Deliver keys to Owner by registered mail or overnight package service. Obtain Owner's contact name and address from Architect.

1.6 COORDINATION

A. Templates: Distribute door hardware templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Distribute templates in a timely manner so as not to delay suppliers. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including excessive deflection, cracking, or breakage.
b. Faulty operation of operators and door hardware.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period: Five years from date of Substantial Completion, except as follows:

a. Manual Closers: 10 years from date of Substantial Completion.

1.8 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

B. Maintenance Service: Beginning at Substantial Completion, provide six months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door hardware operation. Provide parts and supplies same as those used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in this and door hardware sets indicated in Part 3 "Door Hardware Sets" Article.

1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products.
2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.

B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Sets" Article. Products are identified by using door hardware designations, as follows:

1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Sets" Article.
2. References to BHMA Standards: Provide products complying with these standards and requirements for description, quality, and function.

C. 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.

2.2 BUTT HINGES, GENERAL

A. Quantity: Provide the following, unless otherwise indicated:

1. Two Hinges: For doors with heights up to 60 inches (1524 mm).
2. Three Hinges: For doors with heights 61 to 90 inches (1549 to 2286 mm).
3. Four Hinges: For doors with heights 91 to 120 inches (2311 to 3048 mm).
4. For doors with heights more than 120 inches (3048 mm), provide 4 hinges, plus 1 hinge for every 30 inches (750 mm) of door height greater than 120 inches (3048 mm).

B. Template Requirements: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.

C. Hinge Height, Width, and Weight: Unless otherwise indicated, provide the following:

1. Doors with Exit Devices or 3'6" or more in width: 5" high, heavy-weight hinges.
2. Doors less than 3'6" in width: 4-1/2" high, standard-weight hinges.

3. Width: 4-1/2" heavy-weight, 4" standard-weight, unless proper clearance requires a different width.
4. Doors with Closers: Antifriction-bearing hinges.

D. Hinge Base Metal: Unless otherwise indicated, provide the following:

1. Exterior and in-swinging restroom door hinges: Stainless steel, with stainless-steel pin.
2. Balance of hinges: Steel, with steel pin.

E. Hinge Options: Provide the following:

1. Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for reverse bevel lockable doors.
2. Corners: Square.
3. Number of knuckles: Five.

F. Fasteners: Comply with the following:

1. Machine Screws: For metal doors and frames. Install into drilled and tapped holes.
2. Wood Screws: For wood doors and frames.
3. Threaded-to-the-Head Wood Screws: For fire-rated wood doors.
4. Screws: Phillips flat-head. Finish screw heads to match surface of hinges.

G. Template Hinge Dimensions: BHMA A156.7.

H. Available Manufacturers:

1. Bommer Industries, Inc. (BI).
2. Hager Companies (HAG).
3. McKinney Products Company; an ASSA ABLOY Group company (MCK).
4. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
5. PBB, Inc. (PBB)

2.3 LOCKS AND LATCHES, GENERAL

A. Accessibility Requirements: Where indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22 N).

B. Latches and Locks for Means of Egress Doors: Comply with NFPA 101. Latches shall not require more than 15 lbf (67 N) to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.

C. Grade 1 or Grade 2 as indicated by model number in hardware sets.

D. Lock Trim:

1. Levers: Cast.

a. Sargent P model with full smooth return.
2. Roses: Forged.
a. Sargent L model.
3. Lockset Designs: Provide design indicated in hardware sets, or, if sets are provided by another manufacturer, provide designs that match those designated.

E. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

1. Bored Locks: Minimum 1/2-inch (13-mm) latchbolt throw.

F. Backset: 2-3/4 inches (70 mm), unless otherwise indicated.

G. Strikes: Manufacturer's standard strike with strike box for each latchbolt or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, and as follows:

1. Strikes for Bored Locks and Latches: BHMA A156.2.

2.4 MECHANICAL LOCKS AND LATCHES

A. Lock Functions: Function numbers and descriptions indicated in door hardware sets comply with the following:

1. Bored Locks: BHMA A156.2.

B. Bored Locks: BHMA A156.2 Grade 1 or 2 as indicated in hardware sets.

1. Available Manufacturers:

a. Best Access Systems; Div. of The Stanley Works (BAS).
b. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
c. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
d. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).
e. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).

2.5 DOOR BOLTS

A. Bolt Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

1. Mortise Flush Bolts: Minimum 3/4-inch (19-mm) throw.

B. Manual Flush Bolts: BHMA A156.16, Grade 1; designed for mortising into door edge.

1. Available Manufacturers:

a. Door Controls International (DCI).
b. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
c. Hager Companies (HAG).
d. IVES Hardware; an Ingersoll-Rand Company (IVS).
e. McKinney Products Company; an ASSA ABLOY Group company (MCK).

f. Rockwood Manufacturing Company (RM).
g. Trimco (TBM).

2.6 LOCK CYLINDERS

A. Standard Lock Cylinders: BHMA A156.5, Grade 1.

B. Cylinders: Provide cylinders for all devices requiring key cylinders to properly function: constructed from brass or bronze, stainless steel, or nickel silver, and complying with the following:

1. Number of Pins: Six.
2. Keyway: Manufacturer's standard.
3. Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.
4. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
5. Bored-Lock Type: Cylinders with tailpieces to suit locks.

C. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:

1. Small-format Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.

D. Construction Keying: Comply with the following:

1. Construction Cores: Provide keyed brass construction cores that are replaceable by permanent cores for locking devices on exterior doors. Provide 5 construction master keys.

a. Replace construction cores with permanent cores as directed by Owner.

E. Supplemental Items: Provide cylinder spacers, collars, and correct cams as needed for proper function of locking devices.

F. Available Manufacturers:

1. Best Access Systems; Div. of The Stanley Works (BAS).
2. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
3. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
4. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).
5. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).

2.7 OPERATING TRIM

A. Materials: Fabricate from stainless steel, unless otherwise indicated.

B. Dimensions: All dimensions, shapes, fasteners, and other properties identical to models specified in hardware sets.

C. Available Manufacturers:

1. Hager Companies (HAG).

2. IVES Hardware; an Ingersoll-Rand Company (IVS).
3. McKinney Products Company; an ASSA ABLOY Group company (MCK).
4. Rockwood Manufacturing Company (RM).
5. Trimco (TBM).

2.8 SURFACE CLOSERS

A. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

1. Comply with the following maximum opening-force requirements:

a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

B. Door Closers for Means of Egress Doors: Comply with NFPA 101. Door closers shall not require more than 30 lbf (133 N) to set door in motion and not more than 15 lbf (67 N) to open door to minimum required width.

C. Fasteners: Manufacturer's standard for arms, shoes and brackets. Sex bolts for fastening closers to doors.

D. Mounting Accessories: Provide shoes, brackets, drop plates, spacers, etc., as needed for proper mounting of closers and arms to door and frame.

E. Spring Size of Units: Provide field-sizable closers, adjustable for spring sizes 1-6, plus 50% extra spring power at spring size 6, to meet field conditions and requirements for opening force.

F. Cylinders: As specified in hardware sets.

G. Mounting Configuration: Unless otherwise indicated by model number in the hardware sets:

1. Do not furnish closers capable of being mounted on the corridor side of doors.
2. Do not furnish regular arm closers in areas accessible to students.
3. If tri-pack closers are furnished for regular arm applications, remove parallel arm shoe from closer box before delivering to job.
4. Parallel Arm closers are to be manufacturer's double forged rigid models.

H. Available Manufacturers:

1. LCN Closers; an Ingersoll-Rand Company (LCN).
2. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
3. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
4. Norton
5. Yale
6. Corbin-Russwin

2.9 PROTECTIVE TRIM UNITS

A. Size:
1. Width
a. Singles, and pairs with removable mullions or surface applied astragals: 2 inches (38 mm) less than door width on push side and 1 inch (13 mm) less than door width on pull side
b. Other pairs: 1 inch (13 mm) less than door width
2. Height: as specified in door hardware sets; or, if constrained by door bottom rail height, 1" less bottom rail height.

B. Fasteners: Manufacturer's machine or self-tapping countersunk screws.

C. Metal Protective Trim Units: BHMA A156.6; beveled 4 sides; fabricated from 0.050-inch- (1.3-mm-) thick stainless steel.

D. Available Manufacturers:

1. Hager Companies (HAG).
2. IVES Hardware; an Ingersoll-Rand Company (IVS).
3. McKinney Products Company; an ASSA ABLOY Group company (MCK).
4. Rockwood Manufacturing Company (RM).
5. Trimco (TBM).

2.10 MECHANICAL WALL AND FLOOR STOPS AND HOLDERS

A. Stops and Bumpers: BHMA A156.16, Grade 1.

1. Provide wall stops for doors unless floor, overhead, or other type stops are scheduled or indicated. Do not mount floor stops where they will impede traffic. Provide floor stops (and spacers if needed) of proper height and configuration to accommodate floor condition. Where floor or wall stops are not appropriate, provide overhead holders.
2. Properties. Cast construction with fastener suitable for wall or floor condition.
3. Available Manufacturers:
a. Hager Companies (HAG).
b. IVES Hardware; an Ingersoll-Rand Company (IVS).
c. McKinney Products Company; an ASSA ABLOY Group company (MCK).
d. Rockwood Manufacturing Company (RM).
e. Trimco (TBM).

2.11 OVERHEAD STOPS AND HOLDERS

A. BHMA A156.8, Grade 1. Template for maximum degree of opening before encountering obstruction.

B. Available Manufacturers:

1. Architectural Builders Hardware Mfg., Inc. (ABH).
2. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
3. Rixson Specialty Door Controls; an ASSA ABLOY Group company (RIX).
4. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).

2.12 SILENCERS

A. Silencers for Metal Door Frames: BHMA A156.16, Grade 1; neoprene or rubber, minimum diameter 1/2 inch (13 mm); fabricated for drilled-in application to frame.

B. Available Manufacturers:

1. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
2. Hager Companies (HAG).
3. IVES Hardware; an Ingersoll-Rand Company (IVS).
4. McKinney Products Company; an ASSA ABLOY Group company (MCK).
5. Rockwood Manufacturing Company (RM).
6. Trimco (TBM).

2.13 FABRICATION

A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.

1. Manufacturer's identification is permitted on rim of lock cylinders only.

B. Base Metals: Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.

C. Fasteners: Manufacturer's standard, except as noted in product sections of this specification.

2.14 FINISHES

A. Standard: BHMA A156.18, as indicated in door hardware sets.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly

construction, wall and floor construction, and other conditions affecting performance.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

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

3.2 PREPARATION

A. Steel Doors and Frames: Comply with DHI A115 Series.

1. Surface-Applied Door Hardware: Drill and tap doors and frames according to ANSI A250.6.

B. Wood Doors: Comply with DHI A115-W Series.

3.3 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights indicated as follows unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

B. Mounting Locations:

1. Floor Stops and Holders: Locate at least 20" out from hinge edge of door for maximum degree of opening before door encounters obstruction.
2. Wall Stops: Locate so that lockset spindle and wall stop share horizontal and vertical centerlines.
3. Closers and Overhead Stop/Holders: Template and mount closers and overhead stops for maximum degree of opening before door encounters obstruction. When used with closers, template and locate overhead stops so that closer arm does not fully extend and bottom out.

C. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

D. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule. Document cross-indexing per manufacturer's instructions.

E. Weatherstrip and Gasketing: Miter cut at butt joints as needed for neat appearance with no gaps between retainers or bulbs.

F. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

3.4 FIELD QUALITY CONTROL

A. Provide Door Hardware Inspection Services and Field Quality Report as indicated below.

B. Door Hardware Inspection Services

1. Scope
   a. Inspection of all swinging doors and door hardware immediately following completion of installation.
   b. Inspector to furnish a Field Quality Report, itemized per each individual opening, to the Architect within 7 days of the inspection, including:
      1) deficiencies in workmanship and standard industry practices,
      2) use of allowable products,
      3) use of manufacturer recommended fasteners,
      4) compliance with the ADA,
      5) proper door/frame/hardware clearances,
      6) problems related to function, security, aesthetics or maintenance.
   c. Follow-up inspections as required at additional fee.
2. Inspector Qualifications
   1) Certified Architectural Hardware Consultant.
   2) Entirely independent of the supply side of the project, having no familial or financial relationship with any manufacturer, manufacturer's representative, distributor, installer or supplier used on this project.
   3) Approved by Architect. Go to http://www.dhi.org/ for searchable list of local Architectural Hardware Consultants.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

B. Overhead Stops/Holders: Set adjustable stops for maximum degree of opening before door encounters obstruction. Adjust friction to control door.

C. Door Closers:

1. Unless otherwise required by authorities having jurisdiction, adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches (75 mm) from the latch, measured to the leading edge of the door.
2. Adjust latch period so that door does not slam nor injure fingers.
3. Adjust spring power so that door properly latches.
4. Adjust backcheck to slow door down before hitting stop point so as to prevent damage to closer, arm, door, frame, and fasteners.

D. Occupancy Adjustment: Approximately six months after date of Substantial Completion, Installer shall examine and readjust, including adjusting operating forces, each item of door hardware as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.6 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.7 DOOR HARDWARE SETS (on following pages followed by Door-Set Index)

Hardware Set 01

(6) Butt Hinges	TA2314-454	630	MCK
(2) Closer, w/Stop	1431-PS	689	SAR
(2) Kick Plate	K1050 x 8 x 2LDW x B4E	630	ROC
(1) Rest Room Lock	28-73-7P-10G04-LP	626	SAR

End of Section Finish Hardware 087100

SECTION 09 25 50 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Gypsum board assemblies attached to wood framing and furring members.

B. Related Sections: The following Sections contain requirements that relate to this Section:
   1. Division 7 Section "Firestopping" for firestopping systems and fire-resistive-rated joint sealants.

1.3 DEFINITIONS

A. Gypsum Board Construction Terminology: Refer to ASTM C 11 and GA-505 for definitions of terms related to gypsum board assemblies not defined in this Section or in other referenced standards.

1.4 ASSEMBLY PERFORMANCE REQUIREMENTS

A. Sound Transmission Characteristics: For gypsum board assemblies indicated to have STC ratings, provide materials and construction identical to those of assemblies whose STC ratings were determined per ASTM E 90 and classified per ASTM E 413 by a qualified independent testing agency.

1.5 SUBMITTALS

A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections.

B. Product data for each type of product specified.

C. Product certificates signed by manufacturers of gypsum board assembly components certifying that their products comply with specified requirements.

1.6 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Where fire-rated gypsum board assemblies are indicated, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
   1. Fire Resistance Ratings: As indicated by reference to GA File Numbers in GA-600 "Fire Resistance Design Manual" or to design designations in UL "Fire Resistance Directory" or in the listing of another testing and inspecting agency acceptable to authorities having jurisdiction.

B. Single-Source Responsibility for Steel Framing: Obtain steel framing members for gypsum board assemblies from a single manufacturer.

C. Single-Source Responsibility for Panel Products: Obtain each type of gypsum board and other panel products from a single manufacturer.

D. Single-Source Responsibility for Finishing Materials: Obtain finishing materials from either the same manufacturer that supplies gypsum board and other panel products or from a manufacturer acceptable to gypsum board manufacturer.

E. Field Samples: On actual gypsum board assemblies, prepare field samples of at least 100 sq. ft. in surface area for the following applications. Simulate finished lighting conditions for review of in-place unit of Work.
1. Wall surfaces indicated to receive nontextured paint finishes.
2. Ceiling surfaces indicated to receive nontextured paint finishes.
3. Surfaces indicated to receive textured paint finishes.
4. Surfaces indicated to receive textured finishes specified in this Section.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.

B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Neatly stack gypsum panels flat to prevent sagging.

C. Handle gypsum board to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage metal corner beads and trim.

1.8 PROJECT CONDITIONS

A. Environmental Conditions, General: Establish and maintain environmental conditions for applying and finishing gypsum board to comply with ASTM C 840 and with gypsum board manufacturer's recommendations.

B. Room Temperatures: For nonadhesive attachment of gypsum board to framing, maintain not less than 40 deg F (4 deg C). For adhesive attachment and finishing of gypsum board, maintain not less than 50 deg F (10 deg C) for 48 hours prior to application and continuously after until dry. Do not exceed 95 deg F (35 deg C) when using temporary heat sources.

C. Ventilation: Ventilate building spaces, as required, for drying joint treatment materials. Avoid drafts during hot dry weather to prevent finishing materials from drying too rapidly.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Steel Framing and Furring:
   a. Clark Steel Framing.
   b. Consolidated Systems, Inc.
   c. Dale Industries, Inc.
   d. Dietrich Industries, Inc.
   e. Marino Industries Corp.
   f. Gold Bond Building Products Div., National Gypsum Co.
   g. Unimast Inc.
2. Gypsum Board and Related Products:

a. Domtar Gypsum.
b. Georgia-Pacific Corp.
c. Gold Bond Building Products Div., National Gypsum Co.
d. United States Gypsum Co.

2.2 GYPSUM BOARD PRODUCTS

A. General: Provide gypsum board of types indicated in maximum lengths available to minimize end-to-end butt joints.
1. Thickness: Provide gypsum board in thicknesses indicated or, if not otherwise indicated, in either 1/2 inch or 5/8 inch thicknesses to comply with ASTM C 840 for application system and support spacing indicated.

B. Gypsum Wallboard: ASTM C 36 and as follows:

1. Type: Regular for vertical surfaces, unless otherwise indicated.
2. Type: Type X where required for fire-resistive-rated assemblies.
3. Type: Sag-resistant type for ceiling surfaces.
4. Type: Proprietary type as required for specific fire-resistive-rated assemblies.
5. Edges: Tapered.
6. Edges: Tapered and featured (rounded or beveled) for prefilling.
7. Thickness: 5/8 inch, unless otherwise indicated.
8. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work where proprietary gypsum wallboard is indicated include, but are not limited to, the following:
9. Products: Subject to compliance with requirements, provide one of the following products where proprietary gypsum wallboard is indicated:
   a. Gyprock Fireguard C Gypsum Board, Domtar Gypsum.
   b. Firestop Type C, Georgia-Pacific Corp.
   c. Fire-Shield G, Gold Bond Building Products Div., National Gypsum Co.
   d. SHEETROCK Brand Gypsum Panels, FIRECODE C Core, United States Gypsum Co.
   e. SHEETROCK Brand Gypsum Panels, ULTRACODE Core, United States Gypsum Co.

2.3 TRIM ACCESSORIES

A. Accessories for Interior Installation: Corner beads, edge trim, and control joints complying with ASTM C 1047 and requirements indicated below:
1. Material: Formed metal, plastic, or metal combined with paper, with metal complying with the following requirement:
   a. Sheet steel zinc-coated by hot-dip process.
   b. Sheet steel coated with zinc by hot-dip or electrolytic processes, or with aluminum or rolled zinc.
2. Shapes indicated below by reference to Fig. 1 designations in ASTM C 1047:
   a. Cornerbead on outside corners, unless otherwise indicated.
   b. LC-bead with both face and back flanges; face flange formed to receive joint compound. Use LC-beads for edge trim unless otherwise indicated.
   c. L-bead with face flange only; face flange formed to receive joint compound. Use L-bead where indicated.
   d. U-bead with face and back flanges; face flange formed to be left without application of joint compound. Use U-bead where indicated.
   e. One-piece control joint formed with V-shaped slot, with removable strip covering slot opening.

2.4 JOINT TREATMENT MATERIALS

A. General: Provide joint treatment materials complying with ASTM C 475 and the recommendations of both the manufacturers of sheet products and of joint treatment materials for each application indicated.

B. Joint Tape for Gypsum Board: Paper reinforcing tape, unless otherwise indicated.
   1. Use pressure-sensitive or staple-attached open-weave glass-fiber reinforcing tape with compatible joint compound where recommended by manufacturer of gypsum board and joint treatment materials for application indicated.

C. Joint Tape for Cementitious Backer Units: Polymer-coated, open glass-fiber mesh.

D. Setting-Type Joint Compounds for Gypsum Board: Factory-packaged, job-mixed, chemical-hardening powder products formulated for uses indicated.
   1. Where setting-type joint compounds are indicated as a taping compound only or for taping and filling only, use formulation that is compatible with other joint compounds applied over it.
   2. For prefilling gypsum board joints, use formulation recommended by gypsum board manufacturer for this purpose.
   3. For filling joints and treating fasteners of water-resistant gypsum backing board behind base for ceramic tile, use formulation recommended by the gypsum board manufacturer for this purpose.
   4. For topping compound, use sandable formulation.

E. Drying-Type Joint Compounds for Gypsum Board: Factory-packaged vinyl-based products complying with the following requirements for formulation and intended use.
   1. Ready-Mixed Formulation: Factory-mixed product.
   2. Job-Mixed Formulation: Powder product for mixing with water at Project site.
   3. Taping compound formulated for embedding tape and for first coat over fasteners and face flanges of trim accessories.
   4. Topping compound formulated for fill (second) and finish (third) coats.
   5. All-purpose compound formulated for both taping and topping compounds.

2.5 ACOUSTICAL SEALANT

A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following requirements:
   1. Product is effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies per ASTM E 90.
   2. Product has flame-spread and smoke-developed ratings of less than 25 per ASTM E 84.

B. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.

C. Available Products: Subject to compliance with requirements, acoustical sealants that may be incorporated in the Work include, but are not limited to, the following:

D. Products: Subject to compliance with requirements, provide one of the following:
   1. Acoustical Sealant:
      a. AC-20 FTR Acoustical and Insulation Sealant, Pecora Corp.
      b. SHEETROCK Acoustical Sealant, United States Gypsum Co.

2. Acoustical Sealant for Concealed Joints:
   a. BA-98, Pecora Corp.
   b. Tremco Acoustical Sealant, Tremco, Inc.

2.6 MISCELLANEOUS MATERIALS

A. General: Provide auxiliary materials for gypsum board construction that comply with referenced standards and recommendations of gypsum board manufacturer.

B. Laminating Adhesive: Special adhesive or joint compound recommended for laminating gypsum panels.

C. Spot Grout: ASTM C 475, setting-type joint compound recommended for spot grouting hollow metal door frames.

D. Fastening Adhesive for Wood: ASTM C 557.

E. Fastening Adhesive for Metal: Special adhesive recommended for laminating gypsum panels to steel framing.

F. Steel drill screws complying with ASTM C 1002 for the following applications:
   1. Fastening gypsum board to steel members less than 0.03 inch thick.
   2. Fastening gypsum board to wood members.
   3. Fastening gypsum board to gypsum board.

G. Steel drill screws complying with ASTM C 954 for fastening gypsum board to steel members from 0.033 to 0.112 inch thick.

H. Corrosion-resistant-coated steel drill screws of size and type recommended by board manufacturer for fastening cementitious backer units.

I. Gypsum Board Nails: ASTM C 514.

J. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.

K. Sound Attenuation Blankets: Unfaced mineral-fiber blanket insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing):
   1 Mineral-Fiber Type: Fibers manufactured from glass.

L. Thermal Insulation: Material indicated below, of thickness and width to fill voids formed by Z-furring members:
   1. Unfaced Mineral-Fiber Blanket Insulation: Unfaced mineral-fiber blanket insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing):
      a. mineral-Fiber Type: Fibers manufactured from glass.
   2. Extruded Polystyrene Board Thermal Insulation: Rigid, cellular, thermal insulation with closed cells and integral high-density skin, formed by the expansion of polystyrene base resin in an extrusion process to comply with ASTM C 578 for Type IV, and with the following surface-burning characteristics:
      a. Flame-spread and smoke-developed ratings of 75 and 450, respectively, per ASTM E 84.

M. Polyethylene Vapor Retarder: ASTM D 4397, thickness and maximum permeance rating as follows:
   1. 6.0 mils, 0.13 perms.

N. Vapor Retarder Tape: Pressure-sensitive tape of type recommended by vapor retarder manufacturer for sealing joints and penetrations in vapor retarder.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates to which gypsum board assemblies attach or abut, installed hollow metal frames, cast-in-anchors, and structural framing with Installer present for compliance with requirements for installation tolerances and other conditions affecting performance of assemblies specified in this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Ceiling Anchorages: Coordinate installation of ceiling suspension systems with installation of overhead structural assemblies to ensure that inserts and other provisions for anchorages to building structure have been installed to receive ceiling hangers that will develop their full strength and at spacing required to support ceilings.
1. Furnish concrete inserts and other devices indicated to other trades for installation well in advance of time needed for coordination with other construction.

3.3 INSTALLING STEEL FRAMING FOR FURRED CEILINGS

A. Screw furring members to wood framing.
1. Do not connect or suspend steel framing from ducts, pipes or conduit.

3.4 APPLYING AND FINISHING GYPSUM BOARD, GENERAL

A. Gypsum Board Application and Finishing Standards: Install and finish gypsum panels to comply with ASTM C 840 and GA-216.

B. Install sound attenuation blankets where indicated prior to installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

C. Install ceiling board panels across framing to minimize the number of abutting end joints and avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

D. Install wall/partition board panels to minimize the number of abutting end joints or avoid them entirely. Stagger abutting end joints not less than one framing member in alternate courses of board. At stairwells and other high walls, install panels horizontally with end abutting joints over studs and staggered.

E. Install gypsum panels with face side out. Do not install imperfect, damaged, or damp panels. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

F. Locate both edge or end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Position adjoining panels so that tapered edges abut tapered edges, and field-cut edges abut field-cut edges and ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions. Avoid joints at corners of framed openings where possible.

G. Attach gypsum panels to steel studs so that the leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

H. Attach gypsum panels to framing provided at openings and cutouts.

I. Do not attach gypsum panels across the flat grain of wide-dimension lumber including floor joists and headers. Instead, float gypsum panels over these members using resilient channels or provide control joints to counteract wood shrinkage.

J. Spot grout hollow metal door frames for solid core wood doors, hollow metal doors, and doors over 32 inches wide. Apply spot grout at each jamb anchor clip and immediately insert gypsum panels into frames.

K. Form control joints and expansion joints at locations indicated and as detailed, with space between edges of adjoining gypsum panels, as well as supporting framing behind gypsum panels.

L. Cover both faces of steel stud partition framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chase walls that are braced internally.
1. Except where concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect open concrete coffers, concrete joists, and other structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by coffers, joists, and other structural members; allow 1/4-to-1/2-inch-wide joints to install sealant.

M. Isolate perimeter of non-load-bearing gypsum board partitions at structural abutments, except floors, as detailed. Provide 1/4-inch-to-1/2-inch-wide spaces at these locations and trim edges with U-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

N. Floating Construction: Where feasible, including where recommended by manufacturer, install gypsum panels over wood framing, with floating internal corner construction.

O. Where STC-rated gypsum board assemblies are indicated, seal construction at perimeters, behind control and expansion joints, openings, and penetrations with a continuous bead of acoustical sealant including a bead at both faces of the partitions. Comply with ASTM C 919 and manufacturer's recommendations for location of edge trim and closing off sound-flanking paths around or through gypsum board assemblies, including sealing partitions above acoustical ceilings.

P. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's recommendations.

3.5 GYPSUM BOARD APPLICATION METHODS

A. Single-Layer Application: Install gypsum wallboard panels as follows:
1. On ceilings, apply gypsum panels prior to wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing), unless otherwise indicated, and provide panel lengths that will minimize end joints.
3. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing), unless parallel application is required for fire-resistive-rated assemblies. Use maximum-length panels to minimize end joints.

4. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.

B. Single-Layer Fastening Methods: Apply gypsum panels to supports as follows:
1. Fasten with screws.
2. Fasten to wood supports with single nailing.
3. Fasten to wood supports with double nailing.
4. Fasten to wood supports with adhesive and supplementary nails or screws.

C. Direct-Bonding to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members or base layer of gypsum board), comply with gypsum board manufacturer's recommendations, and temporarily brace or fasten gypsum panels until fastening adhesive has set.

3.6 INSTALLING TRIM ACCESSORIES

A. General: For trim accessories with back flanges, fasten to framing with the same fasteners used to fasten gypsum board. Otherwise, fasten trim accessories according to accessory manufacturer's directions for type, length, and spacing of fasteners.

B. Install corner beads at external corners.

C. Install edge trim where edge of gypsum panels would otherwise be exposed or semiexposed. Provide edge trim type with face flange formed to receive joint compound except where other types are indicated.
1. Install LC-bead where gypsum panels are tightly abutted to other construction and back flange can be attached to framing or supporting substrate.
2. Install L-bead where edge trims can only be installed after gypsum panels are installed.
3. Install U-bead where indicated.
4. Install aluminum edge trim and other accessories where indicated.

D. Install control joints at locations indicated, and where not indicated according to ASTM C 840, and in locations approved by Architect for visual effect.

E. Install H-molding in exterior gypsum board assemblies where control joints are indicated. Install on cut or ends of gypsum panels, not on tapered edges.

3.7 FINISHING GYPSUM BOARD ASSEMBLIES

A. General: Apply joint treatment at gypsum board joints (both directions); flanges of corner bead, edge trim, and control joints; penetrations; fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration and levels of gypsum board finish indicated.

B. Prefill open joints, rounded or beveled edges, and damaged areas using setting-type joint compound.

C. Apply joint tape over gypsum board joints except those with trim accessories having concealed face flanges not requiring taping to prevent cracks from developing in joint treatment at flange edges.

D. Apply joint tape over gypsum board joints and to trim accessories with concealed face flanges as recommended by trim accessory manufacturer and as required to prevent cracks from developing in joint compound at flange edges.

E. Levels of Gypsum Board Finish: Provide the following levels of gypsum board finish per GA-214.
1. Level 4 for gypsum board surfaces unless otherwise indicated.

G. For level 4 gypsum board finish, embed tape in joint compound and apply three seperate coats of joint compound over joints, angles, fastener heads, and accessories. Touch up and sand between coats and after last coat as needed to produce a surface free of visual defects and ready for decoration. Use the following joint compound combination:
1. Embedding and First Coat: Ready-mixed, drying-type, all-purpose or taping compound.
2. Fill (Second) Coat: Ready-mixed, drying-type, all-purpose or topping compound.
3. Finish (Third) Coat: Ready-mixed, drying-type, all-purpose or topping compound.

3.8 CLEANING AND PROTECTION

A. Promptly remove any residual joint compound from adjacent surfaces.

B. Provide final protection and maintain conditions, in a manner suitable to Installer, that ensures gypsum board assemblies remain without damage or deterioration at time of Substantial Completion.

END OF SECTION 09 25 50

SECTION 09 30 00 - CERAMIC TILE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
1. Glazed ceramic mosaic tile for use on restroom walls.
2. Unglazed ceramic mosaic tile for use on restroom floor.
2. Stone thresholds.
3. Cementitious backer units.

B. Related Sections: The following sections contain requirements that relate to this Section:
1. Division 2 Section "Selective Demolition" for removal of existing tile.
2. Division 7 Section "Joint Sealers" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
3. Division 9 Section "Gypsum Board Assemblies" for glass mat water resistant gypsum backer units installed as part of gypsum wallboard systems.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for each type of product specified.

C. Shop drawings indicating tile patterns and locations and widths of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
1. Locate precisely each joint and crack in tile substrates by measuring, record measurements on shop drawings, and coordinate them with tile joint locations, in consultation with Architect.

D. Samples for initial selection purposes in form of manufacturer's color charts consisting of actual tiles or sections of tile showing full range of colors, textures, and patterns available for each type and composition of tile indicated. Include samples of grout and accessories involving color selection.

1.4 QUALITY ASSURANCE

A. Single-Source Responsibility for Tile: Obtain each color, grade, finish, type, composition, and variety of tile from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

B. Single-Source Responsibility for Setting and Grouting Materials: Obtain ingredients of a uniform quality from one manufacturer for each cementitious and admixture component and from one source or producer for each aggregate.

C. Installer Qualifications: Engage an experienced Installer who has successfully completed tile installations similar in material, design, and extent to that indicated for Project.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement of ANSI A137.1 for labeling sealed tile packages.

B. Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.

C. Handle tile with temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If despite these precautions coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.6 PROJECT CONDITIONS

A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.

B. Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.

C. Maintain temperatures at 50 deg F (10 deg C) or more in tiled areas during installation and for 7 days after completion, unless higher temperatures are required by referenced installation standard or manufacturer's instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that match the existing tile, may be incorporated in the Work include, but are not limited to, the following:

1. Glazed Ceramic Mosaic Tile:
   a. American Olean Tile Co., Inc.
   b. Dal-Tile Corp.
   c. Florida Tile Industries, Inc.
   d. United States Ceramic Tile Co.
   e. Villeroy & Boch (U.S.A.) Inc.
   f. Wenczel Tile Co. of Florida
2. Dry-Set Mortars and Grouts:
   a. American Olean Tile Co., Inc.
   b. Boiardi Products Corp.
   c. Bostik Construction Products Div.
   d. Custom Building Products
   e. C-Cure Chemical Co.
   f. DAP Inc. Div.; USG Corp.
   g. L & M Mfg. Inc.
   h. Laticrete International Inc.
   i. Mapei Corp.
   j. Southern Grouts & Mortars, Inc.
   k. Summitville Tiles, Inc.
   l. Syracuse Adhesives Co.
   m. American Olean Tile Co., Inc.
   n. Boiardi Products Corp.

o. Bostik Construction Products Div.
p. C-Cure Chemical Co.
q. DAP Inc. Div.; USG Corp.
r. Mapei Corp.
s. Southern Grouts & Mortars, Inc.
t. Summitville Tiles, Inc.
u. Syracuse Adhesives Co.

3. Acrylic Emulsions for Latex-Portland Cement Grouts:
a. American Olean Tile Co., Inc.
b. Boiardi Products Corp.
c. Bostik Construction Products Div.
d. Custom Building Products
e. C-Cure Chemical Co.
f. DAP Inc. Div.; USG Corp.
g. L & M Mfg. Inc.
h. Laticrete International Inc.
i. Mapei Corp.
j. Southern Grouts & Mortars, Inc.
k. Summitville Tiles, Inc.
l. Syracuse Adhesives Co.

2.2 PRODUCTS, GENERAL

A. ANSI Standard for Ceramic Tile: Comply with ANSI A137.1 "American National Standard Specifications for Ceramic Tile" for types, compositions, and grades of tile indicated.
1. Furnish tile complying with "Standard Grade" requirements unless otherwise indicated.

B. ANSI Standard for Tile Installation Materials: Comply with ANSI standard referenced with products and materials indicated for setting and grouting.

C. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with the following requirements:
1. Provide selections made by Architect from manufacturer's full range of premium price group colors.
2. Provide tile trim and accessories that match color and finish of adjoining flat tile.

D. Factory Blending: For tile exhibiting color variations within the ranges selected during sample submittals, blend tile in factory and package accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples.

E. Mounting: Where factory-mounted tile is required, provide back- or edge-mounted tile assemblies as standard with manufacturer unless another mounting method is indicated.
1. Where tile is indicated for installation in swimming pools, on exteriors or in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies that this type of mounting is suitable for these kinds of uses and has been successfully used on other projects.

F. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating them with a continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.3 TILE PRODUCTS

A. Unglazed Ceramic Mosaic Tile: Provide factory-mounted flat tile complying with the following requirements:
1. Composition: Porcelain.
2. Nominal Facial Dimensions: 2 inches by 2 inches.
3. Nominal Thickness: 1/4 inch.
4. Face: Plain with cushion edges.

B. Trim Units: Provide tile trim units to match characteristics of adjoining flat tile and to comply with following requirements:
1. Size: As indicated, coordinated with sizes and coursing of adjoining flat tile where applicable.
2. Shapes: As follows, selected from manufacturer's standard shapes:
a. Base for Thinset Mortar Installations: Straight.
b. Wainscot Cap for Thinset Mortar Installations: Surface bullnose.
c. External Corners for Thinset Installations: Surface bullnose.
d. Internal Corners: Field-butted square corners, except use coved base and cap angle pieces designed to member with stretcher shapes.

C. Accessories for Glazed Wall Tile: Provide vitreous china accessories of type and size indicated and in color and finish to match adjoining glazed wall tile.
1. One soap holder for each shower and tub indicated.
2. One roll toilet paper holder at each water closet in guest rooms.
3. One set of towel bar brackets with 24" metal bar for each shower and tub indicated.

2.4 STONE THRESHOLDS

A. General: Provide stone that is uniform in color and finish, fabricated to sizes and profiles indicated or required to provide transition between tile surfaces and adjoining finished floor surfaces.

2.5 SETTING MATERIALS

A. Dry-Set Portland Cement Mortar: ANSI A118.1.

B. Latex-Portland Cement Mortar: ANSI A118.4, composition as follows:
1. Latex additive (water emulsion) of type described below, serving as replacement for part or all of gauging water, combined at job site with prepackaged dry mortar mix supplied or specified by latex additive manufacturer.
a. Latex Type: Manufacturer's standard.

2.6 GROUTING MATERIALS

A. Dry-Set Grout: ANSI A118.6, color as indicated.

B. Latex-Portland Cement Grout: ANSI A118.6, color as indicated, composition as follows:
1. Latex additive (water emulsion) serving as replacement for part or all of gauging water, added at job site with dry grout mixture, with type of latex and dry grout mix as follows:
a. Latex Type: Manufacturer's standard.
b. Dry Grout Mixture: Commercial portland cement specified or supplied by latex additive manufacturer.

1) Application: Use commercial portland cement grout combined with latex additive for grouting joints in floor tile unless otherwise indicated.

2.7 CEMENTITIOUS BACKER UNITS

A. Cement-Coated Portland Cement Panels: ANSI A 118.9 high-density portland cement surface coating on both faces and lightweight concrete core composed of portland cement and expanded ceramic aggregate; fabricated in panels 7/16-inch thick by 36 inches wide by 36, 48, 60, 64, or 72 inches long and weighing 3.2 to 3.8 psf.

B. Mortar Unit Finishing Materials: Tape and joint compounds as recommended by manufacturer of cementitious backer units.

C. Available Products: Subject to compliance with requirements, cementitious backer units which may be incorporated in the Work include, but are not limited to, the following:
1. "Wonder-Board"; Modulars Inc.
2. "Durock Tile Backer Board"; Durabond Div., USG Industries, Inc.

2.8 MISCELLANEOUS MATERIALS

A. Temporary Protective Coating: Provide product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout, is compatible with tile and mortar/grout products, and is easily removable after grouting is completed without damaging grout or tile.
1. Petroleum paraffin wax, fully refined, tasteless, odorless, containing at least 0.5 percent oil with a melting point of 120 deg F (49 deg C) to 140 deg F (60 deg C) per ASTM D 87.

2.9 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with requirements of referenced standards and manufacturers including those for accurate proportioning of materials, water, or additive content; type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortars and grouts of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and areas where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
1. Verify that substrates for setting tile are firm, dry, clean, and free from oil or waxy films and curing compounds.
2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.

B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Blending: For tile exhibiting color variations within the ranges selected during sample submittals, verify that tile has been blended in factory and packaged accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION, GENERAL

A. ANSI Tile Installation Standard: Comply with parts of ANSI 108 series of tile installation standards included under "American National Standard Specifications for the Installation of Ceramic Tile" that apply to type of setting and grouting materials and methods indicated.

B. TCA Installation Guidelines: TCA "Handbook for Ceramic Tile Installation"; comply with TCA installation methods indicated.

C. Extend tile work into recesses and 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.

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, walls, 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 joint widths unless otherwise shown.
1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so that extent of each sheet is not apparent in finished work.

F. Lay out tile wainscots to next full tile beyond dimensions indicated.

G. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw cut joints after installation of tiles.
1. Locate joints in tile surfaces directly above joints in concrete substrates.

H. Grout tile to comply with the requirements of the following installation standards:
1. For ceramic tile grouts (sand-portland cement, dry-set, commercial portland cement, and latex-portland cement grouts), comply with ANSI A108.10.

3.4 WALL TILE INSTALLATION METHODS

A. Install types of tile designated for wall application to comply with requirements indicated below for setting-bed methods, TCA installation methods related to subsurface wall conditions, and grout types:
1. Portland Cement Mortar: ANSI A108.1.
a. Masonry or Concrete, Interior: TCA W211 (bonded).
b. Solid Backing, Interior: TCA W222 (one-coat method).

c. Grout: Latex-portland cement.
2. Latex-Portland Cement Mortar: ANSI A108.5.
3. Dry-Set Portland Cement Mortar: ANSI A108.5.
a. Masonry, Interior: TCA W202.
b. Wood or Metal Studs, Interior: TCA W243.
c. Glass Mat Water Resistant Gypsum Board Backer Units, Interior: TCA W244.
d. Grout: Latex-portland cement.

3.5 CLEANING AND PROTECTION

A. Cleaning: Upon completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
1. Remove latex-portland cement grout residue from tile as soon as possible.
2. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to brick and grout manufacturer. Trap and remove coating to prevent it from clogging drains.

B. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.

C. Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensures that tile is without damage or deterioration at time of Substantial Completion.
1. 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 staining, damage, and wear.
2. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

E. Cold Weather Note: The setting portland cement mortars are retarded by low temperatures. Finished work should be protected for an extended period of time.

END OF SECTION 09 30 00

SECTION 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 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This section includes the following:
1. Surface preparation, all preparation required to make all painted surfaces ready to paint, including sealants and sanding of surfaces.
2. Surface finish schedule for painted items.

B. Related Work under this section to include:
1.) Painting of ferrous metal, including metal doors and frames.
2.) Painting of wood items, interior misc. millwork and trim.
3.) Painting of patched and repaired interior plaster surfaces.
4.) Painting of all drywall wall and ceiling surfaces.
5.) Painting of mechanical and electrical work, all pipes to be painted where exposed in mechanical spaces.

1.03 REGULATORY REQUIREMENTS

A. Conform to the Kentucky Building Code for flame/fuel/smoke rating requirements for finishes.

1.04 SUBMITTALS

A. Submit product data under provisions of Section 01001, Submissions.

B. Provide product data on all finishing products and special coating.

C. Submit manufacturer's application instructions under provisions of Section 01001.

1.05 DEFINITIONS

A. Conform to ANSI/ASTM D16 for interpretation of terms used in this Section.

1.06 QUALITY ASSURANCE

A. Product Manufacturer: Company specializing in manufacturing quality paint and finish products with 5 years experience.

B. Applicator: Company specializing in commercial painting and finishing with 5 years documented experience.

1.07 FIELD SAMPLES

A. Provide samples under provisions of Section 01001.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site under provisions of Section 01001.

B. Store and protect products under provisions of Section 01001.

C. Deliver products to site in sealed and labeled containers; inspect to verify acceptance.

D. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.

E. Store paint materials at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in well ventilated area, unless required otherwise by manufacturer's instructions.

F. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees F for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.

B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent, unless required otherwise by manufacturer's instructions.

C. Minimum Application Temperatures for Latex Paints: 45 degrees F (7 degrees C) for interiors; 50 degrees F (10 degrees C) for exterior; unless required otherwise by manufacturer's instructions.

D. Minimum Application Temperature for Varnish and Epoxy Finishes: 65 degrees F (18 degrees C) for interior or exterior, unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

1.10 EXTRA STOCK

A. Provide a one gallon container of each color and surface texture to Owner.

B. Label each container with color, texture, room locations, and indicate if wall or trim paint in addition to the manufacturer's label.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - PAINT

A. Benjamine Moore Product: exterior and interior alkyd enamels and all latex enamels
B. Sherwin Williams Paints Product: same
C. ICI Product: same
D. Porter Paint: same
E. Substitutions: Under provisions of Section 01001.

2.02 ACCEPTABLE MANUFACTURERS - PRIMER-SEALERS

A. Benjamin Moore Product: Moorcraft Latex Primer-Sealer
B. Sherwin Williams
C. ICI
D. Porter Paint
E. Substitutions: Under provisions of Section 01001.

2.04 MATERIALS

A. Coatings: Ready mixed, except field catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.

B. Coatings: Good flow and brushing properties; capable of drying or curing free of streaks or sags.

C. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

D. All surfaces shall be painted with materials from the same manufacturer from primer through finish coat.

2.05 FINISHES

A. Refer to Room Finish Schedule, Door Schedule and Window Schedule for finish types and locations. Color Schedule will be submitted by Architect prior to primecoating.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:

1. Plaster and Gypsum Wallboard: 12 percent.
2. Masonry, Concrete, and Concrete Unit Masonry: 12%
3. Interior Located Wood: 15 percent, measured in accordance with ASTM D2016.
4. Concrete Floors: 7 percent.

D. Beginning of installation means acceptance of existing surfaces.

3.02 PREPARATION

A. Remove electrical plates, hardware, light fixture trim, and fittings prior to preparing surfaces or finishing.

B. Correct minor defects and clean surfaces which affect work of this Section.

C. Shellac and seal marks which may bleed through surface finishes.

D. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

E. Aluminum Surfaces Scheduled for Paint Finish: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.

F. Asphalt, Creosote, or Bituminous Surfaces Scheduled for Paint Finish: Remove foreign particles to permit adhesion of finishing materials. Apply latex based sealer or primer.

G. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.

H. Gypsum Board Surfaces: Latex fill minor defects. Spot prime defects after repair.

I. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

J. Plaster Surfaces: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

K. Uncoated Steel and Iron Surfaces: Remove grease, scale, dirt, and rust. Where heavy coatings of scale are evident, remove by wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.

L. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.

M. Interior Wood Items Scheduled to Receive Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Apply sealant to all open cracks between adjacent so that paint will flow and seal all open gags.

N. Exterior Wood Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior caulking compound after prime coat has been applied.

O. Wood and Metal Doors Scheduled for Painting: Seal top and bottom edges with primer.

3.03 PROTECTION

A. Protect elements surrounding the work of this Section from damage or disfiguration.

B. Repair damage to other surfaces caused by work of this section.

C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.

D. Remove empty paint containers from site.

3.04 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Do not apply finishes to surfaces that are not dry.

C. Apply each coat to uniform finish.

D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.

E. Sand lightly between coats to achieve required finish.

F. Allow applied coat to dry before next coat is applied.

G. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

H. Prime back surfaces of interior and exterior woodwork with primer paint.

I. Prime back surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

J. After prime and first finish coat, Architect to inspect color. If contractor applies final finish coat, before Architect reviews first finish coat, the contractor will be required to repaint at no cost to the Owner.

3.05 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. Paint shop primed equipment, including all new steel pipe hand railings and guard screens. Minimum of two additional coats required.

B. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

C. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports which occur in rooms and areas receiving paint.

D. Replace identification markings on mechanical or electrical equipment when painted accidentally.

E. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint, to limit of sight line. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.

F. Paint exposed conduit and electrical equipment occurring in finished areas.

G. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.

H. Color code equipment, piping, conduit, and exposed ductwork in accordance with requirements indicated. Color band and identify with flow- arrows, names, and numbering.

I. Replace electrical plates, hardware, light fixture trim, and fittings removed prior to finishing.

3.06 CLEANING

A. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.

B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.

C. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.07 SCHEDULE - SHOP PRIMED ITEMS FOR SITE FINISHING

A. Metal Fabrications (Section 05500): Exposed surfaces of lintels, roof

ladders, roof exhaust hoods, etc.

3.08 SCHEDULE - INTERIOR SURFACES

A. Wood - Painted
   1. One coat alkyd prime sealer.
   2. Two coats alkyd enamel, semi-gloss.
B. Concrete, Concrete Block
   1. One coat block filler mixed with latex primer.
   2. Two coats alkyd, semi-gloss
   3. Where schedule calls for epoxy/ester, install instead of finish coats, 2 coats; 5'4" high on wall. Paint line to match block coursing
C. Steel - Unprimed
   1. One coat zinc chromate primer.
   2. Two coats alkyd enamel, semi- gloss.
D. Steel - Primed
   1. Touch-up with original primer.
   2. Two coats alkyd enamel, semi-gloss.
E. Steel - Galvanized
   1. One coat zinc chromate primer.
   2. Two coats alkyd enamel, semi-gloss.
F. Plaster, Gypsum Board
   1. One coat latex primer-sealer.
   2. Two coats alkyd, semi-gloss.

3.09 SCHEDULE - COLORS

A. Color Schedule to be submitted by Architect prior to prime coating procedures. Note architect will inspect and approve colors upon first finish coat. If final coats are applied without architect inspection, finish coats may have to be redone at contractor's expense.

END OF SECTION 09 90 00

SECTION 10 28 00 - TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes toilet and bath accessory items as scheduled.

B. Mirrored glass for frameless applications is specified in Division 8 Section "Mirrored Glass."

C. Ceramic tile accessories are specified in Division 9.

1.3 SUBMITTALS

A. General: Submit the following according to Conditions of Contract and Division 1 Specifications Sections.

B. Product data for each toilet accessory item specified, including construction details relative to materials, dimensions, gages, profiles, mounting method, specified options, and finishes.

C. Samples of each toilet accessory item to verify design, operation, and finish requirements. Acceptable full-size samples will be returned and may be used in the Work.

D. Schedule indicating types, quantities, sizes, and installation locations (by room) for each toilet accessory item to be provided for project.

E. Setting drawings where cutouts are required in other work, including templates, substrate preparation instructions, and directions for preparing cutouts and installing anchorage devices.

F. Maintenance instructions including replaceable parts and service recommendations.

1.4 QUALITY ASSURANCE

A. Inserts and Anchorages: Furnish accessory manufacturers' standard inserts and anchoring devices that must be set in concrete or built into masonry. Coordinate delivery with other work to avoid delay.

B. Single-Source Responsibility: Provide products of same manufacturer for each type of accessory unit and for units exposed to view in same areas, unless otherwise acceptable to Architect.

1.5 PROJECT CONDITIONS

A. Coordination: Coordinate accessory locations, installation, and sequencing with other work to avoid interference with and ensure proper installation, operation, adjustment, cleaning, and servicing of toilet accessory items.

1.6 WARRANTY

A. Warranty: Submit a written warranty executed by mirror manufacturer, agreeing to replace any mirrors that develop visible silver spoilage defects within warranty period.

B. Warranty Period: 15 years from date of Substantial Completion.

C. The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering toilet accessories that may be incorporated in the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide toilet accessories by one of the following:

1. A & J Washroom Accessories.
2. American Specialties, Inc.
3. Bobrick Washroom Equipment, Inc.
4. Bradley Corporation.
5. General Accessory Manufacturing Co.
6. McKinney/Parker.

2.2 MATERIALS, GENERAL

A. Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 0.034-inch (22-gage) minimum thickness.

B. Brass: Leaded and unleaded, flat products, ASTM B 19; rods, shapes, forgings, and flat products with finished edges, ASTM B 16; Castings, ASTM B 30.

C. Sheet Steel: Cold-rolled, commercial quality ASTM A 366, 0.04-inch (20-gage) minimum. Surface preparation and metal pretreatment as required for applied finish.

D. Galvanized Steel Sheet: ASTM A 527, G60.

E. Chromium Plating: Nickel and chromium electro-deposited on base metal, ASTM B 456, Type SC 2.

F. Baked Enamel Finish: Factory-applied, gloss white, baked acrylic enamel coating.

G. Mirror Glass: Nominal 6.0-mm (0.23-inch) thick, conforming to ASTM C 1036, Type I, Class 1, Quality q2, and with silvering, electro-plated copper coating, and protective organic coating.

H. Stainless Steel Mirror Surfaces: Not less than 0.04-inch (20-gage) AISI Type 302/304 stainless steel sheet, stretcher-leveled with No. 8 polished mirror finish. Bond to 1/4-inch minimum hardboard backing.

I. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.

J. Fasteners: Screws, bolts, and other devices of same material as accessory unit, or of galvanized steel where concealed.

2.3 PAPER TOWEL DISPENSERS

A. Surface-Mounted Towel Dispensers: Fabricate of stainless steel with hinged front equipped with tumbler lockset. Provide pierced slots at sides as refill indicators.

1. Capacity: Not less than either 300 C-fold or 400 multifold paper towels without special adapters.

2.4 TOILET TISSUE DISPENSERS

A. Roll-In-Reserve Dispenser: Fabricate of stainless steel for mounting indicated below, size to store and dispense either 4-1/2-inch-diameter or 5-inch-diameter core tissue rolls, with reserve roll placed in service by automatic release or by action of manual release bar. Hinge front of unit with pivot hinge and secure with tumbler lockset.

1. Mounting: Semirecessed for nominal 4-inch wall depth.

2.5 GRAB BARS

A. Surface Mounted Grab Bars: constructed of stainless steel tubing in 1-1/4" and 1-1/2" diameters, exposed mounting, satin finish, nonslip gripping surface, comply with structural strenght requirements to support 900 lbs at 1-1/2" clearance from wall meeting ADA Accessibility Guidelines. Bobrick Model # B-490 Series for the lengths noted on the plans, including shower grab bar.

2.6 SOAP DISPENSERS

A. Liquid Soap Dispenser, Horizontal-Tank Type: Fabricate for surface mounting, sized for 40-fluid-ounce minimum capacity. Provide stainless steel piston, springs, and internal parts designed to dispense soap in measured quantity by pump action. Provide cover of type 304 stainless steel in No. 4 finish, with unbreakable window-type refill indicator.

1. Equip unit with push-type valve for dispensing soap in liquid form.

2.7 SHOWER AND BATH ACCESSORIES

A. Shower Curtain Rod, Normal Duty: 1-inch o.d., 0.04-inch (20-gage) stainless steel, satin finish; furnish with 3-inch o.d., minimum 0.04-inch (20-gage) stainless steel flanges with satin finish, designed for exposed fasteners.

B. Recessed Soap Dish: One-piece construction of stainless steel for recess mounting in wall; furnish with mounting clamp or lugs appropriate for wall construction indicated.

C. Towel Bar: size as indicated on plans, satin-finished, Type 304 stainless steel tubular (3/4-inch-square) bar and rectangular end brackets. Provide galvanized backplates for concealed mounting.

D. Shower Seat: size as indicated on plans, satin-finished, Type 304 stainless steel tubular (3/4-inch-round) with solid phenolic seat, hinged for wall mounting, ADA compliant, 24" x 15", fold down leg supports. Provide galvanized backplates for concealed mounting.

E. Garb Bar: size as indicated on plans. L shaped, satin-finished, Type 304 stainless steel tubular (1-1/2") bar and rectangular end brackets. Provide galvanized backplates for concealed mounting.

F. Shower Handheld Head and Mounting Bar: Shower Panel; Constructed of 16 gauge stainless steel with recessed soap dish. Showerhead;Standard fixed direction adjustable sprayhead. Diverter Valve; Lever handle operation for easy transfer of water flow between fixed and hand-held hose spray. Hand-Held Shower Spray; Consisting of hand shower with on-off control, a 60" stainless steel flexible hose and post style mounting bracket to hold to shower panel. Elevated in-line backflow preventer with quick-disconnect for flexible hose. Supply inlets are flexible, stainless steel hoses with 1/2" NPT connections. Flow Control; A 2.0 GPM (7.6 LPM)

flow control is standard. Actual flow may vary, but will not exceed 2.5 GPM (9.5 LPM) max.

G. One-piece, pre-pitched shower pan, PVC, with integrated roll-in entrance, splash walls, and 2" PVC drain, tile set directly on shower pan surface, ADA compliant,

2.8 MISCELLANEOUS ACCESSORIES

A. Double-Prong Robe Hook: Heavy-duty satin finished stainless steel double-prong robe hook; rectangular wall bracket with backplate for concealed mounting.

B. Tumbler and Toothbrush Holder: Satin-finished stainless steel unit with 2-1/4-inch-diameter hole in center to hold tumbler and two holes on each side to accommodate total of four toothbrushes; rectangular wall bracket equipped with backplate for concealed mounting.

C. Soap Dish: Satin-finished, stainless steel soap dish with rectangular wall bracket equipped with backplate for concealed mounting.

D. Towel Pin: Satin-finished, stainless steel pin projecting minimum of 3 inches from wall surface; rectangular wall bracket with backplate for concealed mounting.

2.9 MIRROR UNITS

A. Stainless Steel Framed Mirror Units: Fabricate frame with angle shapes not less than 0.05 inch (18 gage), with square corners mitered, welded, and ground smooth. Provide in No. 4 satin polished finish.

C. Fixed-Tilt, Stainless Steel Framed Mirror Units: Fabricate frame of not less than 0.04-inch (20-gage) stainless steel, with all joints mitered, welded, and ground smooth. Construct frame so that taper is not less than 3 inches from top to bottom.

2.10 FABRICATION

A. General: No names or labels are permitted on exposed faces of toilet and bath accessory units. On either interior surface not exposed to view or on back surface, provide identification of each accessory item either by a printed, waterproof label or a stamped nameplate indicating manufacturer's name and product model number.

C. Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous stainless steel piano hinge. Provide concealed anchorage wherever possible.

D. Recessed Toilet Accessories, General: Except where otherwise indicated, fabricate units of all-welded construction, without mitered corners. Hang doors or access panels with full-length, stainless steel piano hinge. Provide anchorage that is fully concealed when unit is closed.

E. Framed Mirror Units, General: Fabricate frames for glass mirror units to accommodate wood, felt, plastic, or other glass edge protection material. Provide mirror backing and support system that will permit rigid, tamperproof glass installation and prevent moisture accumulation, as follows:

1. Provide galvanized-steel backing sheet, not less than 0.034 inch (22 gage) and full mirror size, with nonabsorptive filler material. Corrugated cardboard is not an acceptable filler material.

F. Mirror Unit Hangers: Provide system for mounting mirror units that will permit rigid, tamperproof, and theftproof installation, as follows:

1. One-piece, galvanized-steel, wall-hanger device with spring-action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
2. Heavy-duty wall brackets of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.

G. Keys: Provide universal keys for access to toilet accessory units requiring internal access for servicing, resupply, etc. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install toilet accessory units according to manufacturers' instructions, using fasteners appropriate to substrate as recommended by unit manufacturer. Install units plumb and level, firmly anchored in locations and at heights indicated.

B. Secure mirrors to walls in concealed, tamperproof manner with special hangers, toggle bolts, or screws. Set units plumb, level, and square at locations indicated, according to manufacturer's instructions for type of substrate involved.

C. Install grab bars to withstand a downward load of at least 250 lbf, complying with ASTM F 446.

3.2 ADJUSTING AND CLEANING

A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.

B. Clean and polish all exposed surfaces strictly according to manufacturer's recommendations after removing temporary labels and protective coatings.

END OF SECTION 10 28 00

SECTION 220500- COMMON WORK RESULTS FOR MECHANICAL SYSTEMS

PART 1- GENERAL

1.1 SUMMARY

A. This section includes the following:

1. General equipment requirements
2. Dielectric fittings
3. Sleeves
4. Escutcheons
5. Firestopping
6. Smokestopping
7. Drives
8. RoofCurbs
9. General piping requirements
10. Demolition

1.2 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents (ESPECIALLY DIVISIONS 21, 22, 23 AND 26) are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

1.3 GENERAL REQUIREMENTS

A. All equipment shall be properly aligned, leveled and adjusted for satisfactory operation. Equipment shall be installed so that the connecting and disconnecting of piping and accessories can be done readily and so that all parts are easily accessible for inspection, operation, maintenance and repair. Items of equipment shall essentially duplicate equipment that has been in satisfactory use at least 2 years prior to bid opening and shall be supported by a service organization that is, in the opinion of the Architect reasonably convenient to the site.

1.4 IDENTIFICATION

A. Permanent and legible engraved tags, brass or laminated plastic, shall be installed on all switches, pumps, main valves, and controls, using the same nomenclature as appears on record drawings, diagrams and typewritten or printed operating instructions. A permanent index thereto shall be provided in triplicate, one copy of which shall be mounted under framed glass. Each major component of equipment shall have the manufacturer's name, address and catalog number on a metal plate securely attached to the item of equipment. The nameplate shall be easily readable

and not obscured during the period of construction by painting, plastering, insulating or other work.

1.5 PREVENTION OF RUST

A. Surfaces of ferrous metal shall be given a rust inhibiting coating where specified. Coal-tar or asphalt-type coating will not be acceptable unless so stated for a specific item. Where steel is specified to be hot dip galvanized after fabrication, mill galvanized sheet steel may be used, provided all raw edges are painted.

1.6 PROTECTION FROM MOVING PARTS

A. Belts, pulleys, chains, gears, couplings, projecting setscrews, keys and other rotating parts located so that any person can come in close proximity thereto shall be fully enclosed or properly guarded.

1.7 PROTECTION OF EQUIPMENT AND MATERIALS

A. After delivery, before and after installation, equipment and materials shall be protected against weather theft, injury or damage from all causes.

B. Plumbing fixtures and other equipment with enameled or glazed surfaces shall be protected from damage by covering and/or coating, as recommended in bulletin Handling and Care of Enameled Cast Iron Plumbing Fixtures, issued by Plumbing Fixtures Manufacturers' Association.

C. Where marring or disfigurement has occurred, the Contractor shall replace or refinish the damaged surfaces as directed and to the satisfaction of the Architect.

D. Pipe and duct openings shall be closed with caps or plugs during installation.

1.8 MATERIALS

A. Materials specified herein shall conform to the respective publications and other requirements specified in the following paragraphs and as shown on the drawings. Other materials shall be the products of manufacturers regularly engaged in the manufacture of such products. Types, grades, schedules and pressure and temperature ratings for a particular service shall be as specified hereinafter and other sections of these specifications.

B. Unless specifically noted to the contrary, all valves, strainers and accessories listed in these specifications shall be "rated" devices (i.e. 125 lb. steam- 200 lb. water, oil or gas), selected for the proper use and conditions of the system for which they are to be installed. Under no circumstances shall the contractor be relieved of the responsibility of the valve rating by the installation of valves of lesser quality. All valves shall have rising stems, except that ball valves, plug valves, butterfly valves

and other similar types shall have clear indicators for valve positions. Non-rising stem valves, and non-rated valves shall not be used.

PART 2- PRODUCTS

2.1 DIELECTRIC FITTINGS

A Description: Combination fitting of copper alloy and ferrous materials with threaded, solder joint, plain or weld-neck and connections that match piping system materials.

2.2 SLEEVES

A Steel: Galvanized, plain ends, ASTM A 53, Type E, Grade B, Schedule 40.

B. Cast Iron: Equivalent to ductile iron pressure pipe with plain ends.

2.3 ESCUTCHEONS

A Chromium-plated iron or chromium-plated brags, either one piece or split patterns, held in place by internal spring tension or set screw that completely covers opening.

2.4 FIRE STOPPING

A Asbestos free materials classified by UL to provide Fire Barrier equal to time rating of construction being penetrated and complying with applicable codes and have been tested in accordance with UL 1479 or ASTM E-814.

2.5 DRIVES

A. Each belt-connected motor-driven unit or fan shall be provided with a variable pitch V-belt drive.

B. Sheaves shall be of cast iron or of steel, statically and dynamically balanced, bored to fit properly on the shafts and secured with key of proper size. Sheaves having set screws alone will not be permitted. Sheaves shall be variable pitched and shall be designed to give the required rpm at approximately the midposition of adjustment. Pitch diameters of sheaves shall be not less than 3.0 inches for "A" section belts; 5.4 inches for "B" section belts; 9.0 inches for "C" section belts; and 13.0 inches for "D" section belts.

C. Belts shall be selected for a minimum service factor of 1.5 (based on motor nameplate horsepower), and selected and matched in sets for equal tension.

D. All other drives shall be as described under the respective equipment paragraph of these Specifications, as applicable.

2.6 ROOF CURBS

A. Roof curbs shall be fabricated for complete compatibility with roof panels and framing system. Size and design as required to support vent unit and to adequately divert storm drainage. Provide all sealants, closures, etc. as required for complete installation. Provide roof subframing and/or headers between roof bar joists to provide continuous rigid perimeter support for the curb.

B. Prefabricated roof curbs shall be constructed of galvanized sheet steel, 16 or 14 gauge as required with comers mitered and continuously welded. Provided integral water diverter with seams continuously welded. Provide internal reinforcing as required. Factory insulate curbs with 1 W' thick 3 lb. density fiber glass insulation. Top of curb shall be level with pitch built into curbs.

C. Mechanical contractor shall coordinate with the roofing contractor to insure compatibility of the systems and for proper installation. Provide shop drawings to roofing contractor for review and coordination.

D. The mechanical contractor is responsible for installing the curb and framing. Roofing contractor is responsible for attaching roofing to the curb. Both contractors will be held responsible for leaks.

E. Top of roof curb to be installed at a minimum of 12" above the adjacent finished roof surface.

PART 3- EX ECU TIO N

3.1 PIPING

A. Pipe shall be cut accurately to measurements established at the jobsite and worked into place without springing or forcing, properly clearing all windows, doors, and other openings. Cutting or other weakening of the building structure to facilitate piping installation will not be permitted without written approval. Piping and equipment supports shall be provided. Supports shall be attached only to structural framing members and concrete beams or slabs at approved locations with approved connections. Where supports are required between structural framing members, suitable intermediate metal framing shall be provided and detailed. Pipes shall have burrs removed by reaming and shall be installed to permit free expansion and contraction without damage to joints or hangers. Changes in direction shall be made with fittings. All piping shall be installed with sufficient pitch to insure adequate drainage and venting. Piping connections to equipment shall be provided with unions or flanges. Ferrous piping and copper piping shall be electrically isolated from each other with dielectric couplings or fittings.

3.2 WORKMANSHIP

A. General: All materials and equipment shall be installed in accordance with the approved recommendations of the manufacturer to conform with the contract documents. The installation shall be accomplished by workmen skilled in this type of work.

B. Screw joints shall be made with tapered threads properly cut. Joints shall be made tight with a stiff mixture of litharge and glycerin, or polytetrafluorethylene tape, or other approved thread joint compound applied to the male threads only. Not more than three threads shall show after the joint is made up.

C. Victaulic (mechanical bolted) type joints shall be grooved accurately and ends buffed flush before retainer band is put in place. Retainer bands shall be malleable iron or forged steel and shall be properly fitted to each joint.

3.3 EXCAVATION AND BACKFILL

A. As part of the work under these sections, provide all excavating and backfilling, including dewatering and shoring required for the introduction and completion of the work. The work performed under this heading must conform to surrounding grounds or finished grade and must be approved by the Engineer.

B. All excavation shall be classified in accordance with the General Conditions ofthese specifications.

C. Surplus material and materials unsuitable for use as fill or backfill of foundation or trench excavations shall be disposed of off the Owner's property at the Contractor's expense.

D. Borrow material, if required, may not be available on Owner's property and shall be the responsibility of the Contractor to import any required material at his expense.

E. Explosives and blasting shall not be permitted except by written permission of the Engineer.

F. Where adjacent surface areas are disturbed as a result of construction operations or the storage of materials, they shall be cleaned of all debris and restored to original conditions.

G. The Contractor shall be responsible for location in the field the excavation lines shown on the drawings. The location shall be approved by the Engineer before excavation is begun. The Contractor shall use reference points as shown on the drawings for locating control points for earthwork and construction. In the absence of reference points, the Contractor shall locate control points in accordance with the Engineer's instructions.

H. Active utilities shown on the drawings shall be adequately protected from damage and removed or relocated only as indicated or specified. Where active utilities are encountered but are not shown on the drawings, the Engineer shall be advised; the work shall be adequately protected, supported or relocated as directed by the Architect. In-active and abandoned utilities encountered in excavating and grading operations shall be reported to the Architect; they shall be removed, plugged or capped as directed by the Architect.

I. Trench Excavation: The bottom ofthe trenches shall be accurately graded to provide uniform bearing and support for the pipe or concrete trench as shown on the drawings. Pipe shall be supported at every point along its entire length. Unless otherwise indicated, excavation shall be by open cut and trench sides shall be verticaL The trench bottom shall follow a uniform grade as shown on the drawings in the direction of flow insofar as possible. Where the trench has been excavated below grade, either inadvertently or purposely, the trench shall be backfilled and thoroughly tamped so as to provide full length bearing for the pipe barreL

J. Laying Pipe: Laying of pipe on blocks, brick or wood to bring the pipe to a uniform invert shall not be permitted. Drainage lines shall be layed to conform to the drawings. All pipe joints shall be inspected and approved prior to backfilling.

K. Backfilling Trenches: The trenches shall not be backfilled until all required pressure tests are performed and until the system as installed conforms to the requirements specified, except that pipe may be covered between joints to maintain alignment during testing. Except as otherwise specified for special conditions of overdepths, trenches shall be backfilled to the ground surface with selected excavated material or other material that is suitable for the specified compaction and as hereinafter specified. Four (4) inches of crushed stone (#9 gravel), chips, or sand shall be placed in the bottom of the ditch and properly graded to assure firm bedding. After pipe is in place, tests and required inspections completed, the ditch shall be backfilled with crushed stone (#9 gravel), chips, or sand to a depth of elevation no less than 4 inches above the pipe. Commencing above the pipe, the backfill shall be loose earth placed and thoroughly tamped (in layers not to exceed six (6) inches in depth) to finished grade. Where trench undercuts any foundation, provide a minimum of six (6) inches of lean concrete fill below foundation in addition to requirements listed above. Trenches under paved surfaces shall be backfilled to the surface with crushed stone, chips or dense grade. See the drawings for any special requirements noted or shown in details.

L. Backfilling Drain Lines: Compacted earth shall be placed around and over the drain lines to the elevation shown on the drawings.

3.4 WELDING AND BRAZING

A. Welders Qualification

1. Welder's qualifications shall specifY results of test, or retest, positions qualified and type of welding in which qualified.

2. All welds shall be of sound metal thoroughly fused to the base metal at all points, free from cracks; and reasonably free from oxidation, blow holes, and non- metallic inclusions. No fins or weld metal shall project within the pipe; and should they occur shall be removed. All pipe beveling shall be done by machine. The surface of all parts to be welded shall be thoroughly cleaned free from paint, oil, rust or scale, at the time of welding except that a light coat of oil may be used to preserve the beveled surfaces from rust.

3. All pipe and fittings shall be carefully aligned with adjacent parts and this alignment must be preserved in a rigid manner during the process of welding.

4. It is required that all welding of piping covered by this specification, regardless of conditions of service, be installed as follows:

   a. Pipe welding shall comply with the provision of the latest revisions of the applicable code whether ASME "Boiler Construction Code", ANSI "Code for Pressure Piping", AWS and/or Kentucky KRS-236 "Boiler Safety Law". The contractor shall make arrangements for inspection visits by the state boiler inspector as required by KRS-236.

   b. The Contractor's welding procedure shall clearly set forth P-numbers of parent metal to be welded, rod or filter metal to be used and positions required.

   c. Before any pipe welding is performed, the Contractor shall submit to the Architect a copy ofhis welding procedure specifications together with proof of its qualification as outlined and required by the most recent issue of the code having jurisdiction.

   d. Before any operator shall perform any pipe welding, the Contractor shall also submit to the Architect, the operator's qualification record in conformance with provisions of the Code having jurisdiction, showing that the operator was tested under the approved procedure specification submitted by the Contractor.

   e. Welding work shall not be performed by welders who are not approved by the Architect and any such work performed shall be summarily removed and replaced without further recourse by the Contractor.

   f. Standard Procedure Specifications and operators qualified by the National Certified Pipe Welding Bureau shall be considered as conforming to the requirements of the specifications.

g. Each manufacturer or Contractor shall be responsible for the quality of welding done by his organization and shall repair any work not in accordance with these specifications.

h. Brazing, when specified or indicated on the contract drawings, shall be in accordance with Part UB of Section VIII of the ASME Code. Filler metal shall confonn to AWS 826 0, Class B AG-1 orB AG-2. Procedure and performance qualification requirements for brazing shall be the same as for welding, as required above.

5. Flanges and Unions shall be faced true. Flanges shall be provided with 1116 inch composition gasket, unless otherwise specified, and made square and tight. Union or flange joints shall be provided in each line immediately preceding the connection to each piece of equipment or material requiring maintenance such as coils, pumps, control valves, and other similar items. Gaskets shall confonn to ANSI Standard B16.21.

6. Valves in horizontal lines shall be installed with stems horizontal or above. Isolation valves shall be installed on each side of each piece of equipment such as pumps, and other similar items; and at any other points indicated or required for draining, isolation, or sectionalizing purposes.

3.5 PIPE SLEEVES

A. General: Pipes passing through concrete or masonry walls or concrete floor or roofs shall be provided with pipe sleeves fitted into place with epoxy sealing grout at the time of construction. Sleeves shall not be installed in structural members except where indicated or approved. Each sleeve shall extend through its respective wall, floor or roof, and shall be cut flush with each surface, except sleeves through floor where not in chase shall extend 114 inch above finished floor. Unless otherwise indicated, sleeves shall be of such size as to provide a minimum of 114 inch all around clearance between bare pipe and sleeves or between jacket over insulation and sleeves. Except in pipe chases or interior walls, the annular space between pipe and sleeve or between jacket over insulation and sleeve shall be sealed as specified.

B. Sleeves are not required for core drilled holes.

C. Pipes Passing Through Waterproofing Membranes: Pipes passing through floor waterproofing membrane shall be installed through a 4-pound lead-flashing sleeve, or a 0.032-inch thick aluminum sleeve, each with an integral skirt or flange. Flashing sleeve shall be suitably formed, and the skirt of flange shall extend not less than 8 inches from the pipe and shall set over the floor membrane in a troweled coating of bituminous cement. The flashing sleeve shall extend up the pipe a minimum of 1 inch above the floor. The annular space between the flashing sleeve and the metal-jacket-covered insulation shall be sealed. At the Contractor's option, pipes

passing through floor waterproofing membrane may be installed through a cast iron sleeve with caulking recess, anchor lugs, flashing clamp device, and a pressure ring with brass bolts. Waterproofing membrane shall be clamped into space and sealant shall be placed in the caulking recess.

D. Pipes Passing Through Roof: Pipes passing through the roof shall be installed where shown on the drawings. Any penetration in roof shall be approved by the Roofing Manufacturer.

3.6 ESCUTCHEONS

A. Escutcheons shall be provided at all finished surfaces where exposed piping, bare or insulated, passes through floors, walls, or ceilings. Escutcheons shall be fastened securely to pipe sleeves or to extensions of sleeves without any part of sleeves being visible. Where sleeves project slightly from floors, special deep-type escutcheons shall be used.

3.7 PROTECTIVE COATINGS FOR PIPE AND FITTINGS

A. Protective Coating for Pipe and Fittings: Metallic pipe and fittings, except cast iron and copper, that are installed underground shall be provided with a field- or shop-applied coal-tar coating and wrapping or a shop-applied extruded polyethylene sheath. The coating shall consist of a coat of coal-tar primer, a coat of coal-tar enamel, a second coat of coal-tar enamel, a second wrapper of coal-tar saturated felt, and a wrapper of kraft paper applied in the order named and conforming to the requirements of AWWA Standard C203 for materials, thicknesses, methods of application, tests, and handling, except that interior lining will not be required. Upon completion of satisfactory tests hereinafter specified, the joints shall be hand-wrapped with hot-applied preformed coal-tar tape. Preparation of surface and hand-applied wrapping shall be done in such a manner that a covering equal in effectiveness to that of the shop-applied coating will be produced. When extruded polyethylene sheath is used for the protective coating, fittings and joints shall be covered in the manner and with the materials recommended by the manufacturer of the sheath.

3.8 TESTS

A. General: All tests shall be conducted in the presence of the Engineer who shall be given 2 days notice before any test is to be conducted. Any utilities, materials, equipment, instruments, and personnel required for the tests shall be provided by the Contractor.

B. Piping: After cleaning, all piping (except soil, waste and vent piping) shall be hydrostatically tested at a pressure equal to 150 percent of the total system operating pressure but not less than 100 psi for a period of time sufficient to inspect every joint in the system and in no case less than 2 hours. No loss of pressure will be allowed.

Leaks found during tests shall be repaired by rewelding or replacing pipe or fittings. Caulking or peening of joints or fittings will not be permitted. Concealed and insulated piping shall be tested in place before covering or concealing.

3.9 CLEANING

A. General: Clean all piping and equipment systems as required to leave the piping and equipment clean and free from scale, silt, contamination, etc., as normally required and as specified herein.

B. Utilities and Equipment: The Contractor shall provide all necessary temporary materials and equipment to clean the piping and equipment installed under this specification. No permanent equipment shall be used for storage, mixing, settling, compressing, pumping, etc., without the approval of the Architect. The Contractor shall supply a separate and independent source of clean, dry, oil-free air for the blowdown of systems requiring this method of cleaning.

C. Use of Chemicals: No chemicals, wetting or drying agents shall be used to clean systems or equipment where the materials of the system undergo any changes in their physical or structural characteristics. In case of any doubt as to the compatibility of any materials to the cleaning solution used, the Contractor shall obtain prior written approval for the use of the solution from the manufacturer of the equipment. Piping systems, equipment and sub-assemblies shall be cleaned after completion of welding, machining, threading, testing and any other operations capable of contaminating the system piping or equipment. After cleaning, the permanent strainers shall be removed, cleaned and replaced. Temporary strainers shall be periodically removed, cleaned and replaced during cleaning in lines ahead of equipment to protect against particles becoming lodged in the equipment.

3.10 FIRESTOPPING

A. Firestopping shall be provided around all pipe, duct and chimney penetrations of fire rated floors, masonry walls and other fire rated walls and ceilings.

B. Clean surfaces to be in contact with penetration seal materials, of dirt, grease, oil, loose materials, rust or other substances that may affect proper fitting, adhesion, or the required fire resistance.

C. Install penetration seal materials in accordance with manufacturer's instruction.

D. Seal holes or voids may be penetrations to ensure an effective smoke barrier.

E. Protect materials from damage on surfaces subject to traffic.

F. Stop insulation flush with wall on insulated pipe and seal edges.

3.11 SMOKE-STOPPING

A. Smoke-stopping shall be provided around all pipe, duct and chimney penetrations through floor or floor/ceiling assemblies and any other smoke walls or barriers.

B. Clean surfaces to be in contact with penetration seal materials, of dirt, grease, oil, loose materials, rust or other substances that may affect proper fitting, adhesion, or the required fire resistance.

C. Install penetration seal materials in accordance with manufacturer's instruction.

D. Seal holes or voids may be penetrations to ensure an effective smoke barrier.

E. Protect materials from damage on surfaces subject to traffic.

3.12 DEMOLITION AND SCHEDULE

A. All existing mechanical equipment noted on drawings and listed herein that is to be removed or demolished, shall be removed on schedule and disposed of as hereinafter directed.

B. All items removed shall become the property of the contractor and shall be immediately disposed of off site at contractor's expense except as noted on drawings unless otherwise directed by owner.

C. All demolition shall be carefully accomplished in accordance with master construction schedule so as not to remove any item required for support operation during the planned schedule. No item shall be removed until full schedule is worked out with contractors according to owners demands and agreed to in writing by the Engineer.

D. Storage will be arranged during scheduling process. Contractors to provide own storage and security.

E. Contractor doing the demolition of equipment must conform to the Clean Air Act of 1990. Refrigerant must be recovered from any air conditioning or refrigeration equipment prior to disconnecting and disposal. The contractor must own and use recovery equipment to meet this requirement. The contractor will be responsible for disposal of refrigerant, refrigerant oil or equipment.

F. If pipe, insulation or equipment to remain is damaged in appearance or is unserviceable, remove damage or unserviceable portion and replace with new products of equal capacity and quality. All existing piping to remain shall be permanently capped, new or existing valves are not adequate.

End of Section 220500

SECTION 220700- PIPING INSULATION

PART 1- GENERAL

1.1 WORK INCLUDED

A. Piping Insulation

B. Jackets and Accessories

1.2 RELATED WORK

A. The General and Special Conditions and all other Contract Documents (ESPECIALLY DIVISIONS 21, 22, 23 AND 26) are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 220100- GENERAL PROVISION FOR MECHANICAL WORK

C. Section 220500- COMMON WORK RESULTS FOR MECHANICAL SYSTEMS

D. Section 220553 - IDENTIFICATION OF MECHANICAL PIPING AND EQUIPMENT

1.3 QUALITY ASSURANCE

A. Materials: Flame spread smoke developed rating of25/50 in accordance with ASTM E84.

B. All pipe insulation shall be installed by mechanics specializing in this type of work. The finished product shall present a neat and workmanlike appearance. Insulation shall not be applied until all tests except operating tests have been completed, all foreign material, such as rust, scale, or dirt, has been removed and the surfaces are clean and dry. Insulation shall be clean and dry when installed and during the application of any finish.

C. The insulation, insulating materials and related items shall be delivered to the jobsite in the manufacturer's unopened containers. The containers shall have labels stating the manufacturer's name, contents, quantity and other pertinent data.

PART 2 -PRODUCTS

2.1 INSULATION

A. Type A glass fiber insulation; ANSIIASTM C547; 'k' value of0 .24 at 75 degrees F;

noncombustible.

B. Type B cellular foam; flexible, plastic; 'k' value of 0.27 at 75 degrees F; ASTM C534. APArmaflex W (white) or APArmaflex SS (black) or equal.

C. Type C vinyl plastisol prefabricated assemblies with 118minimum wall thickness. Trap wrap protective kit by Brocar, Truebro or approved equal.

2.2 JACKETS

A. Vapor Barrier Jackets: Kraft reinforced foil vapor barrier with self-sealing adhesive joints.

B. PVC Jackets: One piece, premolded type.

C. Canvas Jackets: UL listed treated cotton fabric, 6 oz/sq yd.

2.3 ACCESSORIES

A. Insulation Bands: 3/4 inch wide; 0.015 inch thick galvanized steel, stainless steel. 0.007 inch 0.18 thick aluminum.

B. Metal Jacket Bands: 3/8 inch wide; 0.015 inch thick aluminum. 0.010 inch thick stainless steel.

C. Insulating Cement: ANSI/ASTM C195; hydraulic setting mineral wool.

D. Finishing Cement: ASTM C449.

E. Fibrous Glass Cloth: Untreaded; 9 oz/sq yd weight.

F. Adhesives: Compatible with insulation.

G. Treated wooden blocks.

PART 3 - EXECUTION

3.1 PREPARATION

A. Install materials after piping has been tested and approved.

3.2 INSTALLATION

A. Install materials in accordance with manufacturer's instructions.

B. Continue insulation with vapor barrier through penetrations, except on fire rated

walls.

C. In exposed piping, locate insulation and cover seams in least visible locations.

D. On insulated piping with vapor barrier, insulate fittings, valves, unions, flanges, strainers, flexible connections, and expansion joints.

E. Provide an insert, not less than 6 inches long, of same thickness and contour as adjoining insulation, between support shield and piping, but under the finish jacket, on piping 2 inches diameter or larger, to prevent insulation from sagging at support points. Inserts shall be cork or other heavy density insulating material suitable for the planned temperature range. Factory fabricated inserts may be used. Insert shall extend around bottom 120 degrees of pipe barrel and shall be included inside vapor barrier jacket where applied. See Section 220529 for shields and hangers.

F. Neatly finish insulation at supports, protrusions, and interruptions.

G. Jackets

1. Indoor, Concealed Applications: Insulated pipes shall have standard jackets, with vapor barrier, factory-applied or field-applied. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass cloth and adhesive. PVC jackets may be used.

2. Indoor, Exposed Applications: For pipe exposed in mechanical equipment rooms or in finished spaces, insulate as for concealed applications. Finish with canvas jacket; size for finish painting. Do not use PVC jackets.

3. Flanges, Valves, Anchors and Fittings: Unless otherwise specified, all flanges, valves, anchors and fittings shall be insulated with factory premolded or field fabricated segments of insulation of the same materials and thickness as the adjoining pipe insulation. When segments of insulation are used, elbows shall be provided with not less than three segments. For other fittings and valves, segments shall be cut to required curvatures, or nesting size sectional insulation shall be used. The segments of the insulation shall be properly placed and jointed with fire-resistant adhesive. After the insulation segments are finnly in place, fire-resistant vapor barrier coating shall be applied over the insulation in two coats with glass tape embedded between coats. The coating shall be applied to a total dry film thickness of 1/16 inch minimum. All glass tape seams shall be terminated neatly at the ends of the unions with insulating cement troweled on the bevel. For piping operating below ambient temperature, the beveled ends shall receive a coat of vapor barrier coating. Where anchors are used and secured directly to low temperature piping, they shall be insulated for a distance to prevent condensation, but not less than 6 inches from the surface of the pipe insulation. For jacket facing to receive finish painting, the factory applied

jacket shall be as specified herein, except that the kraft paper shall be light colored with the kraft paper exposed. Field applied vapor barrier jacket shall conform to the above conditions where finish painting is required.

Piping		**Pipe Size (inch)**	**Thickness (inch)**
Domestic Hot Water Supply/Recirculation	*AlB*	all	1
Domestic Cold Water	*AlB*	all	1
Copper Water Piping Below Slab and Inside Wails	B	all	*Y2*
Chrome Plated Piping to Handicapped Lavatories	C	all	*Y2*
Chrome Plated Piping to Plumbing Fixtures		None	

END OF SECTION 220700

SUBMITTALS

In accordance with the requirements of the General Conditions and Supplementary General Conditions, the following information is required to be submitted for this Section. The Contractor shall submit 11 copies of the required information to Architect for approval within 30 days after notice to proceed.

ITEM DESCRIPTION	SHOP DRAWINGS	CATALOG DATA	PARTS LISTS	OPERATING MANUAL	WIRING DIAGRAM	CERTIFICATION	SAMPLES	OTHER
Pipe Insulation	X	X					X	
Fitting Insulation	X	X						
Insulation Block Inserts		X					X	

SECTION 221000- PLUMBING PIPING AND VALVES

PART 1- GENERAL

1.1 WORK INCLUDED

A. Pipe and Pipe Fittings

B. Valves

C. Sanitary Sewer Piping

D. Domestic Water Piping

1.2 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents (ESPECIALLY DIVISIONS 21, 22, 23 AND 26) are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 220100- GENERAL PROVISION FOR MECHANICAL WORK

C. Section 220500- COMMON WORK RESULTS FOR MECHANICAL SYSTEMS

D. Section 220553- IDENTIFICATION FOR MECHANICAL PIPING AND EQUIPMENT

E. Section 220700- PIPING INSULATION

F. Section 223000- PLUMBING SPECIALTIES

G. Section 224000 - PLUMBING FIXTURES

1.3 QUALITY ASSURANCE

A. Valves: Manufacturer's name and pressure rating marked on valve body.

B. Welding Materials and Procedures: Conform to ASME Code.

C. Welders Certification: In accordance with ANSI/ASME Section 9.

D. Cast Iron Pipe: All cast iron pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute (CISPI) and shall be listed by NSF International.

E. Hubless Cast Iron Couplings: All couplings for Hubless cast iron soil pipe and fittings shall conform to CISPI 310 and be certified by NSF International.

F. **All drinking water system components that convey or dispense water for human consumption through drinking or cooking shall be "lead-free" in accordance with NSF/ANSI 61 and/or NSF/ANSI 372 standards and any and all state and local requirements.**

PART 2 -PRODUCTS

2.1 SANITARY SEWER PIPING, BURIED INSIDE AND OUTSIDE OF BUILDING.

A. Cast Iron Pipe: ASTM A74, extra heavy or service weight. Fittings: Cast iron. Joints: ASTM C564, neoprene gasketing system.

B. PVC Pipe (House Line): ASTM D2665. Fittings: PVC. Joints: ASTM D2855, solvent weld.

2.2 SANITARY SEWER PIPING, INTERIOR, ABOVE GRADE

A. Cast Iron Pipe: ASTM A74, service weight. Fittings: Cast iron. Joints: Hub-and-spigot, CISPI HSN compression type with ASTM C564 neoprene gaskets.

B. Cast Iron Pipe: CISPI 301, hubless, service weight. Fittings: Cast iron. Joints: Neoprene gaskets and stainless steel clamp-and-shield assemblies. Above grade only.

C. Copper Pipe: ASTM B306, DWV. Fittings: ANSVASME Bl6.3, cast bronze, or ANSI/ASME Bl6.29, wrought copper. Joints: ANSIIASTM B32, solder, Grade 50B.

D. Steel Pipe: ASTM A53 or A120, Schedule 40 galvanized. Fittings: Galvanized malleable cast iron drainage pattern. Joints: screwed.

2.3 WATER PIPING, INTERIOR

A. Copper Tubing: ASTM B88, Type K below slab, Type L above slab. Fittings: ANSI/ASME Bl6.23, cast brass, or ANSVASME Bl6.29, wrought copper. Joints: ANSI/ASTM B32, solder, Grade 95TA.

B. Galvanized Steel Pipe: ASTM A53 or Al20 , Schedule 40. Fittings: Cast iron. Joints: Grooved mechanical couplings. For equipment connections only.

2.4 FLANGES, UNIONS, AND COUPLINGS

A. Pipe Size 2 Inches and Under: 150 psig, malleable iron unions for threaded ferrous piping; Schedule 40 250 psig malleable iron unions for threaded ferrous piping, Schedule 80 malleable unions for copper pipe, soldered joints.

B. Pipe Size Over 2 Inches: 150 and 300 psig as required by equipment , forged steel slip-on flanges for ferrous piping; bronze flanges for copper piping; neoprene gaskets for gas service; 1/16 inch thick preformed neoprene bonded to asbestos.

C. Grooved and Shouldered Pipe End Couplings: Malleable iron housing clamps to engage and lock, designed to permit some angular deflection, contraction, and expansion; "C" shape composition sealing gasket; steel bolts, nuts, and washers; galvanized couplings for galvanized pipe.

D. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.5 BALL VALVES

A. Up to 2 Inches: Bronze body, stainless steel ball, teflon seats and stuffing box ring, lever handle and balancing stops, threaded ends with union.

B. Over 2Inches: Cast steel body, chrome plated steel ball, teflon seat and stuffing box seals, lever handle or gear drive handwheel for sizes 10 inches and over, flanged.

C. Manufactured by Apollo, Crane, Nibco, Stockham and Watts.

2.6 BUTTERFLY VALVES (150#WOG)

A. Iron body, bronze disc, resilient replaceable seat for service to 180 degrees F, water or lug ends, infinite position lever handle with memory stop.

B. Manufactured by Apollo, Crane, Nibco, Stockham and Watts.

2.7 SWING CHECK VALVES (150# WOG)

A. Up to 2 Inches: Bronze 45 degree swing disc, solder or screwed ends.

B. Over 2 Inches: Iron body, bronze trim, 45 degree swing disc, renewable disc and seat, flanged ends.

C. Manufactured by Apollo, Crane, Nibco, Stockham and Watts.

2.8 SPRING LOADED CHECK VALVES

A. Iron body, bronze trim, spring loaded, renewable composition disc, screwed, wafer, or flanged ends.

B. Manufactured by Apollo, Crane, Nibco, Stockham and Watts.

2.9 WATER PRESSURE REDUCING VALVES

A. Bronze body, stainless steel and thermoplastic internal parts, fabric reinforced diaphragm, strainer, threaded ends.

B. Manufactured by Apollo, Consolidated, Kunkel, Watts and Zurn.

2.20 RELIEF VALVES

A. Bronze body, teflon seat, steel stem and springs, automatic, direct pressure actuated, capacities ASME certified and labeled.

B. Manufactured by Apollo, Consolidated, Kunkel, Watts and Zurn.

PART 3- EXECUTION

3.1 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.2 INSTALLATION

A. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

B. Route piping in orderly manner and maintain gradient.

C. Install piping to conserve building space and not interfere with use of space. Do not change the designed path of piping, add excessive turns or offsets, or change pipe sizes without first consulting the Engineer.

D. Group piping whenever practical at common elevations.

E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

F. Provide clearance for installation of insulation and access to valves and fittings.

G. Provide access where valves and fittings are not exposed.

H. Slope water piping and arrange to drain at low points.

I. Establish elevations of buried piping outside the building to ensure not less than 3 feet of cover.

J. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

K. Prepare pipe, fittings, supports, and accessories not prefinished, ready for finish painting.

L. Establish invert elevations, slopes for drainage to be 1/8 inch per foot one percent minimum. Maintain gradients.

M. Excavate in accordance with Section 220100 for work of this Section.

N. Backfill in accordance with Section 220 100 for work of this Section.

0. Install bell and spigot pipe with bell end upstream.

P. Install valves with stems upright or horizontal, not inverted.

3.3 APPLICATION

A. Use grooved mechanical couplings and fasteners only in accessible locations.

B. Install unions downstream of valves and at equipment or apparatus connections.

C. Install brass male adapters each side of valves in copper pipe system. Sweat solder adapters to pipe.

D. Install ball and/or butterfly valves for shut-off and to isolate equipment, parts of systems, vertical risers and branch piping serving fixtures without a means of shut-off. Valves to be located in such a manner to be accessible for service personnel. Provide access panel(s) if required to access valves.

E. Install ball valves for throttling, bypass, or manual flow control services.

F. Provide spring loaded check valves on discharge of water pumps.

G. Do not install above grade piping in areas subject to freezing. Where such an area is encountered, notify the engineer for instruction.

3.4 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

A. Prior to starting work, verity system is complete, flushed and clean.

B. Ensure PH of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).

C. Inject disinfectant, free chlorine in liquid, powder, tablet or gas form, throughout system to obtain 50 to 80 mg/L residual.

D. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.

E. Maintain disinfectant in system for 24 hours.

F. If final disinfectant residual test less than 25 mg/L, repeat treatment.

G. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.

H. Take samples no sooner than 24 hours after flushing, from outlets and from water entry, and analyze in accordance with AWWA C601.

3.5 SERVICE CONNECTIONS

A. Provide new sanitary sewer service. Before commencing work check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.

B. Provide new water service complete with reduced pressure backflow preventor.

END OF SECTION 221000

SUBMITTALS

In accordance with the requirements of the General Conditions and Supplementary General Conditions, the following information is required to be submitted for this Section. The Contractor shall submit 11 copies of the required information to Architect for approval within 30 days after notice to proceed.

ITEM DESCRIPTION	SHOP DRAWINGS	CATALOG DATA	PARTS LISTS	OPERATING MANUAL	WIRING DIAGRAM	CERTIFICATION	SAMPLES	OTHER
Sanitary Piping	X	X						
Domestic Water Piping	X	X						
Valves	X	X						

SECTION 224000 - PLUMBING FIXTURES AND EQUIPMENT

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Water Closets
B. Lavatories
C. Showers
D. Shower Trim
E. Floor Drains

1.2 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents (ESPECIALLY DIVISIONS 21, 22, 23 AND 26) are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion ofthe work.

B. Section 220100- GENERAL PROVISION FOR MECHANICAL WORK

C. Section 220500- COMMON WORK RESULTS FOR MECHANICAL SYSTEMS

1.3 GENERAL REQUIREMENTS

A. All plumbing fixtures and their installation shall conform to the requirements of the Kentucky State Plumbing Code.

B. Exposed metal work shall be bright chrome-plated brass except as noted.

C. All fixtures shall be by the same manufacturer.

D. All ADA accessible water closets provided with manual flush valve/trip lever shall have the flush valve handle/trip lever mounted on the wide(open) side of the water closet.

E. **All drinking water system components that convey or dispense water for human consumption through drinking or cooking shall be "lead-free" in accordance with NSF/ANSI 61 and/or NSF/ANSI 372 standards and any and all state and local requirements.**

PART 2- PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Acorn, Ancorn Aqua, American Standard, Bemis, Briggs/Proflo, Chicago, Clarion Bathware, Church, Component Hardware, Crane, Delany, Delta, Eljer, Elkay, Encon, Fiat, Guardian, Haws, Intersan, JayR. Smith, Just, Kohler, Lawler, Leonard, Moen, Murdock, Mustee, Oasis, Olsonite, Powers, Sioux Chief, Sloan, Speakman, Steam-Williams, Stingray Systems, Syrnmons, T&S Brass, Toto, Willoughby, Watersaver, Watts and Zurn. SEE SCHEDULES ON DRAWINGS.

2.2 Products listed in schedule on drawings shall determine quality and grade required. If other than those listed in schedule are to be used, equivalent or parallel grade shall be used.

2.3 All drains shall be constructed of the finest quality cast iron, coated with the manufacturer's standard protective paint and furnished with all items specified. Drain shall be as manufactured by Josam, Sioux Chief, Smith, Wade, Watts and Zurn.

PART 3- IN STA LLA TIO N

3.1 Install each fixture with traps, easily removable for servicing and cleaning.

3.2 Provide bright chrome plated annealed copper supplies to fixtures with screwdriver stops, reducers and escutcheons.

3.3 All wall-hung fixtures shall be furnished with carriers.

3.4 Work shall be accurately laid out and roughed-in so that all piping will be straight and true without bends and offsets and no such bends and offsets will be acceptable unless they are unavoidable and are allowed by the Architect.

3.5 Seal fixtures to wall and/or floor surfaces with sealant, color to match fixtures.

3.6 If fixture mounting surfaces do not allow mounting to be level and plumb, surfaces are to be grounded smooth and flat.

3.7 Install ADA accessible water closets with flush valve handle/trip lever mounted on the wide(open) side of the water closet.

END OF SECTION 224000

SUBMITTALS

In accordance with the requirements of the General Conditions and Supplementary General Conditions, the following information is required to be submitted for this Section. The Contractor shall submit **11** copies of the required information to Architect for approval within 30 days after notice to proceed.

ITEM DESCRIPTION	SHOP DRAWINGS	CATALOG DATA	PARTS LISTS	OPERATING MANUAL	WIRING DIAGRAM	CERTIFICATION	SAMPLES	OTHER
Water Closets	X	X						
Lavatories	X	X		X				
Showers	X	X		X				
Shower Trim	X	X		X				
Floor Drains	X	X		X				

SECTION 233423- POWER VENTILATORS

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Ceiling Exhaust Fans

1.2 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents (ESPECIALLY DIVISIONS 21, 22, 23 AND 26) are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 220500 -COMMON WORK RESULTS FOR MECHANICAL SYSTEMS

1.3 REFERENCES

A. AMCA 99 - Standards Handbook.

B. AMCA 210- Laboratory Methods of Testing Fans for Rating Purposes.

C. AMCA 300- Test Code for Sound Rating Air Moving Devices.

D. AMCA 301 -Method of Publishing Sound Ratings for Air Moving Devices.

E. SMACNA- Low Pressure Duct Construction Standard.

1.4 QUALITY ASSURANCE

A. Performance Ratings: Conform to AMCA 210.

B. Sound Ratings: AMCA 301, tested to AMCA 300.

C. Fabrication: Conform to AMCA 99.

PART 2- PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Greenheck, Penn, Carnes, Loren Cook, Jenn-Aire, Acme, Adco, ILG, Shipman, Breident, Venmar, Spinnaker.

2.2 GENERAL

A. Provide all fans with disconnect.

B. Provide all fans with motor starters. See Section 220100 for details.

C. Integral phase relay shall be provided as a part of all three phase motor starters. Relay shall shut motor down on phase loss or phase unbalance and automatically reset when normal phasing is restored. Phase failure relay shall have adjustable restart time capabilities. Mechanical contractor shall coordinate staggered restart times as required.

2.3 CEILING EXHAUST FANS

A. Centrifugal Fan Unit: V-belt or direct drive, with galvanized steel housing lined with 112 inch acoustic insulation resilient mounted motor, gravity backdraft damper in discharge.

B. Disconnect Switch: Factory wired, non-fusible, in housing for thermal overload protected motor and wall mounted multiple speed switch/solid state speed controller.

C. Grille: Molded white plastic or aluminum with baked white enamel finish.

D. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed, variable and adjustable pitch motor sheaves selected so required rpm is obtained with sheaves set at mid-position, fan shaft with self-aligning pre-lubricated ball bearings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install equipment in a manner to provide required clearances for proper operation and maintenance.

C. Secure roof exhausters with lag screws to roof curb.

END OF SECTION 233423

SUBMITTALS

In accordance with the requirements of the General Conditions and Supplementary General Conditions, the following information is required to be submitted for this Section. The Contractor shall submit 11 copies of the required information to Architect for approval within 30 days after notice to proceed.

ITEM DESCRIPTION	SHOP DRAWINGS	CATALOG DATA	PARTS LISTS	OPERATING MANUAL	WIRING DIAGRAM	CERTIFICATION	SAMPLES	OTHER
Ceiling Exhausters	X	X	X	X	X			

SECTION 260500- COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

1.2 SCOPE

A. Include furnishing of all labor, materials, equipment and other related items required to complete the work called for and indicated on the Contract Drawings and specified for a complete system.

B. The work covered by this section of the contract shall include the furnishing of all labor, materials, tools and equipment necessary to complete the electrical work as herein specified, or implied and as shown or implied on the contract drawings.

C. All materials shall be new and the best of their respective kinds unless otherwise specified and shall be listed by UL and shall be so labeled. All equipment shall conform to the latest approved standards of the IEEE, NEMA, ANSI and OSHA.

1.3 ABBREVIATIONS OF ORGANIZATIONS AND PUBLICATIONS

NEC	-National Electrical Code
UL	- Underwriters Laboratories, Inc.
IPCEA	-Insulated Power Cable Engineers Association
ANSI	-American National Standards Institute
OSHA	-O ccupational Safety Health Act
IMC	-In ternational Mechanical Code

1.4 DRAWINGS AND SPECIFICATIONS

A. The contract drawings and specifications are intended to cover all work enumerated under the respective headings. Examine all contract drawings and specifications to determine any references to work of an electrical nature and be guided accordingly in prosecuting the electrical work. The contract drawings are diagrammatic only, as far as final location is concerned. Any item of work not clearly included, specified or shown, and any errors or conflict between contract drawings, specifications, codes and field conditions shall be clarified by a written request to the architect prior to bidding; otherwise all labor and materials required to make good any damage or defect in finished work caused by such error, omission or conflict shall be provided at no additional cost to the Owner.

1.5 CODE COMPLIANCE

A. The minimum standards for all electrical work shall be the 2011 revision of the NEC. Whenever and wherever OSHA and/or federal, state, and/or local laws or regulations and/or design require higher standards than the NEC, then these laws and/or regulations and/or design shall be followed.

1.6 "OR EQUAL" CLAUSE

A. The specifications covering this work are open; wherever a specific manufacturer's item is specified, it is intended as a standard to be met and items which are approved equal or superior will be accepted.

1.7 WARRANTY

A. All equipment shall be warranted for a period of at least one (I) year from the date of acceptance, as evidenced by date of substantial completion for the entire project of for the last phase of the project, whichever occurs later, against defective materials, design, and workmanship. In addition to the equipment warranty, the Contractor shall provide all repair and adjustment service necessary for the proper operation of the entire system for the length of the entire warranty period.. Upon receipt of notice from the Owner's representative of failure of any part of the warranted system or equipment during the warranty period, the affected part shall be replaced promptly with a new part without cost to the Owner. Upon failure to take action within 24 hours after being notified, the work will be accomplished by the Engineer at the expense of the Contractor. See General Conditions and individual equipment specifications. Note that the warranty period of time specified in this section represents the minimum warranty period required for work performed under specification Divisions 260000, 270000, and 280000. Where the General Conditions and/or individual equipment/system specifications require a warranty period of longer duration or earlier start date than specified in this paragraph, the longer duration/earlier start date shall supercede for those portions of work covered by that specification. In the event the contractor is notified of warranty issues but does not correct or address the warranty issues prior to the end of the specified warranty period, the contractor will not be relieved of the responsibility to correct the deficient items after the warranty end date has passed.

PART 2 - PRODUCTS

Not Applicable

PART 3- EXE CUTION

3.1 COOPERATION

A. Check with other trades on the scope oftheir work and coordinate on all locations of

various items of equipment and outlets before they are finally placed and connected. Any relocation of material or equipment necessitated by failure to coordinate work shall be at no cost to the Owner.

B. Do not cut the work of any other trade without first consulting the Architect's representative. Repair any work damaged employing the services of the trade whose work is damaged.

3.2 INSPECTION AND CERTIFICATES

A. Furnish electrical inspection by a licensed electrical inspector. NotifY the electrical inspector in writing, immediately upon the start ofthe work with a copy of the notice to the architect. The inspector shall be scheduled for rough as well as finished work. Approval from the electrical inspector will not be allowed as reason for deviation from the contract drawing and specifications. All cost incidental to the electrical inspection shall be borne by the contractor.

3.3 CLEANING

A. At the completion of the work required under this contract and just prior to acceptance by the Owner, thoroughly clean all exposed equipment fittings, fixtures and accessories.

3.4 CONNECTIONS TO EQUIPMENT BY OTHERS

A. Provide all conduit, boxes and wire with required connections, including any disconnect switches called for by NEC to all electrically powered or controlled equipment furnished and set in place by others. Examine all divisions of the specifications and all contract drawings to determine location and size of all electrically powered or controlled equipment.

3.5 SPECIAL NOTE

A. All openings in electrical equipment, enclosures, cabinets, outlets and junction boxes shall be by means of standard knockouts or shall be sawed or drilled. The use of a cutting torch is prohibited.

3.6 PIPE SLEEVES AND FIRE RATING OF OPENINGS

A. Holes through walls and ceilings, chases, shafts, etc., for the passage of cable or conduit shall be made so as to substantially preserve the integrity of the fire rating of such surfaces or passages in accordance with NEC 300-21.

3.7 OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS

A. At completion of the contract, the Owner shall be provided with three (3) bound copies of operations and maintenance instructions for the various items of the electrical equipment.

B. In addition to manufacturer's approved shop drawings, manual shall include a listing of equipment and distribution or supplier of the equipment. In case of lighting fixtures, the type replacement lamp including voltage and other necessary designation shall be included.

3.8 SHOP DRAWINGS

Submit the required number of copies of Shop Drawings including, but not limited to the following items:

1. Lighting Fixtures

2. Switches and Receptacles

END OF SECTION 260500

SECTION 260510 - ELECTRICAL DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

1.2 SCOPE

A. Electrical demolition is required in the existing building as indicated on the architectural drawings. Where circuits or other electrical items feed through to adjoining spaces they shall be maintained or re-routed as required to be compatible with new work. See architectural drawings for more information on areas to demolish.

PART 2- PRO DUCTS

Not applicable.

PART 3- EXE CUTION

A. The contractor shall visit the site, prior to submitting bids and familiarize himself with existing field conditions relative to demolition work and routing, interferences and all other difficulties that may be encountered relative to this contract. Failure to visit the site shall not constitute sufficient reason to warrant a change order for difficulties not apparent in the contract documents.

B. The contractor shall seal floor openings from removed conduits with thermo setting fire resistive compound.

C. Any outlet boxes left empty after demolishing a device may be reused for installation of a new device if in close proximity to a new device going in, if box is at correct mounting height, and if outlet box and conduit are of sufficient size for new device. Otherwise, cover empty box with blank plate.

D. If circuitry within the area of demolition serves equipment located outside the boundaries of the demolition, the continuity of the circuits shall be maintained as required to keep the equipment operational.

E. The electrical contractor shall be responsible for damage caused by said contractor to existing-to-remain materials. Repair or replace damaged material or equipment as directed at no additional cost.

F. Repairing, painting and patching of walls shall be by others, as described in other sections of the specifications.

G. The owner has the option of retaining or rejecting all demolished materials. The electrical contractor shall be responsible for removing from the site any electrical-related material not claimed by the owner.

END OF SECTION 260510

SECTION 260526- GROUNDING AND BONDING OF ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 260500- Common Work Results for Electrical Systems is applicable to work under this section of the specifications.

1.2 SCOPE

A. The conduit system and neutral conductors of the wiring system shall be grounded in accordance with NEC.

PART 2- PRODUCTS

2.1 CONDUCTORS

A. Conductors shall be copper unless otherwise noted. Conductors shall be rated for 600V. Conductors must meet ASTM and NEC requirements.

PART 3 - EXECUTION

A. The entire grounding system shall be installed in a workmanlike manner and shall be inconspicuous.

B. Continuity of the ground shall be maintained throughout the building. Continuity of equipment and raceway ground shall be insured by the use of double locknuts and insulated grounding bushings bonded to enclosures at service equipment, at all panelboards, safety switches, pull boxes, etc., and at the terminations of all conduit which (1) house the supply conductors to the main bus or main breaker of a panelboard; (2) house the conductors of any branch or feeder circuit protected at 60 amperes or more. Convenience outlets shall be grounded by means of a bonding wire attached to the outlet box in a manner approved by NEC Article 250-148.

C. All equipment or device grounds at panelboards, service or distribution equipment shall be connected to ground bars in such equipment with set screw connectors.

D. Whether shown on the drawings or not, all equipment and device feeders (receptacles, light fixtures, motor connections, etc.) shall include a green ground wire, sized per NEC, to be run in conduit with power conductors. Provide grounding

connections per NEC 250.

END OF SECTION 260526

SECTION 260533 - GENERAL MATERIALS AND INSTALLATION

PART 1- GENERAL

1.1 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 260500- Common Work Results for Electrical Systems is applicable to work under this section of the specifications.

PART 2- PRODUCTS

2.1 CONDUIT

A. In general, conduit shall be zinc-coated, steel conduit and shall meet in all respects, the UL Standards for Rigid Steel Conduit.

B. Electrical metallic tubing (EMT) may be used in all places unless otherwise noted.

2.2 OUTLET BOXES

A. Only zinc-coated or cadmium plated, sheet-steel boxes according to NEC, of a class to satisfy the conditions for each outlet shall be used in concealed work.

B. For masonry or drywall construction, square cornered boxes measuring 3-3/4" high by approximately 2" wide and having interior device mounting holes shall be used.

C. Single gang boxes for devices shall be not less than 2-1/2" deep unless limited by depth of construction and shall accommodate up to five #12 conductors. When construction depth permits, 3-1/2" deep boxes shall be used for devices where the number of conductors entering a single gang outlet is 6 to 8. Where more than 8 conductors enter an outlet housing a single device, boxes shall be 4" square by 2-1/8" deep to accommodate a maximum of 14 conductors and shall be provided with single device, square cornered tile wall covers of a suitable depth. Where construction depth is limited or to facilitate installation in cavity walls, 4" square boxes 1-1/2" deep may be used with single gang square cornered tile walkovers in lieu of single gang, 2-1/2" or 3-112" deep boxes. Such installation shall be increased to conform with NEC requirements for conductors larger than #12 AWG.

D. Where two or more devices are to be ganged at one outlet, 3-3/4" high boxes as specified above and with the required number of gangs shall be used. Each gang

shall be subject to the same "fill" limitations as for single gang installation.

2.3 WIRES AND CABLES (CONDUCTORS)

A. LOW VOLTAGE (0- 600V)

1. All conductors shall be copper unless otherwise specified.

2. Insulation unless otherwise noted shall be thermoplastic Type THHN-THWN. The color code shall be in accordance with the National Electric Code.

3. Branch circuit conductors shall be not smaller than No. 12 A.W.G. Branch circuits longer than 100' shall be run with minimum No. 10 A.W.G. Conductors for signal and pilot control circuits may be No. 14 A.W.G.

4. All building wires shall be as manufactured by Capital, General Electric, General Cable, American, Southwire, US Wire or approved equal.

2.4 JUNCTION BOXES AND TERMINAL CABINETS

A. All junction and terminal cabinets used under this contract shall be constructed of code gauge, galvanized steel and shall be as manufactured by Steel City, Appleton, 0-Z/Gedney, RACO, Killark, or approved equal.

2.5 SURFACERACEWAY

A. Where existing conduit and backboxes cannot be used, contractor shall utilize surface raceway equal to Wiremold V700 series, but sized accordingly. Provide base, cover, 2-hole support straps, backboxes, etc. as required.

PART 3 - EXECUTION

3.1 CONDUIT

A. All thick wall terminals shall be capped with insulating bushings. Electrical metallic tubing shall be terminated with connectors with insulated throat. Metallined terminating fittings will not be acceptable. All terminating fittings shall be secured to box or cabinet with double lock-nut type of construction.

B. Couplings and connectors for electrical metallic tubing shall be steel and shall be of the compression type. Set screw and indentation type connectors will not be acceptable, except that approved type steel set screw connectors may be used on EMT 2-1/2" or larger an on rigid conduit unless otherwise noted.

C. Runs of conduit or tubing shall have supports spaced in accordance with the NEC,

and exposed conduit shall be installed with runs parallel or perpendicular to walls, structural members or intersections of vertical planes and ceilings, with right angle turns consisting of cast metal fittings or symmetrical bends. Bends or offsets shall be avoided were possible but where necessary shall be made with an approved conduit bending machine. Conduit or tubing which has been crushed or defonned in any way shall not be installed. Expansion fittings or other approved devices shall be used to provide for expansion or contraction where conduit or tubing crosses expansion joints. Conduit and tubing shall be supported on an approved type of ceiling trapeze, beam clamps, strap hangers, or pipe straps, secured by means of toggle bolts on hollow masonry units, expansion shields in concrete or brick and machine screws on metal surfaces. The use of tie wire for suspending conduits or securing same to joists, purlins, beams, etc., will not be allowed. Conduit shall be securely fastened to all sheet metal outlets, junction and pull boxes with double galvanized locknuts and insulating bushings.

D. Conduit and tubing shall be installed in such manner as to insure against trouble from the collection of trapped condensation, and all runs shall be arranged so as to be devoid of traps wherever possible.

E. The final 18 inch section of conduit connecting each motor shall be liquid tight flexible type.

F. All conduit shall be installed concealed unless otherwise noted or shown on the drawings.

G. No conduit smaller than 3/4" shall be used except as noted. No flexible conduit smaller than 1/2" shall be used except as permitted by NEC 348. Flexible conduit shall be used only for light fixture whips unless otherwise noted.

3.2 OUTLET BOXES

A. Outlets shall be installed in the locations shown on the contract drawings. The general building plans shall be studied in relation to the spaces surrounding each outlet in order that work under this division of the specifications may fit the work required under other divisions. When necessary, outlets shall be relocated so that when fixtures or other fittings are installed they will be symmetrically located according to room layout and will not interfere with other work or equipment.

B. Boxes shall be installed in a rigid and satisfactory manner either by wood screws on wood, expansion shields on masonry, or machine screws on steel.

C. All supports required for outlet boxes in addition to that furnished under the general building construction, shall be furnished and installed under this division of the specifications. All supports shall be steel.

D. Partitions shall be provided in ganged boxes as required for conformity with NEC

380-8.

E. Where tile covers are used, they shall be of sufficient depth to bring the box opening within 1/4" of the finished wall surface.

F. Provide and install blank metal cover plates for all boxes which do not receive devices.

3.3 WIRES AND CABLES (CONDUCTORS)

A. LOW VOLTAGE (0 - 600V)

1. Conductors shall be continuous from outlet to outlet and no splices shall be made except within outlet or junction boxes. Junction boxes may be utilized where required.

2. Wire connectors of insulating materials or solderless pressure connectors properly insulated shall be utilized for all splices and wiring where possible. Rubber and friction tape shall conform to NEC and be UL approved. Vinyl plastic tape will be acceptable in lieu of rubber and friction tape. For branch circuit wires sizes #6 and smaller, and for fixture wiring, all splices shall be made with approved type crimp-on sleeves with separate outer insulating cap. In lieu of this, preinsulated, twist on torsion spring type connectors equal to "Scotchlok" may be utilized. The use of threaded connectors with integral insulation of bakelite or other material will not be allowed.

3.4 SURFACERACEWAY

A. Paint raceway to match wall.

END OF SECTION 260533

SECTION 262700- WIRING DEVICES

PART I - GENERAL

1.1 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 260500- Common Work Results for Electrical Systems is applicable to work under this section of the specifications.

PART 2- PRODUCTS

2.1 SWITCHES

A. All switches shall be ofthe flush tumbler type. All wall switches shall be rated at 20 ampere, 120 volts.

B. Switches shall be specification grade and shall be as follows, or approved equal:

	HUBBELL	PASS& SEYMOUR	LEVITON
20A Single Pole	1221	20AC1	1221-2

2.2 RECEPTACLES

A. Convenience outlets shall be 20 amp rated, Hubbell No. 5352, Leviton No. 5362-1, or Pass & Seymour No. 5362-A, of the grounding type.

B. GFI duplex outlets shall be fully UL 943 compliant, equivalent to Hubbell No. GF 5352A, or equal by Pass & Seymour or Leviton.

2.3 PLATES

A. All plates for concealed devices shall be jumbo sized, ivory, nylon type.

2.4 All wiring devices shall be of one manufacturer and shall be ivory.

END OF SECTION 262000

SECTION 265000 - LIGHTING SYSTEMS AND FIXTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A The General and Special Conditions and all other Contract Documents are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 260500- Common Work Results for Electrical Systems is applicable to work under this section of the specifications.

PART 2 -PRODUCTS

2.1 LIGHT FIXTURES

A. Furnish and install the lighting fixtures complete with lamps, as shown on the Contract Drawings. Proposed substitutions for lighting fixtures shall be submitted to the Engineer no later than ten (10) days prior to bid date.

B. The proper number and type of fixture shall be provided for each lighting outlet. See below for Light Fixture Schedule.

2.2 LIGHT FIXTURE SCHEDULE

LF-1 Wall mounted 38" vanity light with 20-gauge steel housing, translucent acrylic diffuser, brushed aluminum trim, polished end caps, 120V programmed start electronic ballast, UL listing, and two (2) F25T8 lamps.
ASL #DRBV-225T8-120-3500K-FBE-CLE
Original Cast and Lightolier equal

LF-2 Surface mounted 4' architectural ceiling mount fixture with 20-gauge steel housing, translucent acrylic lens, decorative end caps, 120V programmed start electronic ballast, UL listing, and two (2) F32T8 lamps.
Lithonia #10521RE-WH
Lightolier and Williams equal

LF-3 Recessed LED downlight with 16-gauge galvanized steel mounting frame, torsion spring brackets, vertically adjustable mounting brackets, 16-gauge flat bar hangers, height adjustment, one-piece die cast trim, finned heat sink, wet location rated lens, elliptical upper reflector, micro-prism lens, matt-white splay, thermal protection, 70% lumen output for more than 50,000 hours, 1000 delivered lumens, 14.2 input watts, wet location listed and 5-year limited warranty.

Lithonia #REALC-D6MW-1000L-35K-.95SC
Omega and Pathway equal

2.3 LAMPS AND BALLASTS

A All lamps shall be rated at 120 volts. All lamps shall be as manufactured by General Electric, Osram, Phillips, or approved equal. All ballasts shall be Advance, Motorola, General Electric or approved equal. Ballasts to be energy-saving magnetic or electronic, as specified with each fixture type. All lamps shall be of the same manufacture. All fluorescent and compact fluorescent lamps shall have a minimum CRI of 82.

PART 3 - EXECUTION

2.1 LIGHT FIXTURES

A. All steel supports required for lighting fixtures, in addition to those furnished and installed under the general building construction, shall be furnished and installed under this section of the specifications.

B. Fixtures in suspended ceilings shall be independently secured to framing members in accordance with NEC 410-16. Electrical contractor is responsible for the installation of a minimum of two grid support wires at opposing comers of each light fixture installed in a lay-in or gypsum ceiling, from the fixture to the structure. Each grid light fixture shall be installed with grid-clips.

END OF SECTION 265000

Technical Specifications

Rest Room Construction Station #15
3308 Shillito Park
Lexington, KY

Lexington Fire Department
Division of Fire and Emergency Services
Facilities Maintenance Bureau
219 East Third St.
Lexington, KY 40508

Bid No. 57-2014

Prepared by: Fitzsimons Office of Architecture
112 West Third St.
Lexington, KY 40508
859-243-0838
KTA Consulting Engineers
1708 Jaggie Fox Way
Lexington, KY 40511
(859) 253-2459

Technical Specifications Contents

SECTION 010000 - Special Requirements

1.1 SECTION INCLUDES:
This Section includes information which supplements the General Conditions:

1. Scope
2. Time for Completion
3. Ordering Materials
4. Storage of Materials
5. Protection of Existing Facilities
6. Project Closeout and Record Drawings.
7. Access to Site and Building
8. Temporary Parking
9. Owner Occupancy
10. Interruption and Protection of Utilities
11. Progress Meetings
12. Work by Owner
13. Field Office
14. Communications Service
15. Staging and Storage
16. Sanitary Facilities
17. Utilities
18. Final Cleaning
19. Substantial Completion, Final Inspections and Subsequent Inspections
20. Divisions of Specifications
21. Disputes
22. Allocation of Work
23. Codes and Ordinances
24. Conduct of Employees
25. Contractor Coordination
26. Cutting and Patching
27. Fire-Smoke Detectors - Existing
28. Submittal Procedure
29. Construction Photographs
30. Proposed Materials and Equipment List
31. Interior Enclosures
32. Progress Cleaning
33. Hazardous Materials

1. **SCOPE**

A. Project Description: This project involves the construction of a new rest room with shower in the existing locker room. Fire Station #15 has a concrete slab floor cast over pre-cast concrete T sections, over a crawl space. The new rest room is to attach on to existing utilities. Existing utilities are to be extended to the new location for piping, electric and HVAC.

B. Bidders, subcontractors and suppliers, before submitting proposals, shall visit and examine the site to satisfy themselves as to the nature and scope of the existing conditions at the site. The submission of a proposal will be construed as evidence that a visit and examination have been made. Later claims for labor equipment, or materials required for difficulties encountered which could have been foreseen had such an examination been made will not be recognized.

C. The Work under this contract does not include any items marked N.I.C. on the Drawings (Not In Contract).

D. It shall be the responsibility of all Contractors and Subcontractors to carefully examine all Drawings, Specifications and Contract Documents pertaining to all phases of the construction in order that Contractor and Subcontractor may foresee all requirements for coordination of their work. Submission of a bid shall be construed as evidence that such an examination has been made. Claims based on unforeseen requirements will not be

considered.

E. Should any error or inconsistency appear in Drawings or Specifications, the Contractor, before proceeding with the work, must make mention of the same to the Architect for proper adjustment, and in no case proceed with the work in uncertainty or with insufficient drawings.

F. The Contractor and each Subcontractor shall be responsible for verification of all measurements at the building before ordering any materials or doing any work. No extra charge or compensation shall be allowed due to differences between actual dimensions and dimensions indicated on the Drawings. Any such discrepancy in dimensions which may be found shall be submitted to the Architect for his consideration before the Contractor proceeds with the work in the affected areas.

G. Contractors shall follow sizes in Specification or figures on Drawings, in preference to scale measurements and follow detail drawings in preference to general drawings.

2. **TIMES FOR COMPLETION:**

A. Substantial Completion: Subject to the conditions of the General Conditions, the total work to be done under this Construction Contract shall be commenced at the time stipulated in the Work Order to the Contractor and shall be substantially completed within: ***90 calendar days*** for entire project.

B. The date of Substantial Completion, to be determined, shall be the date certified by the Architect when the work is sufficiently complete, in accordance with the Contract Documents, so the Owner may conditionally accept, and beneficially occupy and use, all of the facilities provided under this Construction Contract.

C. Final Completion: Subject to the conditions of the General Conditions, the total work to be done under this Construction Contract shall be fully completed within thirty (30) consecutive calendar days after the Date of Substantial Completion.

D. The Date of Final Completion shall be the date that the work is complete and all Contract requirements have been fulfilled by the Contractor.

3. **ORDERING MATERIALS**

A. Immediately following Award of Contract for this work, Contractor shall determine source of supply for all materials and length of time required for their delivery, including materials of subcontractors, and order shall be placed for such materials based on the project schedule.

B. If, for any reason, any item specified will not be available when needed and Contractor can show that he has made a reasonably persistent effort to obtain item in question, the Architect is to be notified in writing within 15 days after Contract is signed; otherwise the Contractor will not be excused for delays in securing materials specified and will be held accountable if completion of building is thereby delayed.

4. **STORAGE OF MATERIALS**

A. Each Contractor providing materials and equipment shall be responsible for the proper and adequate storage of his materials and equipment, and for the removal of same upon completion of his work. Storage of materials at the site shall be confined to areas within Contract Limits or as otherwise designated by the Owner at the Pre-Construction Conference. Coordinate with Architect. Storage will be limited to the site.

5. **PROTECTION OF EXISTING FACILITIES**

A. The General Contractor shall repair and/or replace, at no expense to the Owner, any sections of existing roads, streets, sidewalks, curbs, grassed areas, shrubs, trees, utilities, buildings, automobiles, trucks and other structures or vehicles damaged by reason of work performed under this Contract or incidental thereto, whether by his own forces or by his subcontractors or his material suppliers.

Care should be taken by the Contractor to protect from injury any persons and vehicles that will use the building during construction. The Contractor, at the Construction Conference will outline his proposed procedures of construction, determine degrees of potential dangers and outline protective measures he will take during various construction phases.

B. Exterior Enclosures. Provide temporary weather-tight closures to exterior openings to protect the interior at all times for all types of weather.

C. Security. Provide security to protect work and existing facilities from unauthorized entry, vandalism or theft. Verify with Owner the schedule for opening and closing the building.

6. PROJECT CLOSEOUT AND RECORD DRAWINGS

A. The Owner will furnish one (1) set of blue line prints which the Contractor shall keep on file in the field office. The Contractor shall record on these prints from day to day as the work progresses, all changes and deviations from the contract Drawing, with special emphasis on the exact location of all work concealed from view by offset distances to surface improvements such as building corners, curbs, etc. Entries and notations shall be neat, legible and permanent. These prints shall be delivered to the Architect upon completion of this project. Approval of final payment will be contingent upon compliance with these provisions.

B. Provide a minimum of three (3) bound final installation, training, operation, maintenance and repair manuals to be turned over to the LFUCG's Project Manager and approved for content by the Owner prior to acceptance of substantial completion.

C. Manuals provided must be of sufficient detail to enable customer to install, calibrate, train, operate, maintain, service and repair every system, subsystem, and/or piece of equipment installed on or as part of this contract. Manual must contain:

1. Project Title, Project number, Location, dates of submittals, names of Design Consultant, Engineer, Contractor, and Contractor's Subs. Provide phone numbers and addresses for Contractor and Subs.

2. An Equipment Index that includes vendors name, address, and telephone number for all equipment purchased on the project.

3. Emergency instructions with phone numbers and names of contact persons on warranty items.

4. All manuals in binders shall be original copies provided by the manufacturer. At minimum these binders must include:

Installation manuals	Calibration manuals
Training manuals	Repair manuals
Service Manual	Parts list

Reviewed shop drawings

5. Included in the front of the "Operation and Maintenance Manual" shall be a copy of the Interior and Exterior Finish plan and Schedule listing all finish materials, the manufacturer, the finish color, and the manufacturer's paint number.

D. Submission of final set of record drawings.

1. The Contractor, on copies of the Contract Documents provided by the contractor, shall submit a Record Set of Drawings indicating all deviations of construction as originally specified in the contract documents. These Record Drawings will compile information from the General Contractor as well as all sub-contractors. The Contractor shall provide a qualified representative to update the Record Set of Drawings as construction progresses.

2. Approval of the final payment request will be contingent upon compliance with these provisions. The Contractor's Record Set of Drawings shall be delivered to the Design Consultant at their completion so that the Design Consultant may make any changes on the original contract drawings.

7. ACCESS TO SITE AND BUILDING

A. Contact the architect for arrangements to visit the building.

8. TEMPORARY PARKING

A. Parking is limited to existing parking lot, coordinate with owner.

9. OWNER OCCUPANCY:

A. The site will be occupied during construction.

B. The contractor shall confine his operations, including delivery and unloading of materials and equipment, to the areas within the designated Contract Limits.

10. INTERRUPTION AND PROTECTION OF UTILITIES:

A. Utilities on the site are not to be interrupted without 48 hour notice to the Owner.

B. The contractor shall protect all utilities during construction.

11. PROGRESS MEETINGS

A. With the express purpose of expediting construction and providing the opportunity for cooperation of affected parties, meetings may be called which shall be attended by representatives of:

(1) Project Manager LFUCG, Fire Department, other
(2) the Architect and Consultants
(3) the General Contractor
(4) all Subcontractors

A location on or near the site will be designated where such meetings will be held. The frequency of meeting shall be twice a month for a formal meeting.

12. WORK BY OWNER

A. The owner may under take minor construction projects related to this project. The owner will coordinate any projects with the contractor and not disrupt the construction project.

13. FIELD OFFICE

A. Field office is not required, contractor cannot leave any items on site without permission of Station.

14. COMMUNICATIONS SERVICE

A. Contractor to arrange for and provide direct on-site communication by telephone during the construction of this project. Cellular phone is acceptable.

15. STAGING AND STORAGE AREA

A. All staging and storage is to occur within the site limits.

16. SANITARY FACILITIES

A. Restroom facilities are to be provided by the contractor for his workers and subcontractors. Drinking water shall be provided from an approved safe source, so piped or transported as to be kept clean and fresh and served from single service containers or satisfactory types of sanitary drinking stands or fountains. All such facilities and services shall be furnished in strict accordance with existing governing health regulations.

17. UTILITIES

A. The Contractor to provide can connect to existing electric service for construction power.

B. The Contractor to provide can connect to existing water service for construction water.

18. FINAL CLEANING:

A. Execute prior to final inspection. Clean building according to general conditions final cleaning. The intent is to clean and vacuum the entire building to keep dirt from being drawn into the HVAC system.

B. Clean interior and exterior surfaces exposed to view.

C. Clean debris from site, roofs, gutters, downspouts and drainage systems.

D. Remove waste and surplus materials, rubbish and construction facilities from the site.

19. SUBSTANTIAL COMPLETION, FINAL INSPECTION & SUBSEQUENT INSPECTIONS:

A. In as much as all parties with and intend to prosecute the work in a diligent and good faith manner, and to complete the work in a timely fashion, the Contractor shall notify the Architect when the Contractor believes he has attained Substantial Completion. Notification shall be made at least five (5) calendar days prior to the date set to the Substantial Completion inspection. The Contractor shall comply with the prerequisite

requirements for Substantial Completion as set forth in General Conditions.

B. Upon receipt of the Contractor's request, the Architect will either proceed with inspection or advise Contractor of prerequisites not fulfilled. Following initial inspection, the Architect will either prepare a certificate of substantial completion, or advise the Contractor of work which must be performed prior to issuance of the certificate of substantial completion. The Architect will repeat the inspection when requested and assure that the work has been substantially completed. Results of the completed inspection will form the initial "punch list" for final acceptance.

C. The Architect will re-inspect the work upon the receipt of the Contractor's notice that he believes in good faith that except for those items whose completion has been delayed due to circumstances that are acceptable to the Architect, the work has been completed, including punch list items from earlier inspections. Punch List shall be completed within 30 working days or Liquidated Damages can be assessed. Upon completion of re-inspection, the Architect will either recommend final acceptance and final payment, or will advise the Contractor of work not completed or obligations not fulfilled as required for final acceptance by issuance of another punch list. The architect will inspect for punch list completion only twice.

D. The Contractor, upon completion of all outstanding items set forth on the punch list, shall notify the Architect of the completion of the work. The Architect shall verify completion of the work by an on-site inspection.

E. If at this final inspection items remain on the punch list the general contractor shall be responsible for the cost of re-inspection by the architect and engineer. The cost is to be determined prior to the inspection but will not be less than hourly amounts noted on the Architect and Owner contract.

20. DIVISION OF SPECIFICATIONS:

A. Division of Specification into sections is done for convenience of reference and is not intended to control contractors in dividing work among subcontractors or to limit scope of work performed by any trade under any given section.

21. DISPUTES:

A. Contractor is hereby put on notice that it is his contractual obligation to adjust differences between his several subcontractors. Attempts to have the Architect or Owner settle disputes between Prime Contractor and his subcontractors, will not be given consideration.

22. ALLOCATION OF WORK:

A. Where certain materials are specified to be installed under various headings, it shall be the responsibility of the General Contractor to reallocate such work under the proper subcontractor if the specification is in conflict with local jurisdiction.

23. CODES AND ORDINANCES:

A. All branches of the work shown on the Plans or specified, whether specifically mentioned or not, shall be executed in strict compliance with all local or state regulations and codes and shall be in compliance with all national codes, when same have jurisdiction.

24. CONDUCT OF EMPLOYEES:

A. No Smoking is allowed on the job site.

B. The Contractor shall post signs conspicuously on the site to prohibit the use or possession of alcoholic beverages by any of his employees while they are on the grounds of this project. The Contractor is responsible for reporting violations of the provisions of KRS 244 to the proper authorities and for taking the necessary action to insure that the intent of this paragraph is carried out

25. **CONTRACTOR COORDINATION:**

A. The General Contractor and all Subcontractors shall cooperate and coordinate their work to expedite the progress of the project. All Subcontractors shall review and refer to the Drawings and Specifications of other trades involved with their particular work before proceeding. Any work installed which conflicts with another trade and had not been brought to the attention of the Architect prior to installation shall be removed at no additional expense to the Owner.

26. **CUTTING AND PATCHING:**

A. This is a historic building. All craftsmen are to be skilled in working on historic building. Extra time and care is needed to properly selectively demolish and rebuild this project. Matching new materials to the existing will require test patches to be approved before entire work is started. There will be discussion of the construction techniques and methods to make sure that the finished product will meet the required standards.

B. Employ a skilled and experienced installer to perform cutting and patching; replace materials ONLY if existing materials cannot be restored by splicing, filling and other appropriate restoration procedures.

C. Fit work tight to adjacent elements. Seal voids and gaps with appropriate sealant as indicated in plans and specifications. Consult the architect for detailing questions.

27. **FIRE-SMOKE DETECTORS - EXISTING:**

A. Existing systems are to remain in operation at all times except when construction will cause false alarms. Devise methods to cover and protect existing equipment during construction. Remove to keep system operational while no construction underway.

28. **SUBMITTAL PROCEDURES:**

A. Submittal form to identify Project, Contractor, Subcontractor Supplier and pertinent Contract Document Reference Numbers.

B. Apply Contractor's stamp or signature, certifying that review, verification of products required, field dimensions, adjacent work and coordination of information is in accordance with the requirements of the Work and Contract Documents.

C. Identify variations from Contract Documents and Product Specifications which may be detrimental to successful performance of the completed work.

D. Revise and resubmit submittals as required; identify all changes made since previous submittal.

E. Product Data. Submit the number of copies which the Contractor requires plus two copies to be retained by the Architect/Engineer. Mark each copy to identify applicable product, model, options, etc. Supplement manufacturers' standard data to provide information unique to this project.

F. Samples. Submit samples to illustrate functional and aesthetic characteristics of the product. Submit samples of projects from the full range of manufacturers' standard colors or in custom colors selected,

textures, and patterns for Architect/Engineer's selection.

29. CONSTRUCTION PHOTOGRAPHS:

A. Provide digital photographs of all uncovered conditions, and prior to covering any detail of construction.

30. PROPOSED MATERIALS AND EQUIPMENT LIST:

A. Within one hour of bid opening the successful low bidder must submit complete list of major Products proposed for use, with name of manufacturer, trade name, and model number of each Product.

31. INTERIOR ENCLOSURES:

A. Provide interior enclosures to control duct while performing demolition or cutting plaster, concrete, terrazzo, masonry or other material that generates dust.

B. Provide interior enclosures as required by hazardous materials rules and regulations.

32. PROGRESS CLEANING:

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

33. HAZARDOUS MATERIALS:

A. The owner has tested suspect materials in the building and there are no currently known hazardous materials on site.

B. The architect and architect's consultants shall have no responsibility for the discovery, presence, handling, removal or disposal of or exposure of persons to hazardous materials in any form at the project site, including but not limited to asbestos, asbestos products, polychlorinated biphenyl (PCB) or other toxic substances.

C. If the work which is to preformed under this contract interfaces in any way with existing components which contain hazardous materials, it shall be the contractor's responsibility to contact the Owner or Owner's environmental consultant regarding the proper means and methods to be utilized in dealing with the hazardous materials.

D. By execution of the contract for construction, the Contractor hereby agrees to bring no claim for negligence, breach of contract, indemnity, or otherwise against the Architect, his principals, employees, agents, and consultants if such claim in any way would involve the investigation of or remedial work related to hazardous materials in any form at the project site, including but not limited to asbestos, asbestos products, polychlorinated biphenyl (PCB) or other toxic substances. The contractor further agrees to defend, indemnify, and hold the Architect and his principals, employees, agents, and consultants harmless from any such claims related to hazardous materials that may be brought by the Contractor's Subcontractors, Suppliers, or other third parties who may be acting under the direction of the Contractor pursuant to this project.

END OF SECTION 010000 - Special Requirements

SECTION 020700 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. The construction of a new rest room should have very little impact on existing conditions. Only minor demolition is needed install new partitions, plumbing, HVAC to a single restroom.
2. Relocation of existing attic opening.
3. Patching and repairs are to be completed under other sections of the specifications but coordination between demolition and renovation must be considered and planned for.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section 01001 "Summary of Work" for use of the building requirements.
2. Division 1 Section 01001 "Cutting and Patching" for cutting and patching procedures for selective demolition operations.
3. Division 1 Section 01001 "Contract Closeout" for record document requirements.

1.3 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.

1.4 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 with further disposition at the Contractor's option.

1.5 QUALITY ASSURANCE

A. Demolition Firm Qualifications: Engage an experienced (min. five years experience) 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.

1.6 PROJECT CONDITIONS

A. Owner assumes no responsibility for actual condition of buildings to be selectively demolished.
1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

B. Asbestos: It is not expected that asbestos will be encountered in the Work. If any materials suspected of containing asbestos are encountered, do not disturb the materials. Immediately stop all work. Remove workmen from the area. Immediately notify the Architect and the Owner.

PART 2 - PRODUCTS

2.1 REPAIR MATERIALS

A. Use repair materials identical to existing materials.

1. Where identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
2. Use a material whose installed performance equals or surpasses that of existing materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. 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.

3.2 UTILITY SERVICES

A. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services serving building to be selectively demolished.

1. Arrange to shut off indicated utilities with LFUCG Division of Fire and Emergency Services.

B. Utility Requirements: A licensed electrical contractor shall be employed for shutting off, disconnecting, removing, and sealing or capping utility services. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 PREPARATION

A. Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.

B. Employ a certified, licensed exterminator to treat building and to control rodents and vermin before and during selective demolition operations.

C. Conduct demolition operations and remove debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

D. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and 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.
2. Cover and protect furniture, furnishings, and equipment that have not been removed.

F. Coordinate new openings in the existing concrete slab with existing structural system.

3.4 POLLUTION CONTROLS

A. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.

1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

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.

3.5 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. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition work above each floor or tier before disturbing supporting members on lower levels.
2. 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.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

3.6 PATCHING AND REPAIRS

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

B. Patching is specified in Division 1 Section "Cutting and Patching."

C. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.

D. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction to remain in a manner that eliminates evidence of patching and refinishing.

E. Patch and repair floor and wall surfaces in the new space where demolished walls or partitions extend one finished area into another. Provide a flush and even surface of uniform color and appearance.

1. Closely match texture and finish of existing adjacent surface.
2. Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
3. Where patching smooth painted surfaces, extend final paint coat over entire unbroken surface containing the patch after the surface has received primer and second coat.
4. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
5. Inspect and test patched areas to demonstrate integrity of the installation, where feasible.

F. Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site. Remove debris daily from the site.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them. The disposal of any materials removed by the contractor must be in compliance with all building codes, local, city, state and federal requirements.

3.8 CLEANING

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

END OF SECTION 020700

SECTION 061000 - GENERAL CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
1. Wall framing for new partitions and wood nailers, framing and blocking.
2. Finish carpentry, miscellaneous trim work.
3. Interior architectural woodwork.
4. Solid surface counter top, substrate, backsplash, coordinated with ADA under-counter piping protection panels.

B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Division 9 Section "Painting" for back priming and finishing of finish carpentry.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for each type of factory-fabricated product and process specified, including details of construction relative to materials, dimensions of individual components, profiles, finishing and installation.

C. Material certificates for dimensional lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use as well as design values approved by the Board of Review of American Lumber Standards Committee (ALSC).

D. Wood treatment data as follows including chemical treatment manufacturer's instructions for handling, storing, installation, and finishing of treated material:
1. For each type of preservative treated wood product include certification by treating plant stating type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards.
2. Warranty of chemical treatment manufacturer.

E. Shop drawings showing location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

F. Lumber and panel products with non-factory applied finish, 50 sq. in. (300 sq. cm) for lumber and 8 by 10 inches (203 by 250 mm) for panels for each species and cut, with one-half of exposed surface finished.

G. Mockup: Prior to fabricating or installing interior architectural woodwork, cabinetry, construct mockup to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution. Build mockup of the size indicated, using materials indicated for final unit of work, and complying with the following requirements.
1. Locate mockup on site in the location indicated or, if not indicated, as directed by Architect.

2. Notify Architect one week in advance of the date and time when mockup will be installed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain architect's acceptance of mockup before start of final unit of Work.
5. Retain and maintain mockup during construction in an undisturbed condition as a standard for judging the completed Work.
   a. Accepted mockup in an undisturbed condition at the time of Substantial Completion may become part of the completed Work.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Arrange for installation of carpentry items by firms that can demonstrate successful experience in installing carpentry items similar in type and quality to those required for this Project.

B. Source Quality Control: Obtain trim, paneling and siding each from a single manufacturer to ensure a match of quality, color, pattern and texture.

C. Comply with the AWI Quality Standards of the Architectural Woodwork Institute for grades of interior architectural woodwork, construction, finishes and other requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Storage: Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber; provide for air circulation within and around stacks and under temporary coverings including polyethylene and similar materials.
   1. For lumber pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.

B. Do not deliver interior finish carpentry until concrete, plaster, masonry, ceramic tile, and other wet work is complete and cured to a condition of equilibrium and temperature and humidity are maintained at or near occupancy levels.

1.6 PROJECT CONDITIONS

A. Environmental Conditions: Obtain and comply with finish carpentry manufacturer's and installer's coordinated advice for optimum temperature and humidity conditions for finish carpentry during its storage and installation.

B. Weather Conditions: Proceed with finish carpentry only when existing and forecasted weather conditions will permit exterior finish carpentry to be installed in compliance with manufacturer's recommendations and when substrate is completely dry.

C. Open sealed packages of wood to permit natural adjustment of moisture content and allow wood to acclimate to the room conditions.

D. Field Measurements: Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
   1. Verify locations of concealed framing, blocking, reinforcements, and furring that support woodwork by accurate field measurements before being enclosed. Record measurements on final shop drawings.

1.7 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

1.8 EXTRA MATERIAL

A. Deliver extra material to owner. Before installation begins, furnish not less than 1.0 percent of the quantity of each type of wood trim profile installed on the project packaged with protective covering for storage and identified with labels clearly describing contents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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:
1. Solid Surface Material: NEMA LD 3, grades as indicated, or if not indicated, as required by woodwork quality standard.
a. Ralph Wilson Plastics Co.
b. Formica
c. Pionite
d. Substitutions as per Section 01001.

2.2 MATERIALS

A. General: Provide materials that comply with requirements of the AWI quality standard for each type of woodwork and quality grade indicated and, where the following products are part of interior woodwork, with requirements of the referenced product standards that apply to product characteristics indicated:
1. Hardboard: AHA A135.4.
2. Particleboard: ANSI A208.1, Grade M-2.
3. Softwood Plywood: PS 1.
4. Hardwood Plywood and Face Veneers: HPVA HP-1.

2.3 LUMBER, GENERAL

A. Lumber Standards: Furnish lumber manufactured to comply with DOC PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.

B. Inspection Agencies: Inspection agencies and the abbreviations used to reference them with lumber grades and species include the following:
1. NELMA - Northeastern Lumber Manufacturers Association.
2. SPIB - Southern Pine Inspection Bureau.
3. NHLA - National Hardwood Lumber Association.

C. Grade Stamps: Provide lumber with each piece factory-marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
1. For exposed lumber furnish pieces with grade stamps applied to ends or back of each piece; or omit grade stamps entirely and provide certificates of grade compliance issued by inspection agency.

D. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.

1. Provide dry lumber with 19 percent maximum moisture content at time of dressing and shipment for sizes 2 inches or less in nominal thickness, unless otherwise indicated.

2.4 DIMENSION LUMBER

A. General: Provide dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.

B. For light framing (2 to 4 inches thick, 2 to 4 inches wide) provide the following grade and species:
1. "Construction" grade.
2. Southern Pine graded under SPIB rules.

2.5 MISCELLANEOUS LUMBER

A. General: Provide lumber for support or attachment of other construction, including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members.

B. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shapes shown.

C. Moisture Content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.

D. Grade: For dimension lumber sizes, provide No. 3 or Standard grade lumber per ALSC's NGRs of any species. For board-size lumber, provide No. 3 Common grade per NELMA, NLGA, or WWPA; No. 2 grade per SPIB; or Standard grade per NLGA, WCLIB or WWPA of any species.

2.6 FASTENERS

A. General: Provide fasteners of size and type required for application indicated to provide secure attachment.
1. Provide noncorrosive aluminum fasteners or fasteners with a hot dipped zinc coating per ASTM A 153 or of QISI Type 304 stainless steel.
2. For finish carpentry, countersink nails and fill surface where face nailing is unavoidable.
3. Nails, Wire, Brads, and Staples: FS FF-N-105.
4. Power-Driven Fasteners: CABO NER-272.
5. Wood Screws: ASME B18.6.1.
6. Lag Bolts: ASME B18.2.1. (ASME B18.2.3.8M)
7. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

B. Adhesives: Comply with manufacturer's recommendations for adhesives.

C. Flashing: Comply with requirements of Division 7 Section "Flashing and Sheet Metal" for flashing materials installed in finish carpentry.

D. Sealants: Comply with requirements of Division 7 Section "Joint Sealants" for materials required for sealing.

2.7 ENGINEERED WOOD PRODUCTS

A. General: Provide engineered wood products for which current model code evaluation/research reports exist that are acceptable to authorities having jurisdiction and that evidence compliance for the application indicated with specified requirements and the building code in effect for this Project.

B. Laminated Veneer Lumber: Lumber manufactured by laminating wood veneers in a continuous press using an exterior-type adhesives complying with ASTM D 2559 to produce members with grain of veneers parallel with their lengths and complying with the following requirements:
   1. Veneer Characteristics: Douglas fir or southern pine veneers of varying thickness by widths and lengths standard with manufacturer, end-jointed with a lap-joint, butt joint, or scarf joint.
   2. Allowable Design Stresses: As published by manufacturer, determined from empirical data or by rational engineering analysis, and demonstrated by comprehensive testing performed by a qualified independent testing laboratory.
   3. Sizes: 1-3/4 inches thick by depth and length indicated.
   4. Sizes: As indicated.

C. Prefabricated Wood I Joists: Units manufactured by bonding stress-graded lumber flanges to APA-Performance-Rated panel webs with exterior-type adhesives complying with ASTM D 2559, to produce I-shaped joists complying with the following requirements:
   1. Flange Material: Spruce-pine-fir dimension lumber.
   2. Web Material: Oriented strand board.
   3. Web Material: Plywood complying with PS 1.
   4. Web Material: Either material indicated above, as standard with joist manufacturer.
   5. Allowable Design Stresses: As published by manufacturer, determined according to ASTM D 5055, and demonstrated by comprehensive testing performed by a qualified independent testing laboratory.
   6. Sizes: Depths and widths as indicated, with flanges not less than 1-1/2 inches wide.

D. Composite Joists and Headers: Lumber manufactured by laminating visually graded wood veneers, whose thicknesses range from 0.15 to 0.25 inches in thickness and grain runs parallel to long axis, to narrow faces of oriented strand board to produce rectangular members with veneers making up not less than 32 percent of total cross section.
   1. Wood Species: Veneers and board composed of a random mix of yellow-poplar, sweetgum, red maple, and southern pine; with a minor amount of ash, elm, sycamore, and black gum not to exceed 15 percent of finished product.
   2. Adhesives: Melamine formaldehyde adhesive for gluing veneers to each other and phenol formaldehyde adhesive for gluing veneers to oriented flakeboard.
   3. Allowable Design Stresses: As follows, determined from empirical data or by rational engineering analysis, and demonstrated by comprehensive testing performed by a qualified independent testing laboratory:
      a. Extreme Fiber Stress in Bending (Fb): 1950 psi for single member uses, 2250 psi for multiple member uses.
      b. Modulus of Elasticity in Edgewise Bending (Eb): 1,500,000 psi.
      c. Compression Perpendicular to Veneer Face: 550 psi.
      d. Horizontal Shear of Flakeboard (Fv): 500 psi.
   4. Sizes: 1-1/2 inches thick by depth and length indicated.

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

F. Products: Subject to compliance with requirements, provide one of the following:
   1. Laminated Veneer Lumber:
      a. "Micro=Lam L.V.L Headers and Beams," Trus Joist Corporation.
      b. "Gang-Lam Laminated Veneer Lumber," Mitek Wood Products, Inc.
   2. Prefabricated Wood I Joists:
      a. "Alpine Structures I-Beams and Headers," Wood Products Division, Alpine Engineered Wood Products, Inc.

b. "Wood I-Beam Prefabricated Wooden I Joists and Headers," Georgia Pacific Corp.
c. "TJI Joists," Trus Joist Corporation.

3. Composite Joists and Headers:
a. "Arrowood Joists VJ1," Fibreboard Technology Corp.

2.8 CONSTRUCTION PANELS, GENERAL

A. Construction Panel Standards: Comply with PS 1 "U.S. Product Standard for Construction and Industrial Plywood" for plywood construction panels and, for products not manufactured under PS 1 provisions, with APA PRP-108.

B. Trademark: Furnish construction panels that are each factory-marked with APA trademark evidencing compliance with grade requirements.

2.9 CONCEALED PERFORMANCE-RATED CONSTRUCTION PANELS

A. General: Where construction panels are indicated for the following concealed types of applications, provide APA Performance-Rated Panels complying with requirements designated under each application for grade designation, span rating, exposure durability classification, edge detail (where applicable), and thickness.

2.10 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, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of AISI Type 304 stainless steel.

B. Nails, Wire, Brads, and Staples: FS FF-N-105.

C. Power Driven Fasteners: National Evaluation Report NER-272.

D. Wood Screws: ANSI B18.6.1.

E. Lag Bolts: ANSI B18.2.1.

F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and where indicated, flat washers.

2.11 METAL FRAMING ANCHORS

A. General: Provide metal framing anchors of type, size, metal, and finish indicated that comply with requirements specified including the following:
1. Current Evaluation/Research Reports: Provide products for which model code evaluation/research reports exist that are acceptable to authorities having jurisdiction and that evidence compliance of metal framing anchors for application indicated with the building code in effect for this Project.
2. Allowable Design Loads: Provide products for which manufacturer publishes allowable design loads that are determined from empirical data or by rational engineering analysis and that are demonstrated by comprehensive testing performed by a qualified independent testing laboratory.

B. Galvanized Steel Sheet: Steel sheet zinc-coated by hot-dip process on continuous lines prior to fabrication to comply with ASTM A 525 for Coating Designation G60 and with ASTM A 446, Grade A (structural quality); ASTM A 526 (commercial quality); or ASTM A 527 (lock-forming quality); as standard with manufacturer for type of anchor indicated.

1. Use galvanized steel framing anchors for rough carpentry exposed to weather, in ground contact, or in area of high relative humidity, and where indicated.

C. Painted Steel Sheet: ASTM A 366 (commercial quality) cold rolled steel sheet or ASTM A 570, Grade 33 (structural quality) hot-rolled steel sheet, as standard with manufacturer for type of anchor indicated, coated after fabrication with manufacturers standard, fast-curing, lead-free "universal primer" resistant to normal atmospheric corrosion.
1. Use painted steel framing anchors for rough carpentry not exposed to weather, in ground contact, or in area of high relative humidity.

2.12 MISCELLANEOUS MATERIALS

A. Sill Sealer Gaskets: Glass fiber resilient insulation fabricated in strip form for use as a sill sealer; 1 inch nominal thickness compressible to 1/32 inch; selected from manufacturer's standard widths to suit width of sill members indicated; in rolls of 50 feet or 100 feet in length.

B. Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by both adhesive and panel manufacturer.

C. Water Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbonate (IPBC) as its active ingredient.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Discard units of material with defects that impair quality of carpentry construction and that are too small to use in fabricating carpentry with minimum joints or optimum joint arrangement.

B. Set carpentry to required levels and lines, with members plumb and true to line and cut and fitted.

C. Fit carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.

D. Securely attach carpentry work to substrate by anchoring and fastening as required to securely attach.

E. Countersink nail heads on exposed carpentry work and fill holes.

F. Use common wire nails for rough carpentry work, unless otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners

3.2 WOOD FRAMING, GENERAL

A. Framing Standard: Comply with N.F.P.A. "Manual for Wood Frame Construction," unless otherwise indicated.

B. Install wall framing members of nominal 2" x 4"'s at 16" on center or as required to match existing.

C. Install roof framing members of nominal 2" x (x)"'s as noted on drawings at 16" on center or as required to match existing.

D. Anchor and nail as required to securely attach, and to comply with the following:
   1. "Appendix C - Recommended Nailing Schedule" of the BOCA National Building Code.

E. Do not splice structural members between supports.

F. Firestop concealed spaces of wood framed walls and partitions at each floor level and at the ceiling line of the top story. Where firestops are not automatically provided by the framing system used, use closely fitted wood blocks of nominal 2-inch-thick lumber of the same width as framing members.

3.3 FINISH CARPENTRY EXAMINATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting installation and performance of finish carpentry. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.4 FINISH CARPENTRY PREPARATION

A. Clean substrates of projections and substances detrimental to application.

B. Condition finish carpentry to average prevailing humidity conditions in installation areas before installation for a minimum of 24 hours unless longer conditioning recommended by manufacturer.

C. Backprime lumber for painted finish exposed on the exterior. Comply with requirements for surface preparation and application in Section "Painting."

3.5 FINISH CARPENTRY INSTALLATION, GENERAL

A. Do not use finish carpentry materials that are unsound, warped, bowed, twisted, improperly treated or finished, not adequately seasoned, or too small to fabricate with proper jointing arrangements.
   1. Do not use manufactured units with defective surfaces, sizes, or patterns.

B. Install finish carpentry plumb, level, true, and aligned with adjacent materials. Use concealed shims where required for alignment.
   1. Scribe and cut finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
   2. Install to tolerance of 1/8 inch in 8 feet for plumb and level. Install adjoining finish carpentry with 1/16 inch maximum offset for flush installation and 1/8 inch maximum offset for reveal installation.
   3. Coordinate finish carpentry with materials and systems that may be in or adjacent to standing and running trim and rails. Provide cutouts for mechanical and electrical items that penetrate exposed surfaces of trim and rails.

C. Finish in accordance with specified requirements.

D. Refer to Division 9 Sections for final finishing of finish carpentry.

3.6 FINISH CARPENTRY, STANDING AND RUNNING TRIM AND RAILS

A. Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Stagger joints in adjacent and related standing and running trim and rails. Cope at returns and miter at corners to produce tight-fitting joints with full-

surface contact throughout length of joint. Use scarf joints for end-to-end joints. Plane back of casings to provide uniform thickness across joints if required.
1. Match grain pattern across joints.
2. Drill pilot holes in hardwood prior to nailing or fastening to prevent splitting. Fasten to prevent movement or warping. Countersink nail heads on exposed carpentry work and fill holes.
3. Fit exterior joints to exclude water. Apply flat grain lumber with bark side exposed to weather.

B. Condition woodwork to average prevailing humidity conditions in installation areas prior to installing.

3.7 ADJUSTING

A. Repair damaged or defective finish carpentry where possible to eliminate functional or visual defects. Where not possible to repair, replace finish carpentry. Adjust joinery for uniform appearance.

3.8 CLEANING

A. Clean finish carpentry on exposed and semiexposed surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.

3.9 PROTECTION

A. Provide final protection and maintain conditions that ensure finish carpentry is without damage or deterioration at time of Substantial Completion.

3.10 INTERIOR ARCHITECTURAL WOODWORK

A. PREPARATION
1. Condition woodwork to average prevailing humidity conditions in installation areas prior to installing.
2. Prior to installation of architectural woodwork, examine shop fabricated work for completion, and complete work as required, including back priming and removal of packing.

B. INSTALLATION
1. Install woodwork 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 (including tops); and with no variations in flushness of adjoining surfaces.
2. Scribe and cut work to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.
3. Pressure treated wood: Handle, store, and install pressure treated wood in compliance with recommendations of chemical treatment manufacturer including those for adhesives, where required for installation.
4. Anchor woodwork to anchors or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fasteners heads are required, use fine finishing nails for exposing nailing, countersunk and filled flush with woodwork, and matching final finish where transparent finish is indicated.
5. 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 and comply with referenced Quality Standards for joinery.
6. Cabinets: install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered

operation. Complete the installation of hardware and accessory items as indicated. Maintain veneer sequence matching (if any) of cabinets with transparent finish.

7. Tops: Anchor securely to base units and other support systems as indicated.
8. Secure backsplashes to tops with concealed metal brackets at 16" 0.0.
9. Wood storage shelving: Complete the assembly of units and install in the areas indicated, including hardware and accessories as indicated.
10. Paneling: Anchor paneling to supporting substrate with concealed panel-hanger clips and by blind nailing on backup strips, splined-connection strips, and similar associated trim and framing. Do not face nail unless otherwise indicated.
    a. Install flush paneling with no more than 1/16 inch in 96-inch (1.5 mm in 2400-mm) vertical cup or bow and 1/8 inch in 96-inch (3 mm in 2400-mm) horizontal variation from a true plane.

3.11 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork where possible to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean woodwork on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

3.12 INSTALLATION

A. Quality Standard: Install woodwork to comply with WIC Section 26 for the same grade specified in Part 2 of this Section for type of woodwork involved.

B. Install woodwork plumb, level, true, and straight with no distortions. Shim as required with concealed shims. Install to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm) for plumb and level (including tops).

C. Scribe and cut woodwork to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.

D. Cabinets: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.
   1. Install cabinets with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
   2. Maintain veneer sequence matching of cabinets with transparent finish.

E. Tops: Anchor securely to base units and other support systems as indicated. Caulk space between backsplash and wall with specified sealant.
   1. Install countertops with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.

F. Complete the finishing work specified in this Section to the extent not completed at shop or before installation of woodwork. Fill nail holes with matching filler where exposed. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats were applied in the shop.

3.13 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork where possible to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean woodwork on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 061000

SECTION 079000 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes joint sealants for the following locations:
   1. Interior joints where rest room installed.

B. Related Sections: The following sections contain requirements that relate to this Section:
   1. Division 6 Section "Woodwork" for sealing all woodwork and carpentry.
   2. Division 9 Section "Painting."

1.3 SYSTEM PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that have been produced and installed to establish and to maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.

1.4 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data from manufacturers for each joint sealant product required.
   1. Certification by joint sealant manufacturer that sealants plus the primers and cleaners required for sealant installation shall contain no volatile organic compounds.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has completed joint sealant applications similar in material, design, and extent to that indicated for Project that have resulted in construction with a record of successful in-service performance.

B. Conform to Sealant and Waterproofers Institute requirements for materials and installation.

C. Product Testing: Provide comprehensive test data for each type of joint sealant based on tests conducted by a qualified independent testing laboratory on current product formulations within a 24-month period preceding date of Contractor's submittal of test results to Architect.
   1. Test elastomeric sealants for compliance with requirements specified by reference to ASTM C 920. Include test results for hardness, stain resistance, adhesion and cohesion under cyclic movement (per ASTM C 719), low-temperature flexibility, modulus of elasticity at 100 percent strain, effects of heat aging, and effects of accelerated weathering.

D. Field-Constructed Mock-Ups: Prior to installation of joint sealants, apply elastomeric sealants as follows to verify selections made under

sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution:

1. Joints in field-constructed mock-ups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants specified in this Section.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multi-component materials.

B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Conditions: Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer.
2. When joint substrates are wet.

B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than allowed by joint sealant manufacturer for application indicated.

C. Joint Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.

1.8 SEQUENCING AND SCHEDULING

A. Sequence installation of joint sealants to occur not less than 21 nor more than 30 days after completion of waterproofing, unless otherwise indicated.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, joint fillers, 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: Provide color of exposed joint sealants to comply with the following:

1. Provide selections made by Architect from manufacturer's full range of standard colors for products of type indicated.

2.2 ELASTOMERIC JOINT SEALANTS

A. Exterior sealant, except paving joints, shall be Sonolastic NP-I by Sonneborn, Dymetric by Tremco, Synthacalk GC-5 by Pecora, or approved equal.

B. Interior sealant shall be Pecora AC-20 acrylic or equal by Sonneborn or Tremco.

C. Joint fillers and back-up materials, solvents, primers, bond breakers, and cleaners shall be as recommended by sealant

manufacturer for various conditions encountered and shall be non-bituminous material.

2.3 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from pre-construction 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 in any way joint substrates and adjacent nonporous surfaces, and formulated to promote optimum adhesion of sealants with joint substrates.

C. Masking Tape: Non-staining, non-absorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance. Do not proceed with installation of joint sealants until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturer and the following requirements:
1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean concrete, masonry, unglazed surfaces of ceramic tile, and similar 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 from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
3. Remove laitance and form release agents from concrete.
4. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile, and other 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.

B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealant manufacturer based on pre-construction joint sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's recommendations. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. 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.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

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

C. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:
   1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
      a. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width.
      b. Do not stretch, twist, puncture, or tear joint fillers.
      c. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.
   2. Install bond breaker tape between sealants where backer rods are not used between sealants and joint fillers or back of joints.

D. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.

E. Tooling of Non-sag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
   1. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

3.4 CLEANING

A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so that and installations with repaired areas are indistinguishable from original work.

END OF SECTION 079000

SECTION 08 11 00 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
B. Door Schedule see: one hollow metal door frame.

1.2 SUMMARY

A. This Section includes the following:
   1. Non-rated rolled steel frame, no hollow metal door in project, frame for drywall partition, 2x4 wood stud wall, to receive solid core wood door.

B. Relates Sections: The following Sections contain requirements that relate to this section
   1. Section 08710: Finish Hardware.
   2. Section 09900: Painting (Field painting of doors and frames).

1.3 SUBMITTALS

A. Submit shop drawings and product data under provisions of Section 01001.
B. Indicate frame configuration, anchor types and spacings, location of cutouts for hardware, reinforcement, and finish.
C. Indicate door elevations, internal reinforcement, closure method, and cut outs for glazing.
D. Submit manufacturer's installation instructions under provisions of Section 01001.

1.4 QUALITY ASSURANCE

A. Conform to requirements of SDI-100.

1.5 REGULATORY REQUIREMENTS

A. Conform to applicable code for fire rated frames and doors.

1.6 DELIVERY, STORAGE AND PROTECTION

A. Protect products under provisions of Section 01001.

B. Protect doors and frames with resilient packaging sealed with heat shrunk plastic.

C. Break seal on-site to permit ventilation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Steelcraft, Inc.
B. Fenestra
C. Amweld Building Products, Inc.
D. Substitutions: Under provisions of Section 01001.

2.2 FRAMES

A. Interior Frames: 16 gage thick material.

2.3 ACCESSORIES

A. Rubber Silencers Resilient rubber, 3 on strike side.

2.5 PROTECTIVE COATINGS

A. Bituminous Coating: Fibered asphalt emulsion.

B. Primer: Zinc chromate type.

2.6 FABRICATION

A. Fabricate frames as welded unit for drywall slip-on type.

B. Mullions for Double Doors: Removable type. Provide metal T shaped astragals for double doors.

C. Fabricate frames and doors with hardware reinforcement plates welded in place. Provide mortar guard boxes.

D. Reinforce frames wider than 48 inches (1 200 mm) with roll formed steel channels fitted tightly into frame head, flush with top.

E. Prepare frame for silencers. Provide three single rubber silencers for single doors and mullions of double doors on strike side, and two single silencers on frame head at double doors without mullions.

F. Attach fire rated label to each frame and door unit.

G. Close top edge of exterior door flush with inverted steel channel closure. Seal joints watertight.

H. Fabricate frames for masonry wall coursing with 4 inch head member.

I. Galvanize all components of the door and frame. Galvanize the top and bottom cap inserts and all stiffeners or reinforcements. Touch up all welded areas, patched or repaired areas.

2.7 FINISH

A. Interior Units: 0.60 oz/sq ft galvanized.

B. Primer: Baked on.

C. Finish: Site applied. See Section 09900 - Painting.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install frames in accordance with SDI-105.

B. Coordinate with masonry and wallboard wall construction for anchor placement.

3.2 TOLERANCES

A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.3 ADJUSTING AND CLEANING

A. Adjust hardware for smooth and balanced door movement.

END OF SECTION 08 11 00

SECTION 08 21 00 WOOD DOORS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
B. Door Schedule: one new door for rest room.

1.2 SUMMARY

A. This Section includes the following:
1. Wood doors, non-rated and rated. See door schedule for location.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section 08110 - Hollow Metal Doors and Frames
2. Section 08710 - Hardware.

1.3 REFERENCES

A. ANSI/NWMA I.S.1 - Industry Standard For Wood Flush Doors (Includes Standards I.S.1.1 through I.I.S. 1.7).

B. ANSI A135.4 - Basic Hardboard.

C. AWI - Quality Standards of Architectural Woodwork Institute.

1.4 SUBMITTALS

A. Submit shop drawings and product data under provisions of Section 01001.

B. Indicate door elevations, stile and rail reinforcement, internal blocking for hardware attachment.

1.5 QUALITY ASSURANCE

A. Conform to requirements of AWI Quality Standard Custom Grade.

B. Fire-Rated Wood Doors: Provide wood doors that comply with NFPA 80; are identical in materials and construction to units tested in door and frame assemblies per ASTM E 152; and are labeled and listed by UL, Warnock Hersey, or another testing and inspection agency acceptable to authorities having jurisdiction.
1. Oversized, Fire-Rated Wood Doors: For door assemblies exceeding sizes of tested assemblies, provide manufacturer's certificate stating that doors conform to all standard construction requirements of tested and labeled fire-door assemblies except for size.
2. Temperature Rise Rating: At stairwell enclosures, provide doors that have a temperature rise rating of 450 deg F (232 deg C) maximum in 30 minutes of fire exposure.
3. Temperature Rise Rating: At stairwell enclosures, provide doors that have a temperature rise rating of 250 deg F (121 deg C) maximum in 30 minutes of fire exposure.

1.6 REGULATORY REQUIREMENTS

A. Conform to Kentucky Building Code.

1.7 DELIVERY, STORAGE, AND PROTECTION

A. Protect doors with resilient packaging, sealed with heat shrunk plastic. Break seal on site to permit ventilation.

1.8 WARRANTY

A. Provide five year manufacturer's warranty under provisions of Section 01001.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Weyerhauser Company
B. Cal-Wood Door Div.
C. Algoma Hardwood, Inc.
D. Eggers Industries
E. Glen-Mar Door
F. Graham
G. Substitutions: Under provisions of Section 01001.

2.2 DOOR TYPES

A. Strand Core Doors for Transparent Finish: Comply with the following requirements:
1. Faces: White birch, plain sliced.
2. Grade: Premium.
3. Construction: 7 plies.
4. Core: Glued-block core.
5. Bonding: Stiles and rails bonded to core, then entire unit abrasive planed before veneering.

2.3 DOOR CONSTRUCTION (AWI QUALITY STANDARD)

A. Solid, Non-Rated Core: AWI Section 1300, SLC-5 or SLC-7, glue blocked core, 7 plys. Provide solid wood hardware blocking.

2.4 FLUSH DOOR FACING

A. Facing Quality: AWI premium grade.

B. Flush Interior Door Veneer: oak, plain sliced with random matched grain for natural finish.

C. Face Panel: High density overlay plywood face veneer.

2.5 ADHESIVES

A. Interior Doors: AWI, Type II.

2.6 FABRICATION

A. Fabricate non-rated doors in accordance with AWI Quality Standards requirements.

B. Provide flush doors with 1/2 inch thick edge strips of wood species to match face veneer.

C. Pre-machine doors for finish hardware.

2.7 FACTORY FINISHING

A. Comply with referenced AWI quality standard including section 1500 "Factory Finishing". Pre-finish doors at factory.

B. Transparent finish system is to comply with AWI Premium Grade, System #3 alkyd-urea conversion varnish, filled finish, semi-gloss. Finish to match existing stained wood doors.

PART 3 EXECUTION

3.1 INSTALLATION

A. Manufacturer's Instructions: Install wood doors to comply with manufacturer's instructions and referenced quality standard and as indicated.
1. Install fire-rated doors in corresponding fire-rated frames according to requirements of NFPA 80.

B. Job-Fit Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted with fire-rated doors. Machine doors for hardware. Seal cut surfaces after fitting and machining.
1. Fitting Clearances for Non-Fire-Rated Doors: Provide 1/8 inch (3.2 mm) at jambs and heads, 1/16 inch (1.6 mm) per leaf at meeting stiles for pairs of doors, and 1/8 inch (3.2 mm) from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4-inch (6.4-mm) clearance from bottom of door to top of threshold.
2. Fitting Clearances for Fire-Rated Doors: Comply with NFPA 80.
3. Bevel non-fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock and hinge edges.
4. Bevel fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) on lock edge; trim stiles and rails only to extent permitted by labeling agency.

C. Machine cut relief for hinges and closers and coring for handsets and cylinders.

D. Trim door width by cutting equally on both jamb edges.

E. Trim door height by cutting equally on top and bottom edges to a maximum of 3/4 inch (19 mm).

F. Pilot drill screw and bolt holes. Use threaded through bolts for half surface hinges.

G. Prepare doors to receive finish hardware in accordance with AWI requirements.

H. Conform to AWI requirements for fit tolerances.

3.2 INSTALLATION TOLERANCES

A. Maximum Diagonal Distortion: 1/8 inch measured with straight edge, corner to corner.

3.3 ADJUSTING AND CLEANING

A. Adjust for smooth and balanced door movement.

3.4 SCHEDULE: See Door Schedule

END OF SECTION 08 21 00

SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Commercial door hardware for the following swinging doors:
   a. Flush wood.

B. Related Sections include the following:

1. Division 08 Section "Hollow Metal Doors and Frames" for astragals provided as part of fire-rated labeled assemblies and for door silencers provided as part of hollow-metal frames.
2. Division 08 Section "Flush Wood Doors" for astragals provided as part of fire-rated labeled assemblies.

1.3 SUBMITTALS

A. Number of Submittals: All items listed in this section are to be included in one submittal prepared by one Supplier.

B. Product Data: Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.

C. Qualification Data:

1. Finish Hardware Installers
   a. Finish hardware, including electrified hardware, for wood, hollow metal, and aluminum doors to be installed by personnel trained and certified by the manufacturer of the product furnished.
   b. Provide manufacturer's certificates for installer as part of Contractor's bid information. Failure to supply certificates may result in rejection of bid.
2. Hardware Supplier
   a. Established contract hardware firm which maintains and operates an office, display, and stock in project area and which is a factory authorized distributor of the lock being furnished.
   b. Hardware scheduled and furnished by or under direct supervision an Architectural Hardware Consultant.
   c. All schedules submitted to the Architect for approval and job use must carry the signature and certified seal of this Architectural Hardware Consultant.
3. Architectural Hardware Consultant
   a. Currently certified by the Door and Hardware Institute.

b. Full-time employee of the Hardware Supplier or an individual having no contractual ties to any supplier/manufacturer entity.
c. Available at reasonable times to Architect, Owner, and Contractor during course of work.

D. Maintenance Data: For each type of door hardware. Include final hardware schedule, keying schedule, riser diagrams, and point-to-point wiring diagrams in 3-ring binder, labeled on spine with project name and "Door Hardware".

E. Warranty: Special warranty specified in this Section.

F. Other Action Submittals:

1. Door Hardware Sets: Prepared by or under the supervision of a DHI certified Architectural Hardware Consultant, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final door hardware sets with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

a. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule"; other formats will be rejected without review. Double space entries, and number and date each page.
b. Numerical Sequence of Sets and Headings: Submittal headings shall be in exact order as hardware sets in specification: one heading only per set. Submittal set numbers shall relate to specification set numbers, ie. if three headings are required for Set 12 due to door width differences, then the heading numbers should be 12.1, 12.2, and 12.3 or employing similar linking logic.
c. Door Numbers: Identical to those used in the contract documents.
d. Number of Copies: (5).
e. Content: Include the following information:

1) Identification number, location, hand, fire rating, and material of each door and frame.
2) Type, style, function, size, quantity, and finish of each door hardware item.
3) Complete designations of every item required for each door or opening including name and manufacturer.
4) Degree of opening for closer and overhead stop and holder installation.
5) Keying information.
6) Fastenings and other pertinent information.
7) Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
8) Explanation of abbreviations, symbols, and codes contained in schedule.
9) Mounting locations for door hardware.
10) Notes included with specification hardware sets transcribed verbatim into submittal hardware sets.
11) Door and frame sizes and materials.
12) List of related door devices specified in other Sections for each door and frame.

f. Submittal Sequence: Submit the final door hardware sets at earliest possible date, particularly where approval of the

door hardware sets must precede fabrication of other work that is critical in Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the door hardware sets.

2. Keying Schedule: Prepared by or under the supervision of Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.

1.4 QUALITY ASSURANCE

A. Furnish proper hardware types and quantities for door function, hardware mounting and clearances, and to meet applicable codes. Bring discrepancies to the attention of the Architect a minimum of (10) days prior to bid date so that an addendum may be issued. No additional compensation will be allowed after bidding for hardware changes required for proper function, hardware mounting or clearances, or to meet codes.

B. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

C. Source Limitations: All items listed in hardware sets are to be furnished by one supplier. Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.

D. Keying Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." In addition to Owner, Contractor, and Architect, conference participants shall also include Hardware Supplier's Architectural Hardware Consultant. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:

1. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
2. Preliminary key system schematic diagram.
3. Requirements for key control system.
4. Address for delivery of keys.

E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." In addition to Owner, Contractor, and Architect, conference participants shall also include Certified Installer, Hardware Supplier's Architectural Hardware Consultant, and Security Supplier. Review methods and procedures related to electrified door hardware including, but not limited to, the following:

1. Coordinate electrical roughing-in and other preparatory work to be performed by other trades.
2. Review sequence of operation for each type of electrified door hardware.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review required testing, inspecting, and certifying procedures.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

B. Tag each item or package separately with identification related to the final door hardware sets, and include basic installation instructions, templates, and necessary fasteners with each item or package.

C. Deliver keys to Owner by registered mail or overnight package service. Obtain Owner's contact name and address from Architect.

1.6 COORDINATION

A. Templates: Distribute door hardware templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Distribute templates in a timely manner so as not to delay suppliers. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including excessive deflection, cracking, or breakage.
b. Faulty operation of operators and door hardware.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period: Five years from date of Substantial Completion, except as follows:

a. Manual Closers: 10 years from date of Substantial Completion.

1.8 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

B. Maintenance Service: Beginning at Substantial Completion, provide six months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door hardware operation. Provide parts and supplies same as those used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in this and door hardware sets indicated in Part 3 "Door Hardware Sets" Article.

1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products.
2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.

B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Sets" Article. Products are identified by using door hardware designations, as follows:

1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Sets" Article.
2. References to BHMA Standards: Provide products complying with these standards and requirements for description, quality, and function.

C. 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.

2.2 BUTT HINGES, GENERAL

A. Quantity: Provide the following, unless otherwise indicated:

1. Two Hinges: For doors with heights up to 60 inches (1524 mm).
2. Three Hinges: For doors with heights 61 to 90 inches (1549 to 2286 mm).
3. Four Hinges: For doors with heights 91 to 120 inches (2311 to 3048 mm).
4. For doors with heights more than 120 inches (3048 mm), provide 4 hinges, plus 1 hinge for every 30 inches (750 mm) of door height greater than 120 inches (3048 mm).

B. Template Requirements: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.

C. Hinge Height, Width, and Weight: Unless otherwise indicated, provide the following:

1. Doors with Exit Devices or 3'6" or more in width: 5" high, heavy-weight hinges.
2. Doors less than 3'6" in width: 4-1/2" high, standard-weight hinges.

3. Width: 4-1/2" heavy-weight, 4" standard-weight, unless proper clearance requires a different width.
4. Doors with Closers: Antifriction-bearing hinges.

D. Hinge Base Metal: Unless otherwise indicated, provide the following:

1. Exterior and in-swinging restroom door hinges: Stainless steel, with stainless-steel pin.
2. Balance of hinges: Steel, with steel pin.

E. Hinge Options: Provide the following:

1. Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for reverse bevel lockable doors.
2. Corners: Square.
3. Number of knuckles: Five.

F. Fasteners: Comply with the following:

1. Machine Screws: For metal doors and frames. Install into drilled and tapped holes.
2. Wood Screws: For wood doors and frames.
3. Threaded-to-the-Head Wood Screws: For fire-rated wood doors.
4. Screws: Phillips flat-head. Finish screw heads to match surface of hinges.

G. Template Hinge Dimensions: BHMA A156.7.

H. Available Manufacturers:

1. Bommer Industries, Inc. (BI).
2. Hager Companies (HAG).
3. McKinney Products Company; an ASSA ABLOY Group company (MCK).
4. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
5. PBB, Inc. (PBB)

2.3 LOCKS AND LATCHES, GENERAL

A. Accessibility Requirements: Where indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22 N).

B. Latches and Locks for Means of Egress Doors: Comply with NFPA 101. Latches shall not require more than 15 lbf (67 N) to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.

C. Grade 1 or Grade 2 as indicated by model number in hardware sets.

D. Lock Trim:

1. Levers: Cast.

a. Sargent P model with full smooth return.
2. Roses: Forged.
a. Sargent L model.
3. Lockset Designs: Provide design indicated in hardware sets, or, if sets are provided by another manufacturer, provide designs that match those designated.

E. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

1. Bored Locks: Minimum 1/2-inch (13-mm) latchbolt throw.

F. Backset: 2-3/4 inches (70 mm), unless otherwise indicated.

G. Strikes: Manufacturer's standard strike with strike box for each latchbolt or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, and as follows:

1. Strikes for Bored Locks and Latches: BHMA A156.2.

2.4 MECHANICAL LOCKS AND LATCHES

A. Lock Functions: Function numbers and descriptions indicated in door hardware sets comply with the following:

1. Bored Locks: BHMA A156.2.

B. Bored Locks: BHMA A156.2 Grade 1 or 2 as indicated in hardware sets.

1. Available Manufacturers:

a. Best Access Systems; Div. of The Stanley Works (BAS).
b. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
c. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
d. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).
e. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).

2.5 DOOR BOLTS

A. Bolt Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

1. Mortise Flush Bolts: Minimum 3/4-inch (19-mm) throw.

B. Manual Flush Bolts: BHMA A156.16, Grade 1; designed for mortising into door edge.

1. Available Manufacturers:

a. Door Controls International (DCI).
b. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
c. Hager Companies (HAG).
d. IVES Hardware; an Ingersoll-Rand Company (IVS).
e. McKinney Products Company; an ASSA ABLOY Group company (MCK).

f. Rockwood Manufacturing Company (RM).
g. Trimco (TBM).

2.6 LOCK CYLINDERS

A. Standard Lock Cylinders: BHMA A156.5, Grade 1.

B. Cylinders: Provide cylinders for all devices requiring key cylinders to properly function: constructed from brass or bronze, stainless steel, or nickel silver, and complying with the following:

1. Number of Pins: Six.
2. Keyway: Manufacturer's standard.
3. Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.
4. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
5. Bored-Lock Type: Cylinders with tailpieces to suit locks.

C. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:

1. Small-format Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.

D. Construction Keying: Comply with the following:

1. Construction Cores: Provide keyed brass construction cores that are replaceable by permanent cores for locking devices on exterior doors. Provide 5 construction master keys.

a. Replace construction cores with permanent cores as directed by Owner.

E. Supplemental Items: Provide cylinder spacers, collars, and correct cams as needed for proper function of locking devices.

F. Available Manufacturers:

1. Best Access Systems; Div. of The Stanley Works (BAS).
2. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
3. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
4. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).
5. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).

2.7 OPERATING TRIM

A. Materials: Fabricate from stainless steel, unless otherwise indicated.

B. Dimensions: All dimensions, shapes, fasteners, and other properties identical to models specified in hardware sets.

C. Available Manufacturers:

1. Hager Companies (HAG).

2. IVES Hardware; an Ingersoll-Rand Company (IVS).
3. McKinney Products Company; an ASSA ABLOY Group company (MCK).
4. Rockwood Manufacturing Company (RM).
5. Trimco (TBM).

2.8 SURFACE CLOSERS

A. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

1. Comply with the following maximum opening-force requirements:

a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

B. Door Closers for Means of Egress Doors: Comply with NFPA 101. Door closers shall not require more than 30 lbf (133 N) to set door in motion and not more than 15 lbf (67 N) to open door to minimum required width.

C. Fasteners: Manufacturer's standard for arms, shoes and brackets. Sex bolts for fastening closers to doors.

D. Mounting Accessories: Provide shoes, brackets, drop plates, spacers, etc., as needed for proper mounting of closers and arms to door and frame.

E. Spring Size of Units: Provide field-sizable closers, adjustable for spring sizes 1-6, plus 50% extra spring power at spring size 6, to meet field conditions and requirements for opening force.

F. Cylinders: As specified in hardware sets.

G. Mounting Configuration: Unless otherwise indicated by model number in the hardware sets:

1. Do not furnish closers capable of being mounted on the corridor side of doors.
2. Do not furnish regular arm closers in areas accessible to students.
3. If tri-pack closers are furnished for regular arm applications, remove parallel arm shoe from closer box before delivering to job.
4. Parallel Arm closers are to be manufacturer's double forged rigid models.

H. Available Manufacturers:

1. LCN Closers; an Ingersoll-Rand Company (LCN).
2. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
3. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
4. Norton
5. Yale
6. Corbin-Russwin

2.9 PROTECTIVE TRIM UNITS

A. Size:
1. Width
a. Singles, and pairs with removable mullions or surface applied astragals: 2 inches (38 mm) less than door width on push side and 1 inch (13 mm) less than door width on pull side
b. Other pairs: 1 inch (13 mm) less than door width
2. Height: as specified in door hardware sets; or, if constrained by door bottom rail height, 1" less bottom rail height.

B. Fasteners: Manufacturer's machine or self-tapping countersunk screws.

C. Metal Protective Trim Units: BHMA A156.6; beveled 4 sides; fabricated from 0.050-inch- (1.3-mm-) thick stainless steel.

D. Available Manufacturers:

1. Hager Companies (HAG).
2. IVES Hardware; an Ingersoll-Rand Company (IVS).
3. McKinney Products Company; an ASSA ABLOY Group company (MCK).
4. Rockwood Manufacturing Company (RM).
5. Trimco (TBM).

2.10 MECHANICAL WALL AND FLOOR STOPS AND HOLDERS

A. Stops and Bumpers: BHMA A156.16, Grade 1.

1. Provide wall stops for doors unless floor, overhead, or other type stops are scheduled or indicated. Do not mount floor stops where they will impede traffic. Provide floor stops (and spacers if needed) of proper height and configuration to accommodate floor condition. Where floor or wall stops are not appropriate, provide overhead holders.
2. Properties. Cast construction with fastener suitable for wall or floor condition.
3. Available Manufacturers:
a. Hager Companies (HAG).
b. IVES Hardware; an Ingersoll-Rand Company (IVS).
c. McKinney Products Company; an ASSA ABLOY Group company (MCK).
d. Rockwood Manufacturing Company (RM).
e. Trimco (TBM).

2.11 OVERHEAD STOPS AND HOLDERS

A. BHMA A156.8, Grade 1. Template for maximum degree of opening before encountering obstruction.

B. Available Manufacturers:

1. Architectural Builders Hardware Mfg., Inc. (ABH).
2. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
3. Rixson Specialty Door Controls; an ASSA ABLOY Group company (RIX).
4. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).

2.12 SILENCERS

A. Silencers for Metal Door Frames: BHMA A156.16, Grade 1; neoprene or rubber, minimum diameter 1/2 inch (13 mm); fabricated for drilled-in application to frame.

B. Available Manufacturers:

1. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
2. Hager Companies (HAG).
3. IVES Hardware; an Ingersoll-Rand Company (IVS).
4. McKinney Products Company; an ASSA ABLOY Group company (MCK).
5. Rockwood Manufacturing Company (RM).
6. Trimco (TBM).

2.13 FABRICATION

A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.

1. Manufacturer's identification is permitted on rim of lock cylinders only.

B. Base Metals: Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.

C. Fasteners: Manufacturer's standard, except as noted in product sections of this specification.

2.14 FINISHES

A. Standard: BHMA A156.18, as indicated in door hardware sets.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly

construction, wall and floor construction, and other conditions affecting performance.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

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

3.2 PREPARATION

A. Steel Doors and Frames: Comply with DHI A115 Series.

1. Surface-Applied Door Hardware: Drill and tap doors and frames according to ANSI A250.6.

B. Wood Doors: Comply with DHI A115-W Series.

3.3 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights indicated as follows unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

B. Mounting Locations:

1. Floor Stops and Holders: Locate at least 20" out from hinge edge of door for maximum degree of opening before door encounters obstruction.
2. Wall Stops: Locate so that lockset spindle and wall stop share horizontal and vertical centerlines.
3. Closers and Overhead Stop/Holders: Template and mount closers and overhead stops for maximum degree of opening before door encounters obstruction. When used with closers, template and locate overhead stops so that closer arm does not fully extend and bottom out.

C. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

D. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule. Document cross-indexing per manufacturer's instructions.

E. Weatherstrip and Gasketing: Miter cut at butt joints as needed for neat appearance with no gaps between retainers or bulbs.

F. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

3.4 FIELD QUALITY CONTROL

A. Provide Door Hardware Inspection Services and Field Quality Report as indicated below.

B. Door Hardware Inspection Services

1. Scope
   a. Inspection of all swinging doors and door hardware immediately following completion of installation.
   b. Inspector to furnish a Field Quality Report, itemized per each individual opening, to the Architect within 7 days of the inspection, including:
      1) deficiencies in workmanship and standard industry practices,
      2) use of allowable products,
      3) use of manufacturer recommended fasteners,
      4) compliance with the ADA,
      5) proper door/frame/hardware clearances,
      6) problems related to function, security, aesthetics or maintenance.
   c. Follow-up inspections as required at additional fee.
2. Inspector Qualifications
      1) Certified Architectural Hardware Consultant.
      2) Entirely independent of the supply side of the project, having no familial or financial relationship with any manufacturer, manufacturer's representative, distributor, installer or supplier used on this project.
      3) Approved by Architect. Go to http://www.dhi.org/ for searchable list of local Architectural Hardware Consultants.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

B. Overhead Stops/Holders: Set adjustable stops for maximum degree of opening before door encounters obstruction. Adjust friction to control door.

C. Door Closers:

1. Unless otherwise required by authorities having jurisdiction, adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches (75 mm) from the latch, measured to the leading edge of the door.
2. Adjust latch period so that door does not slam nor injure fingers.
3. Adjust spring power so that door properly latches.
4. Adjust backcheck to slow door down before hitting stop point so as to prevent damage to closer, arm, door, frame, and fasteners.

D. Occupancy Adjustment: Approximately six months after date of Substantial Completion, Installer shall examine and readjust, including adjusting operating forces, each item of door hardware as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.6 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.7 DOOR HARDWARE SETS (on following pages followed by Door-Set Index)

Hardware Set 01

(6) Butt Hinges	TA2314-454	630	MCK
(2) Closer, w/Stop	1431-PS	689	SAR
(2) Kick Plate	K1050 x 8 x 2LDW x B4E	630	ROC
(1) Rest Room Lock	28-73-7P-10G04-LP	626	SAR

End of Section Finish Hardware 087100

SECTION 09 25 50 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
1. Gypsum board assemblies attached to wood framing and furring members.

B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Division 7 Section "Firestopping" for firestopping systems and fire-resistive-rated joint sealants.

1.3 DEFINITIONS

A. Gypsum Board Construction Terminology: Refer to ASTM C 11 and GA-505 for definitions of terms related to gypsum board assemblies not defined in this Section or in other referenced standards.

1.4 ASSEMBLY PERFORMANCE REQUIREMENTS

A. Sound Transmission Characteristics: For gypsum board assemblies indicated to have STC ratings, provide materials and construction identical to those of assemblies whose STC ratings were determined per ASTM E 90 and classified per ASTM E 413 by a qualified independent testing agency.

1.5 SUBMITTALS

A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections.

B. Product data for each type of product specified.

C. Product certificates signed by manufacturers of gypsum board assembly components certifying that their products comply with specified requirements.

1.6 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Where fire-rated gypsum board assemblies are indicated, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
1. Fire Resistance Ratings: As indicated by reference to GA File Numbers in GA-600 "Fire Resistance Design Manual" or to design designations in UL "Fire Resistance Directory" or in the listing of another testing and inspecting agency acceptable to authorities having jurisdiction.

B. Single-Source Responsibility for Steel Framing: Obtain steel framing members for gypsum board assemblies from a single manufacturer.

C. Single-Source Responsibility for Panel Products: Obtain each type of gypsum board and other panel products from a single manufacturer.

D. Single-Source Responsibility for Finishing Materials: Obtain finishing materials from either the same manufacturer that supplies gypsum board and other panel products or from a manufacturer acceptable to gypsum board manufacturer.

E. Field Samples: On actual gypsum board assemblies, prepare field samples of at least 100 sq. ft. in surface area for the following applications. Simulate finished lighting conditions for review of in-place unit of Work.
1. Wall surfaces indicated to receive nontextured paint finishes.
2. Ceiling surfaces indicated to receive nontextured paint finishes.
3. Surfaces indicated to receive textured paint finishes.
4. Surfaces indicated to receive textured finishes specified in this Section.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.

B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Neatly stack gypsum panels flat to prevent sagging.

C. Handle gypsum board to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage metal corner beads and trim.

1.8 PROJECT CONDITIONS

A. Environmental Conditions, General: Establish and maintain environmental conditions for applying and finishing gypsum board to comply with ASTM C 840 and with gypsum board manufacturer's recommendations.

B. Room Temperatures: For nonadhesive attachment of gypsum board to framing, maintain not less than 40 deg F (4 deg C). For adhesive attachment and finishing of gypsum board, maintain not less than 50 deg F (10 deg C) for 48 hours prior to application and continuously after until dry. Do not exceed 95 deg F (35 deg C) when using temporary heat sources.

C. Ventilation: Ventilate building spaces, as required, for drying joint treatment materials. Avoid drafts during hot dry weather to prevent finishing materials from drying too rapidly.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Steel Framing and Furring:
   a. Clark Steel Framing.
   b. Consolidated Systems, Inc.
   c. Dale Industries, Inc.
   d. Dietrich Industries, Inc.
   e. Marino Industries Corp.
   f. Gold Bond Building Products Div., National Gypsum Co.

g. Unimast Inc.
2. Gypsum Board and Related Products:
a. Domtar Gypsum.
b. Georgia-Pacific Corp.
c. Gold Bond Building Products Div., National Gypsum Co.
d. United States Gypsum Co.

2.2 GYPSUM BOARD PRODUCTS

A. General: Provide gypsum board of types indicated in maximum lengths available to minimize end-to-end butt joints.
1. Thickness: Provide gypsum board in thicknesses indicated or, if not otherwise indicated, in either 1/2 inch or 5/8 inch thicknesses to comply with ASTM C 840 for application system and support spacing indicated.

B. Gypsum Wallboard: ASTM C 36 and as follows:

1. Type: Regular for vertical surfaces, unless otherwise indicated.
2. Type: Type X where required for fire-resistive-rated assemblies.
3. Type: Sag-resistant type for ceiling surfaces.
4. Type: Proprietary type as required for specific fire-resistive-rated assemblies.
5. Edges: Tapered.
6. Edges: Tapered and featured (rounded or beveled) for prefilling.
7. Thickness: 5/8 inch, unless otherwise indicated.
8. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work where proprietary gypsum wallboard is indicated include, but are not limited to, the following:
9. Products: Subject to compliance with requirements, provide one of the following products where proprietary gypsum wallboard is indicated:
a. Gyprock Fireguard C Gypsum Board, Domtar Gypsum.
b. Firestop Type C, Georgia-Pacific Corp.
c. Fire-Shield G, Gold Bond Building Products Div., National Gypsum Co.
d. SHEETROCK Brand Gypsum Panels, FIRECODE C Core, United States Gypsum Co.
e. SHEETROCK Brand Gypsum Panels, ULTRACODE Core, United States Gypsum Co.

2.3 TRIM ACCESSORIES

A. Accessories for Interior Installation: Corner beads, edge trim, and control joints complying with ASTM C 1047 and requirements indicated below:
1. Material: Formed metal, plastic, or metal combined with paper, with metal complying with the following requirement:
a. Sheet steel zinc-coated by hot-dip process.
b. Sheet steel coated with zinc by hot-dip or electrolytic processes, or with aluminum or rolled zinc.
2. Shapes indicated below by reference to Fig. 1 designations in ASTM C 1047:
a. Cornerbead on outside corners, unless otherwise indicated.
b. LC-bead with both face and back flanges; face flange formed to receive joint compound. Use LC-beads for edge trim unless otherwise indicated.
c. L-bead with face flange only; face flange formed to receive joint compound. Use L-bead where indicated.
d. U-bead with face and back flanges; face flange formed to be left without application of joint compound. Use U-bead where indicated.
e. One-piece control joint formed with V-shaped slot, with removable strip covering slot opening.

2.4 JOINT TREATMENT MATERIALS

A. General: Provide joint treatment materials complying with ASTM C 475 and the recommendations of both the manufacturers of sheet products and of joint treatment materials for each application indicated.

B. Joint Tape for Gypsum Board: Paper reinforcing tape, unless otherwise indicated.
1. Use pressure-sensitive or staple-attached open-weave glass-fiber reinforcing tape with compatible joint compound where recommended by manufacturer of gypsum board and joint treatment materials for application indicated.

C. Joint Tape for Cementitious Backer Units: Polymer-coated, open glass-fiber mesh.

D. Setting-Type Joint Compounds for Gypsum Board: Factory-packaged, job-mixed, chemical-hardening powder products formulated for uses indicated.
1. Where setting-type joint compounds are indicated as a taping compound only or for taping and filling only, use formulation that is compatible with other joint compounds applied over it.
2. For prefilling gypsum board joints, use formulation recommended by gypsum board manufacturer for this purpose.
3. For filling joints and treating fasteners of water-resistant gypsum backing board behind base for ceramic tile, use formulation recommended by the gypsum board manufacturer for this purpose.
4. For topping compound, use sandable formulation.

E. Drying-Type Joint Compounds for Gypsum Board: Factory-packaged vinyl-based products complying with the following requirements for formulation and intended use.
1. Ready-Mixed Formulation: Factory-mixed product.
2. Job-Mixed Formulation: Powder product for mixing with water at Project site.
3. Taping compound formulated for embedding tape and for first coat over fasteners and face flanges of trim accessories.
4. Topping compound formulated for fill (second) and finish (third) coats.
5. All-purpose compound formulated for both taping and topping compounds.

2.5 ACOUSTICAL SEALANT

A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following requirements:
1. Product is effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies per ASTM E 90.
2. Product has flame-spread and smoke-developed ratings of less than 25 per ASTM E 84.

B. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.

C. Available Products: Subject to compliance with requirements, acoustical sealants that may be incorporated in the Work include, but are not limited to, the following:

D. Products: Subject to compliance with requirements, provide one of the following:
1. Acoustical Sealant:
a. AC-20 FTR Acoustical and Insulation Sealant, Pecora Corp.

b. SHEETROCK Acoustical Sealant, United States Gypsum Co.

2. Acoustical Sealant for Concealed Joints:
   a. BA-98, Pecora Corp.
   b. Tremco Acoustical Sealant, Tremco, Inc.

2.6 MISCELLANEOUS MATERIALS

A. General: Provide auxiliary materials for gypsum board construction that comply with referenced standards and recommendations of gypsum board manufacturer.

B. Laminating Adhesive: Special adhesive or joint compound recommended for laminating gypsum panels.

C. Spot Grout: ASTM C 475, setting-type joint compound recommended for spot grouting hollow metal door frames.

D. Fastening Adhesive for Wood: ASTM C 557.

E. Fastening Adhesive for Metal: Special adhesive recommended for laminating gypsum panels to steel framing.

F. Steel drill screws complying with ASTM C 1002 for the following applications:
   1. Fastening gypsum board to steel members less than 0.03 inch thick.
   2. Fastening gypsum board to wood members.
   3. Fastening gypsum board to gypsum board.

G. Steel drill screws complying with ASTM C 954 for fastening gypsum board to steel members from 0.033 to 0.112 inch thick.

H. Corrosion-resistant-coated steel drill screws of size and type recommended by board manufacturer for fastening cementitious backer units.

I. Gypsum Board Nails: ASTM C 514.

J. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.

K. Sound Attenuation Blankets: Unfaced mineral-fiber blanket insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing):
   1 Mineral-Fiber Type: Fibers manufactured from glass.

L. Thermal Insulation: Material indicated below, of thickness and width to fill voids formed by Z-furring members:
   1. Unfaced Mineral-Fiber Blanket Insulation: Unfaced mineral-fiber blanket insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing):
      a. mineral-Fiber Type: Fibers manufactured from glass.
   2. Extruded Polystyrene Board Thermal Insulation: Rigid, cellular, thermal insulation with closed cells and integral high-density skin, formed by the expansion of polystyrene base resin in an extrusion process to comply with ASTM C 578 for Type IV, and with the following surface-burning characteristics:
      a. Flame-spread and smoke-developed ratings of 75 and 450, respectively, per ASTM E 84.

M. Polyethylene Vapor Retarder: ASTM D 4397, thickness and maximum permeance rating as follows:
   1. 6.0 mils, 0.13 perms.

N. Vapor Retarder Tape: Pressure-sensitive tape of type recommended by vapor retarder manufacturer for sealing joints and penetrations in vapor retarder.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates to which gypsum board assemblies attach or abut, installed hollow metal frames, cast-in-anchors, and structural framing with Installer present for compliance with requirements for installation tolerances and other conditions affecting performance of assemblies specified in this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Ceiling Anchorages: Coordinate installation of ceiling suspension systems with installation of overhead structural assemblies to ensure that inserts and other provisions for anchorages to building structure have been installed to receive ceiling hangers that will develop their full strength and at spacing required to support ceilings.
1. Furnish concrete inserts and other devices indicated to other trades for installation well in advance of time needed for coordination with other construction.

3.3 INSTALLING STEEL FRAMING FOR FURRED CEILINGS

A. Screw furring members to wood framing.
1. Do not connect or suspend steel framing from ducts, pipes or conduit.

3.4 APPLYING AND FINISHING GYPSUM BOARD, GENERAL

A. Gypsum Board Application and Finishing Standards: Install and finish gypsum panels to comply with ASTM C 840 and GA-216.

B. Install sound attenuation blankets where indicated prior to installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

C. Install ceiling board panels across framing to minimize the number of abutting end joints and avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

D. Install wall/partition board panels to minimize the number of abutting end joints or avoid them entirely. Stagger abutting end joints not less than one framing member in alternate courses of board. At stairwells and other high walls, install panels horizontally with end abutting joints over studs and staggered.

E. Install gypsum panels with face side out. Do not install imperfect, damaged, or damp panels. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

F. Locate both edge or end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Position adjoining panels so that tapered edges abut tapered edges, and field-cut edges abut field-cut edges and ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions. Avoid joints at corners of framed openings where possible.

G. Attach gypsum panels to steel studs so that the leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

H. Attach gypsum panels to framing provided at openings and cutouts.

I. Do not attach gypsum panels across the flat grain of wide-dimension lumber including floor joists and headers. Instead, float gypsum panels over these members using resilient channels or provide control joints to counteract wood shrinkage.

J. Spot grout hollow metal door frames for solid core wood doors, hollow metal doors, and doors over 32 inches wide. Apply spot grout at each jamb anchor clip and immediately insert gypsum panels into frames.

K. Form control joints and expansion joints at locations indicated and as detailed, with space between edges of adjoining gypsum panels, as well as supporting framing behind gypsum panels.

L. Cover both faces of steel stud partition framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chase walls that are braced internally.
1. Except where concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect open concrete coffers, concrete joists, and other structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by coffers, joists, and other structural members; allow 1/4-to-1/2-inch-wide joints to install sealant.

M. Isolate perimeter of non-load-bearing gypsum board partitions at structural abutments, except floors, as detailed. Provide 1/4-inch-to-1/2-inch-wide spaces at these locations and trim edges with U-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

N. Floating Construction: Where feasible, including where recommended by manufacturer, install gypsum panels over wood framing, with floating internal corner construction.

O. Where STC-rated gypsum board assemblies are indicated, seal construction at perimeters, behind control and expansion joints, openings, and penetrations with a continuous bead of acoustical sealant including a bead at both faces of the partitions. Comply with ASTM C 919 and manufacturer's recommendations for location of edge trim and closing off sound-flanking paths around or through gypsum board assemblies, including sealing partitions above acoustical ceilings.

P. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's recommendations.

3.5 GYPSUM BOARD APPLICATION METHODS

A. Single-Layer Application: Install gypsum wallboard panels as follows:
1. On ceilings, apply gypsum panels prior to wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing), unless otherwise indicated, and provide panel lengths that will minimize end joints.
3. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing), unless parallel application is required

for fire-resistive-rated assemblies. Use maximum-length panels to minimize end joints.

4. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.

B. Single-Layer Fastening Methods: Apply gypsum panels to supports as follows:
1. Fasten with screws.
2. Fasten to wood supports with single nailing.
3. Fasten to wood supports with double nailing.
4. Fasten to wood supports with adhesive and supplementary nails or screws.

C. Direct-Bonding to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members or base layer of gypsum board), comply with gypsum board manufacturer's recommendations, and temporarily brace or fasten gypsum panels until fastening adhesive has set.

3.6 INSTALLING TRIM ACCESSORIES

A. General: For trim accessories with back flanges, fasten to framing with the same fasteners used to fasten gypsum board. Otherwise, fasten trim accessories according to accessory manufacturer's directions for type, length, and spacing of fasteners.

B. Install corner beads at external corners.

C. Install edge trim where edge of gypsum panels would otherwise be exposed or semiexposed. Provide edge trim type with face flange formed to receive joint compound except where other types are indicated.
1. Install LC-bead where gypsum panels are tightly abutted to other construction and back flange can be attached to framing or supporting substrate.
2. Install L-bead where edge trims can only be installed after gypsum panels are installed.
3. Install U-bead where indicated.
4. Install aluminum edge trim and other accessories where indicated.

D. Install control joints at locations indicated, and where not indicated according to ASTM C 840, and in locations approved by Architect for visual effect.

E. Install H-molding in exterior gypsum board assemblies where control joints are indicated. Install on cut or ends of gypsum panels, not on tapered edges.

3.7 FINISHING GYPSUM BOARD ASSEMBLIES

A. General: Apply joint treatment at gypsum board joints (both directions); flanges of corner bead, edge trim, and control joints; penetrations; fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration and levels of gypsum board finish indicated.

B. Prefill open joints, rounded or beveled edges, and damaged areas using setting-type joint compound.

C. Apply joint tape over gypsum board joints except those with trim accessories having concealed face flanges not requiring taping to prevent cracks from developing in joint treatment at flange edges.

D. Apply joint tape over gypsum board joints and to trim accessories with concealed face flanges as recommended by trim accessory manufacturer and

as required to prevent cracks from developing in joint compound at flange edges.

E. Levels of Gypsum Board Finish: Provide the following levels of gypsum board finish per GA-214.
1. Level 4 for gypsum board surfaces unless otherwise indicated.

G. For level 4 gypsum board finish, embed tape in joint compound and apply three seperate coats of joint compound over joints, angles, fastener heads, and accessories. Touch up and sand between coats and after last coat as needed to produce a surface free of visual defects and ready for decoration. Use the following joint compound combination:
1. Embedding and First Coat: Ready-mixed, drying-type, all-purpose or taping compound.
2. Fill (Second) Coat: Ready-mixed, drying-type, all-purpose or topping compound.
3. Finish (Third) Coat: Ready-mixed, drying-type, all-purpose or topping compound.

3.8 CLEANING AND PROTECTION

A. Promptly remove any residual joint compound from adjacent surfaces.

B. Provide final protection and maintain conditions, in a manner suitable to Installer, that ensures gypsum board assemblies remain without damage or deterioration at time of Substantial Completion.

END OF SECTION 09 25 50

SECTION 09 30 00 - CERAMIC TILE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
1. Glazed ceramic mosaic tile for use on restroom walls.
2. Unglazed ceramic mosaic tile for use on restroom floor.
2. Stone thresholds.
3. Cementitious backer units.

B. Related Sections: The following sections contain requirements that relate to this Section:
1. Division 2 Section "Selective Demolition" for removal of existing tile.
2. Division 7 Section "Joint Sealers" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
3. Division 9 Section "Gypsum Board Assemblies" for glass mat water resistant gypsum backer units installed as part of gypsum wallboard systems.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for each type of product specified.

C. Shop drawings indicating tile patterns and locations and widths of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
1. Locate precisely each joint and crack in tile substrates by measuring, record measurements on shop drawings, and coordinate them with tile joint locations, in consultation with Architect.

D. Samples for initial selection purposes in form of manufacturer's color charts consisting of actual tiles or sections of tile showing full range of colors, textures, and patterns available for each type and composition of tile indicated. Include samples of grout and accessories involving color selection.

1.4 QUALITY ASSURANCE

A. Single-Source Responsibility for Tile: Obtain each color, grade, finish, type, composition, and variety of tile from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

B. Single-Source Responsibility for Setting and Grouting Materials: Obtain ingredients of a uniform quality from one manufacturer for each cementitious and admixture component and from one source or producer for each aggregate.

C. Installer Qualifications: Engage an experienced Installer who has successfully completed tile installations similar in material, design, and extent to that indicated for Project.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement of ANSI A137.1 for labeling sealed tile packages.

B. Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.

C. Handle tile with temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If despite these precautions coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.6 PROJECT CONDITIONS

A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.

B. Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.

C. Maintain temperatures at 50 deg F (10 deg C) or more in tiled areas during installation and for 7 days after completion, unless higher temperatures are required by referenced installation standard or manufacturer's instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that match the existing tile, may be incorporated in the Work include, but are not limited to, the following:
   1. Glazed Ceramic Mosaic Tile:
      a. American Olean Tile Co., Inc.
      b. Dal-Tile Corp.
      c. Florida Tile Industries, Inc.
      d. United States Ceramic Tile Co.
      e. Villeroy & Boch (U.S.A.) Inc.
      f. Wenczel Tile Co. of Florida
   2. Dry-Set Mortars and Grouts:
      a. American Olean Tile Co., Inc.
      b. Boiardi Products Corp.
      c. Bostik Construction Products Div.
      d. Custom Building Products
      e. C-Cure Chemical Co.
      f. DAP Inc. Div.; USG Corp.
      g. L & M Mfg. Inc.
      h. Laticrete International Inc.
      i. Mapei Corp.
      j. Southern Grouts & Mortars, Inc.
      k. Summitville Tiles, Inc.
      l. Syracuse Adhesives Co.
      m. American Olean Tile Co., Inc.
      n. Boiardi Products Corp.
      o. Bostik Construction Products Div.
      p. C-Cure Chemical Co.
      q. DAP Inc. Div.; USG Corp.
      r. Mapei Corp.

s. Southern Grouts & Mortars, Inc.
t. Summitville Tiles, Inc.
u. Syracuse Adhesives Co.

3. Acrylic Emulsions for Latex-Portland Cement Grouts:
a. American Olean Tile Co., Inc.
b. Boiardi Products Corp.
c. Bostik Construction Products Div.
d. Custom Building Products
e. C-Cure Chemical Co.
f. DAP Inc. Div.; USG Corp.
g. L & M Mfg. Inc.
h. Laticrete International Inc.
i. Mapei Corp.
j. Southern Grouts & Mortars, Inc.
k. Summitville Tiles, Inc.
l. Syracuse Adhesives Co.

2.2 PRODUCTS, GENERAL

A. ANSI Standard for Ceramic Tile: Comply with ANSI A137.1 "American National Standard Specifications for Ceramic Tile" for types, compositions, and grades of tile indicated.
1. Furnish tile complying with "Standard Grade" requirements unless otherwise indicated.

B. ANSI Standard for Tile Installation Materials: Comply with ANSI standard referenced with products and materials indicated for setting and grouting.

C. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with the following requirements:
1. Provide selections made by Architect from manufacturer's full range of premium price group colors.
2. Provide tile trim and accessories that match color and finish of adjoining flat tile.

D. Factory Blending: For tile exhibiting color variations within the ranges selected during sample submittals, blend tile in factory and package accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples.

E. Mounting: Where factory-mounted tile is required, provide back- or edge-mounted tile assemblies as standard with manufacturer unless another mounting method is indicated.
1. Where tile is indicated for installation in swimming pools, on exteriors or in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies that this type of mounting is suitable for these kinds of uses and has been successfully used on other projects.

F. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating them with a continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.3 TILE PRODUCTS

A. Unglazed Ceramic Mosaic Tile: Provide factory-mounted flat tile complying with the following requirements:
1. Composition: Porcelain.

2. Nominal Facial Dimensions: 2 inches by 2 inches.
3. Nominal Thickness: 1/4 inch.
4. Face: Plain with cushion edges.

B. Trim Units: Provide tile trim units to match characteristics of adjoining flat tile and to comply with following requirements:
1. Size: As indicated, coordinated with sizes and coursing of adjoining flat tile where applicable.
2. Shapes: As follows, selected from manufacturer's standard shapes:
a. Base for Thinset Mortar Installations: Straight.
b. Wainscot Cap for Thinset Mortar Installations: Surface bullnose.
c. External Corners for Thinset Installations: Surface bullnose.
d. Internal Corners: Field-butted square corners, except use coved base and cap angle pieces designed to member with stretcher shapes.

C. Accessories for Glazed Wall Tile: Provide vitreous china accessories of type and size indicated and in color and finish to match adjoining glazed wall tile.
1. One soap holder for each shower and tub indicated.
2. One roll toilet paper holder at each water closet in guest rooms.
3. One set of towel bar brackets with 24" metal bar for each shower and tub indicated.

2.4 STONE THRESHOLDS

A. General: Provide stone that is uniform in color and finish, fabricated to sizes and profiles indicated or required to provide transition between tile surfaces and adjoining finished floor surfaces.

2.5 SETTING MATERIALS

A. Dry-Set Portland Cement Mortar: ANSI A118.1.

B. Latex-Portland Cement Mortar: ANSI A118.4, composition as follows:
1. Latex additive (water emulsion) of type described below, serving as replacement for part or all of gauging water, combined at job site with prepackaged dry mortar mix supplied or specified by latex additive manufacturer.
a. Latex Type: Manufacturer's standard.

2.6 GROUTING MATERIALS

A. Dry-Set Grout: ANSI A118.6, color as indicated.

B. Latex-Portland Cement Grout: ANSI A118.6, color as indicated, composition as follows:
1. Latex additive (water emulsion) serving as replacement for part or all of gauging water, added at job site with dry grout mixture, with type of latex and dry grout mix as follows:
a. Latex Type: Manufacturer's standard.
b. Dry Grout Mixture: Commercial portland cement specified or supplied by latex additive manufacturer.
1) Application: Use commercial portland cement grout combined with latex additive for grouting joints in floor tile unless otherwise indicated.

2.7 CEMENTITIOUS BACKER UNITS

A. Cement-Coated Portland Cement Panels: ANSI A 118.9 high-density portland cement surface coating on both faces and lightweight concrete core composed of portland cement and expanded ceramic aggregate; fabricated in panels 7/16-inch thick by 36 inches wide by 36, 48, 60, 64, or 72 inches long and weighing 3.2 to 3.8 psf.

B. Mortar Unit Finishing Materials: Tape and joint compounds as recommended by manufacturer of cementitious backer units.

C. Available Products: Subject to compliance with requirements, cementitious backer units which may be incorporated in the Work include, but are not limited to, the following:
1. "Wonder-Board"; Modulars Inc.
2. "Durock Tile Backer Board"; Durabond Div., USG Industries, Inc.

2.8 MISCELLANEOUS MATERIALS

A. Temporary Protective Coating: Provide product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout, is compatible with tile and mortar/grout products, and is easily removable after grouting is completed without damaging grout or tile.
1. Petroleum paraffin wax, fully refined, tasteless, odorless, containing at least 0.5 percent oil with a melting point of 120 deg F (49 deg C) to 140 deg F (60 deg C) per ASTM D 87.

2.9 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with requirements of referenced standards and manufacturers including those for accurate proportioning of materials, water, or additive content; type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortars and grouts of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and areas where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
1. Verify that substrates for setting tile are firm, dry, clean, and free from oil or waxy films and curing compounds.
2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.

B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Blending: For tile exhibiting color variations within the ranges selected during sample submittals, verify that tile has been blended in factory and packaged accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION, GENERAL

A. ANSI Tile Installation Standard: Comply with parts of ANSI 108 series of tile installation standards included under "American National Standard Specifications for the Installation of Ceramic Tile" that apply to type of setting and grouting materials and methods indicated.

B. TCA Installation Guidelines: TCA "Handbook for Ceramic Tile Installation"; comply with TCA installation methods indicated.

C. Extend tile work into recesses and 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.

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, walls, 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 joint widths unless otherwise shown.
1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so that extent of each sheet is not apparent in finished work.

F. Lay out tile wainscots to next full tile beyond dimensions indicated.

G. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw cut joints after installation of tiles.
1. Locate joints in tile surfaces directly above joints in concrete substrates.

H. Grout tile to comply with the requirements of the following installation standards:
1. For ceramic tile grouts (sand-portland cement, dry-set, commercial portland cement, and latex-portland cement grouts), comply with ANSI A108.10.

3.4 WALL TILE INSTALLATION METHODS

A. Install types of tile designated for wall application to comply with requirements indicated below for setting-bed methods, TCA installation methods related to subsurface wall conditions, and grout types:
1. Portland Cement Mortar: ANSI A108.1.
   a. Masonry or Concrete, Interior: TCA W211 (bonded).
   b. Solid Backing, Interior: TCA W222 (one-coat method).
   c. Grout: Latex-portland cement.
2. Latex-Portland Cement Mortar: ANSI A108.5.
3. Dry-Set Portland Cement Mortar: ANSI A108.5.
   a. Masonry, Interior: TCA W202.
   b. Wood or Metal Studs, Interior: TCA W243.
   c. Glass Mat Water Resistant Gypsum Board Backer Units, Interior: TCA W244.
   d. Grout: Latex-portland cement.

3.5 CLEANING AND PROTECTION

A. Cleaning: Upon completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
   1. Remove latex-portland cement grout residue from tile as soon as possible.
   2. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to brick and grout manufacturer. Trap and remove coating to prevent it from clogging drains.

B. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.

C. Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensures that tile is without damage or deterioration at time of Substantial Completion.
   1. 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 staining, damage, and wear.
   2. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

E. Cold Weather Note: The setting portland cement mortars are retarded by low temperatures. Finished work should be protected for an extended period of time.

END OF SECTION 09 30 00

SECTION 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 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This section includes the following:
1. Surface preparation, all preparation required to make all painted surfaces ready to paint, including sealants and sanding of surfaces.
2. Surface finish schedule for painted items.

B. Related Work under this section to include:
1.) Painting of ferrous metal, including metal doors and frames.
2.) Painting of wood items, interior misc. millwork and trim.
3.) Painting of patched and repaired interior plaster surfaces.
4.) Painting of all drywall wall and ceiling surfaces.
5.) Painting of mechanical and electrical work, all pipes to be painted where exposed in mechanical spaces.

1.03 REGULATORY REQUIREMENTS

A. Conform to the Kentucky Building Code for flame/fuel/smoke rating requirements for finishes.

1.04 SUBMITTALS

A. Submit product data under provisions of Section 01001, Submissions.

B. Provide product data on all finishing products and special coating.

C. Submit manufacturer's application instructions under provisions of Section 01001.

1.05 DEFINITIONS

A. Conform to ANSI/ASTM D16 for interpretation of terms used in this Section.

1.06 QUALITY ASSURANCE

A. Product Manufacturer: Company specializing in manufacturing quality paint and finish products with 5 years experience.

B. Applicator: Company specializing in commercial painting and finishing with 5 years documented experience.

1.07 FIELD SAMPLES

A. Provide samples under provisions of Section 01001.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site under provisions of Section 01001.

B. Store and protect products under provisions of Section 01001.

C. Deliver products to site in sealed and labeled containers; inspect to verify acceptance.

D. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.

E. Store paint materials at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in well ventilated area, unless required otherwise by manufacturer's instructions.

F. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees F for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.

B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent, unless required otherwise by manufacturer's instructions.

C. Minimum Application Temperatures for Latex Paints: 45 degrees F (7 degrees C) for interiors; 50 degrees F (10 degrees C) for exterior; unless required otherwise by manufacturer's instructions.

D. Minimum Application Temperature for Varnish and Epoxy Finishes: 65 degrees F (18 degrees C) for interior or exterior, unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

1.10 EXTRA STOCK

A. Provide a one gallon container of each color and surface texture to Owner.

B. Label each container with color, texture, room locations, and indicate if wall or trim paint in addition to the manufacturer's label.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - PAINT

A. Benjamine Moore Product: exterior and interior alkyd enamels and all latex enamels
B. Sherwin Williams Paints Product: same
C. ICI Product: same
D. Porter Paint: same
E. Substitutions: Under provisions of Section 01001.

2.02 ACCEPTABLE MANUFACTURERS - PRIMER-SEALERS

A. Benjamin Moore Product: Moorcraft Latex Primer-Sealer
B. Sherwin Williams
C. ICI
D. Porter Paint
E. Substitutions: Under provisions of Section 01001.

2.04 MATERIALS

A. Coatings: Ready mixed, except field catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.

B. Coatings: Good flow and brushing properties; capable of drying or curing free of streaks or sags.

C. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

D. All surfaces shall be painted with materials from the same manufacturer from primer through finish coat.

2.05 FINISHES

A. Refer to Room Finish Schedule, Door Schedule and Window Schedule for finish types and locations. Color Schedule will be submitted by Architect prior to primecoating.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:

1. Plaster and Gypsum Wallboard: 12 percent.
2. Masonry, Concrete, and Concrete Unit Masonry: 12%
3. Interior Located Wood: 15 percent, measured in accordance with ASTM D2016.
4. Concrete Floors: 7 percent.

D. Beginning of installation means acceptance of existing surfaces.

3.02 PREPARATION

A. Remove electrical plates, hardware, light fixture trim, and fittings prior to preparing surfaces or finishing.

B. Correct minor defects and clean surfaces which affect work of this Section.

C. Shellac and seal marks which may bleed through surface finishes.

D. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

E. Aluminum Surfaces Scheduled for Paint Finish: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.

F. Asphalt, Creosote, or Bituminous Surfaces Scheduled for Paint Finish: Remove foreign particles to permit adhesion of finishing materials. Apply latex based sealer or primer.

G. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.

H. Gypsum Board Surfaces: Latex fill minor defects. Spot prime defects after repair.

I. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

J. Plaster Surfaces: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

K. Uncoated Steel and Iron Surfaces: Remove grease, scale, dirt, and rust. Where heavy coatings of scale are evident, remove by wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.

L. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.

M. Interior Wood Items Scheduled to Receive Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Apply sealant to all open cracks between adjacent so that paint will flow and seal all open gags.

N. Exterior Wood Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior caulking compound after prime coat has been applied.

O. Wood and Metal Doors Scheduled for Painting: Seal top and bottom edges with primer.

3.03 PROTECTION

A. Protect elements surrounding the work of this Section from damage or disfiguration.

B. Repair damage to other surfaces caused by work of this section.

C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.

D. Remove empty paint containers from site.

3.04 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Do not apply finishes to surfaces that are not dry.

C. Apply each coat to uniform finish.

D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.

E. Sand lightly between coats to achieve required finish.

F. Allow applied coat to dry before next coat is applied.

G. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

H. Prime back surfaces of interior and exterior woodwork with primer paint.

I. Prime back surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

J. After prime and first finish coat, Architect to inspect color. If contractor applies final finish coat, before Architect reviews first finish coat, the contractor will be required to repaint at no cost to the Owner.

3.05 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. Paint shop primed equipment, including all new steel pipe hand railings and guard screens. Minimum of two additional coats required.

B. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

C. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports which occur in rooms and areas receiving paint.

D. Replace identification markings on mechanical or electrical equipment when painted accidentally.

E. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint, to limit of sight line. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.

F. Paint exposed conduit and electrical equipment occurring in finished areas.

G. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.

H. Color code equipment, piping, conduit, and exposed ductwork in accordance with requirements indicated. Color band and identify with flow- arrows, names, and numbering.

I. Replace electrical plates, hardware, light fixture trim, and fittings removed prior to finishing.

3.06 CLEANING

A. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.

B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.

C. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.07 SCHEDULE - SHOP PRIMED ITEMS FOR SITE FINISHING

A. Metal Fabrications (Section 05500): Exposed surfaces of lintels, roof

ladders, roof exhaust hoods, etc.

3.08 SCHEDULE - INTERIOR SURFACES

A. Wood - Painted
   1. One coat alkyd prime sealer.
   2. Two coats alkyd enamel, semi-gloss.

B. Concrete, Concrete Block
   1. One coat block filler mixed with latex primer.
   2. Two coats alkyd, semi-gloss
   3. Where schedule calls for epoxy/ester, install instead of finish coats, 2 coats; 5'4" high on wall. Paint line to match block coursing

C. Steel - Unprimed
   1. One coat zinc chromate primer.
   2. Two coats alkyd enamel, semi- gloss.

D. Steel - Primed
   1. Touch-up with original primer.
   2. Two coats alkyd enamel, semi-gloss.

E. Steel - Galvanized
   1. One coat zinc chromate primer.
   2. Two coats alkyd enamel, semi-gloss.

F. Plaster, Gypsum Board
   1. One coat latex primer-sealer.
   2. Two coats alkyd, semi-gloss.

3.09 SCHEDULE - COLORS

A. Color Schedule to be submitted by Architect prior to prime coating procedures. Note architect will inspect and approve colors upon first finish coat. If final coats are applied without architect inspection, finish coats may have to be redone at contractor's expense.

END OF SECTION 09 90 00

SECTION 10 28 00 - TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes toilet and bath accessory items as scheduled.

B. Mirrored glass for frameless applications is specified in Division 8 Section "Mirrored Glass."

C. Ceramic tile accessories are specified in Division 9.

1.3 SUBMITTALS

A. General: Submit the following according to Conditions of Contract and Division 1 Specifications Sections.

B. Product data for each toilet accessory item specified, including construction details relative to materials, dimensions, gages, profiles, mounting method, specified options, and finishes.

C. Samples of each toilet accessory item to verify design, operation, and finish requirements. Acceptable full-size samples will be returned and may be used in the Work.

D. Schedule indicating types, quantities, sizes, and installation locations (by room) for each toilet accessory item to be provided for project.

E. Setting drawings where cutouts are required in other work, including templates, substrate preparation instructions, and directions for preparing cutouts and installing anchorage devices.

F. Maintenance instructions including replaceable parts and service recommendations.

1.4 QUALITY ASSURANCE

A. Inserts and Anchorages: Furnish accessory manufacturers' standard inserts and anchoring devices that must be set in concrete or built into masonry. Coordinate delivery with other work to avoid delay.

B. Single-Source Responsibility: Provide products of same manufacturer for each type of accessory unit and for units exposed to view in same areas, unless otherwise acceptable to Architect.

1.5 PROJECT CONDITIONS

A. Coordination: Coordinate accessory locations, installation, and sequencing with other work to avoid interference with and ensure proper installation, operation, adjustment, cleaning, and servicing of toilet accessory items.

1.6 WARRANTY

A. Warranty: Submit a written warranty executed by mirror manufacturer, agreeing to replace any mirrors that develop visible silver spoilage defects within warranty period.

B. Warranty Period: 15 years from date of Substantial Completion.

C. The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering toilet accessories that may be incorporated in the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide toilet accessories by one of the following:

1. A & J Washroom Accessories.
2. American Specialties, Inc.
3. Bobrick Washroom Equipment, Inc.
4. Bradley Corporation.
5. General Accessory Manufacturing Co.
6. McKinney/Parker.

2.2 MATERIALS, GENERAL

A. Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 0.034-inch (22-gage) minimum thickness.

B. Brass: Leaded and unleaded, flat products, ASTM B 19; rods, shapes, forgings, and flat products with finished edges, ASTM B 16; Castings, ASTM B 30.

C. Sheet Steel: Cold-rolled, commercial quality ASTM A 366, 0.04-inch (20-gage) minimum. Surface preparation and metal pretreatment as required for applied finish.

D. Galvanized Steel Sheet: ASTM A 527, G60.

E. Chromium Plating: Nickel and chromium electro-deposited on base metal, ASTM B 456, Type SC 2.

F. Baked Enamel Finish: Factory-applied, gloss white, baked acrylic enamel coating.

G. Mirror Glass: Nominal 6.0-mm (0.23-inch) thick, conforming to ASTM C 1036, Type I, Class 1, Quality q2, and with silvering, electro-plated copper coating, and protective organic coating.

H. Stainless Steel Mirror Surfaces: Not less than 0.04-inch (20-gage) AISI Type 302/304 stainless steel sheet, stretcher-leveled with No. 8 polished mirror finish. Bond to 1/4-inch minimum hardboard backing.

I. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.

J. Fasteners: Screws, bolts, and other devices of same material as accessory unit, or of galvanized steel where concealed.

2.3 PAPER TOWEL DISPENSERS

A. Surface-Mounted Towel Dispensers: Fabricate of stainless steel with hinged front equipped with tumbler lockset. Provide pierced slots at sides as refill indicators.

1. Capacity: Not less than either 300 C-fold or 400 multifold paper towels without special adapters.

2.4 TOILET TISSUE DISPENSERS

A. Roll-In-Reserve Dispenser: Fabricate of stainless steel for mounting indicated below, size to store and dispense either 4-1/2-inch-diameter or 5-inch-diameter core tissue rolls, with reserve roll placed in service by automatic release or by action of manual release bar. Hinge front of unit with pivot hinge and secure with tumbler lockset.

1. Mounting: Semirecessed for nominal 4-inch wall depth.

2.5 GRAB BARS

A. Surface Mounted Grab Bars: constructed of stainless steel tubing in 1-1/4" and 1-1/2" diameters, exposed mounting, satin finish, nonslip gripping surface, comply with structural strenght requirements to support 900 lbs at 1-1/2" clearance from wall meeting ADA Accessibility Guidelines. Bobrick Model # B-490 Series for the lengths noted on the plans, including shower grab bar.

2.6 SOAP DISPENSERS

A. Liquid Soap Dispenser, Horizontal-Tank Type: Fabricate for surface mounting, sized for 40-fluid-ounce minimum capacity. Provide stainless steel piston, springs, and internal parts designed to dispense soap in measured quantity by pump action. Provide cover of type 304 stainless steel in No. 4 finish, with unbreakable window-type refill indicator.

1. Equip unit with push-type valve for dispensing soap in liquid form.

2.7 SHOWER AND BATH ACCESSORIES

A. Shower Curtain Rod, Normal Duty: 1-inch o.d., 0.04-inch (20-gage) stainless steel, satin finish; furnish with 3-inch o.d., minimum 0.04-inch (20-gage) stainless steel flanges with satin finish, designed for exposed fasteners.

B. Recessed Soap Dish: One-piece construction of stainless steel for recess mounting in wall; furnish with mounting clamp or lugs appropriate for wall construction indicated.

C. Towel Bar: size as indicated on plans, satin-finished, Type 304 stainless steel tubular (3/4-inch-square) bar and rectangular end brackets. Provide galvanized backplates for concealed mounting.

D. Shower Seat: size as indicated on plans, satin-finished, Type 304 stainless steel tubular (3/4-inch-round) with solid phenolic seat, hinged for wall mounting, ADA compliant, 24" x 15", fold down leg supports. Provide galvanized backplates for concealed mounting.

E. Garb Bar: size as indicated on plans. L shaped, satin-finished, Type 304 stainless steel tubular (1-1/2") bar and rectangular end brackets. Provide galvanized backplates for concealed mounting.

F. Shower Handheld Head and Mounting Bar: Shower Panel; Constructed of 16 gauge stainless steel with recessed soap dish. Showerhead;Standard fixed direction adjustable sprayhead. Diverter Valve; Lever handle operation for easy transfer of water flow between fixed and hand-held hose spray. Hand-Held Shower Spray; Consisting of hand shower with on-off control, a 60" stainless steel flexible hose and post style mounting bracket to hold to shower panel. Elevated in-line backflow preventer with quick-disconnect for flexible hose. Supply inlets are flexible, stainless steel hoses with 1/2" NPT connections. Flow Control; A 2.0 GPM (7.6 LPM)

flow control is standard. Actual flow may vary, but will not exceed 2.5 GPM (9.5 LPM) max.

G. One-piece, pre-pitched shower pan, PVC, with integrated roll-in entrance, splash walls, and 2" PVC drain, tile set directly on shower pan surface, ADA compliant,

2.8 MISCELLANEOUS ACCESSORIES

A. Double-Prong Robe Hook: Heavy-duty satin finished stainless steel double-prong robe hook; rectangular wall bracket with backplate for concealed mounting.

B. Tumbler and Toothbrush Holder: Satin-finished stainless steel unit with 2-1/4-inch-diameter hole in center to hold tumbler and two holes on each side to accommodate total of four toothbrushes; rectangular wall bracket equipped with backplate for concealed mounting.

C. Soap Dish: Satin-finished, stainless steel soap dish with rectangular wall bracket equipped with backplate for concealed mounting.

D. Towel Pin: Satin-finished, stainless steel pin projecting minimum of 3 inches from wall surface; rectangular wall bracket with backplate for concealed mounting.

2.9 MIRROR UNITS

A. Stainless Steel Framed Mirror Units: Fabricate frame with angle shapes not less than 0.05 inch (18 gage), with square corners mitered, welded, and ground smooth. Provide in No. 4 satin polished finish.

C. Fixed-Tilt, Stainless Steel Framed Mirror Units: Fabricate frame of not less than 0.04-inch (20-gage) stainless steel, with all joints mitered, welded, and ground smooth. Construct frame so that taper is not less than 3 inches from top to bottom.

2.10 FABRICATION

A. General: No names or labels are permitted on exposed faces of toilet and bath accessory units. On either interior surface not exposed to view or on back surface, provide identification of each accessory item either by a printed, waterproof label or a stamped nameplate indicating manufacturer's name and product model number.

C. Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous stainless steel piano hinge. Provide concealed anchorage wherever possible.

D. Recessed Toilet Accessories, General: Except where otherwise indicated, fabricate units of all-welded construction, without mitered corners. Hang doors or access panels with full-length, stainless steel piano hinge. Provide anchorage that is fully concealed when unit is closed.

E. Framed Mirror Units, General: Fabricate frames for glass mirror units to accommodate wood, felt, plastic, or other glass edge protection material. Provide mirror backing and support system that will permit rigid, tamperproof glass installation and prevent moisture accumulation, as follows:

1. Provide galvanized-steel backing sheet, not less than 0.034 inch (22 gage) and full mirror size, with nonabsorptive filler material. Corrugated cardboard is not an acceptable filler material.

F. Mirror Unit Hangers: Provide system for mounting mirror units that will permit rigid, tamperproof, and theftproof installation, as follows:

1. One-piece, galvanized-steel, wall-hanger device with spring-action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
2. Heavy-duty wall brackets of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.

G. Keys: Provide universal keys for access to toilet accessory units requiring internal access for servicing, resupply, etc. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install toilet accessory units according to manufacturers' instructions, using fasteners appropriate to substrate as recommended by unit manufacturer. Install units plumb and level, firmly anchored in locations and at heights indicated.

B. Secure mirrors to walls in concealed, tamperproof manner with special hangers, toggle bolts, or screws. Set units plumb, level, and square at locations indicated, according to manufacturer's instructions for type of substrate involved.

C. Install grab bars to withstand a downward load of at least 250 lbf, complying with ASTM F 446.

3.2 ADJUSTING AND CLEANING

A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.

B. Clean and polish all exposed surfaces strictly according to manufacturer's recommendations after removing temporary labels and protective coatings.

END OF SECTION 10 28 00

SECTION 220500 - COMMON WORK RESULTS FOR MECHANICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes the following:

1. General equipment requirements
2. Dielectric fittings
3. Sleeves
4. Escutcheons
5. Firestopping
6. Smokestopping
7. Drives
8. Roof Curbs
9. General piping requirements
10. Demolition

1.2 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents (ESPECIALLY DIVISIONS 21, 22, 23 AND 26) are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

1.3 GENERAL REQUIREMENTS

A. All equipment shall be properly aligned, leveled and adjusted for satisfactory operation. Equipment shall be installed so that the connecting and disconnecting of piping and accessories can be done readily and so that all parts are easily accessible for inspection, operation, maintenance and repair. Items of equipment shall essentially duplicate equipment that has been in satisfactory use at least 2 years prior to bid opening and shall be supported by a service organization that is, in the opinion of the Architect reasonably convenient to the site.

1.4 IDENTIFICATION

A. Permanent and legible engraved tags, brass or laminated plastic, shall be installed on all switches, pumps, main valves, and controls, using the same nomenclature as appears on record drawings, diagrams and typewritten or printed operating instructions. A permanent index thereto shall be provided in triplicate, one copy of which shall be mounted under framed glass. Each major component of equipment shall have the manufacturer's name, address and catalog number on a metal plate securely attached to the item of equipment. The nameplate shall be easily readable

and not obscured during the period of construction by painting, plastering, insulating or other work.

1.5 PREVENTION OF RUST

A. Surfaces of ferrous metal shall be given a rust inhibiting coating where specified. Coal-tar or asphalt-type coating will not be acceptable unless so stated for a specific item. Where steel is specified to be hot dip galvanized after fabrication, mill galvanized sheet steel may be used, provided all raw edges are painted.

1.6 PROTECTION FROM MOVING PARTS

A. Belts, pulleys, chains, gears, couplings, projecting setscrews, keys and other rotating parts located so that any person can come in close proximity thereto shall be fully enclosed or properly guarded.

1.7 PROTECTION OF EQUIPMENT AND MATERIALS

A. After delivery, before and after installation, equipment and materials shall be protected against weather theft, injury or damage from all causes.

B. Plumbing fixtures and other equipment with enameled or glazed surfaces shall be protected from damage by covering and/or coating, as recommended in bulletin Handling and Care of Enameled Cast Iron Plumbing Fixtures, issued by Plumbing Fixtures Manufacturers' Association.

C. Where marring or disfigurement has occurred, the Contractor shall replace or refinish the damaged surfaces as directed and to the satisfaction of the Architect.

D. Pipe and duct openings shall be closed with caps or plugs during installation.

1.8 MATERIALS

A. Materials specified herein shall conform to the respective publications and other requirements specified in the following paragraphs and as shown on the drawings. Other materials shall be the products of manufacturers regularly engaged in the manufacture of such products. Types, grades, schedules and pressure and temperature ratings for a particular service shall be as specified hereinafter and other sections of these specifications.

B. Unless specifically noted to the contrary, all valves, strainers and accessories listed in these specifications shall be "rated" devices (i.e. 125 lb. steam - 200 lb. water, oil or gas), selected for the proper use and conditions of the system for which they are to be installed. Under no circumstances shall the contractor be relieved of the responsibility of the valve rating by the installation of valves of lesser quality. All valves shall have rising stems, except that ball valves, plug valves, butterfly valves

and other similar types shall have clear indicators for valve positions. Non-rising stem valves, and non-rated valves shall not be used.

PART 2 - PRODUCTS

2.1 DIELECTRIC FITTINGS

A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder joint, plain or weld-neck and connections that match piping system materials.

2.2 SLEEVES

A. Steel: Galvanized, plain ends, ASTM A 53, Type E, Grade B, Schedule 40.

B. Cast Iron: Equivalent to ductile iron pressure pipe with plain ends.

2.3 ESCUTCHEONS

A. Chromium-plated iron or chromium-plated brags, either one piece or split patterns, held in place by internal spring tension or set screw that completely covers opening.

2.4 FIRE STOPPING

A. Asbestos free materials classified by UL to provide Fire Barrier equal to time rating of construction being penetrated and complying with applicable codes and have been tested in accordance with UL 1479 or ASTM E-814.

2.5 DRIVES

A. Each belt-connected motor-driven unit or fan shall be provided with a variable pitch V-belt drive.

B. Sheaves shall be of cast iron or of steel, statically and dynamically balanced, bored to fit properly on the shafts and secured with key of proper size. Sheaves having set screws alone will not be permitted. Sheaves shall be variable pitched and shall be designed to give the required rpm at approximately the midposition of adjustment. Pitch diameters of sheaves shall be not less than 3.0 inches for "A" section belts; 5.4 inches for "B" section belts; 9.0 inches for "C" section belts; and 13.0 inches for "D" section belts.

C. Belts shall be selected for a minimum service factor of 1.5 (based on motor nameplate horsepower), and selected and matched in sets for equal tension.

D. All other drives shall be as described under the respective equipment paragraph of these Specifications, as applicable.

2.6 ROOF CURBS

A. Roof curbs shall be fabricated for complete compatibility with roof panels and framing system. Size and design as required to support vent unit and to adequately divert storm drainage. Provide all sealants, closures, etc. as required for complete installation. Provide roof subframing and/or headers between roof bar joists to provide continuous rigid perimeter support for the curb.

B. Prefabricated roof curbs shall be constructed of galvanized sheet steel, 16 or 14 gauge as required with corners mitered and continuously welded. Provided integral water diverter with seams continuously welded. Provide internal reinforcing as required. Factory insulate curbs with 1 ½" thick 3 lb. density fiber glass insulation. Top of curb shall be level with pitch built into curbs.

C. Mechanical contractor shall coordinate with the roofing contractor to insure compatibility of the systems and for proper installation. Provide shop drawings to roofing contractor for review and coordination.

D. The mechanical contractor is responsible for installing the curb and framing. Roofing contractor is responsible for attaching roofing to the curb. Both contractors will be held responsible for leaks.

E. Top of roof curb to be installed at a minimum of 12" above the adjacent finished roof surface.

PART 3 - EXECUTION

3.1 PIPING

A. Pipe shall be cut accurately to measurements established at the jobsite and worked into place without springing or forcing, properly clearing all windows, doors, and other openings. Cutting or other weakening of the building structure to facilitate piping installation will not be permitted without written approval. Piping and equipment supports shall be provided. Supports shall be attached only to structural framing members and concrete beams or slabs at approved locations with approved connections. Where supports are required between structural framing members, suitable intermediate metal framing shall be provided and detailed. Pipes shall have burrs removed by reaming and shall be installed to permit free expansion and contraction without damage to joints or hangers. Changes in direction shall be made with fittings. All piping shall be installed with sufficient pitch to insure adequate drainage and venting. Piping connections to equipment shall be provided with unions or flanges. Ferrous piping and copper piping shall be electrically isolated from each other with dielectric couplings or fittings.

3.2 WORKMANSHIP

A. General: All materials and equipment shall be installed in accordance with the approved recommendations of the manufacturer to conform with the contract documents. The installation shall be accomplished by workmen skilled in this type of work.

B. Screw joints shall be made with tapered threads properly cut. Joints shall be made tight with a stiff mixture of litharge and glycerin, or polytetrafluorethylene tape, or other approved thread joint compound applied to the male threads only. Not more than three threads shall show after the joint is made up.

C. Victaulic (mechanical bolted) type joints shall be grooved accurately and ends buffed flush before retainer band is put in place. Retainer bands shall be malleable iron or forged steel and shall be properly fitted to each joint.

3.3 EXCAVATION AND BACKFILL

A. As part of the work under these sections, provide all excavating and backfilling, including dewatering and shoring required for the introduction and completion of the work. The work performed under this heading must conform to surrounding grounds or finished grade and must be approved by the Engineer.

B. All excavation shall be classified in accordance with the General Conditions of these specifications.

C. Surplus material and materials unsuitable for use as fill or backfill of foundation or trench excavations shall be disposed of off the Owner's property at the Contractor's expense.

D. Borrow material, if required, may not be available on Owner's property and shall be the responsibility of the Contractor to import any required material at his expense.

E. Explosives and blasting shall not be permitted except by written permission of the Engineer.

F. Where adjacent surface areas are disturbed as a result of construction operations or the storage of materials, they shall be cleaned of all debris and restored to original conditions.

G. The Contractor shall be responsible for location in the field the excavation lines shown on the drawings. The location shall be approved by the Engineer before excavation is begun. The Contractor shall use reference points as shown on the drawings for locating control points for earthwork and construction. In the absence of reference points, the Contractor shall locate control points in accordance with the Engineer's instructions.

H. Active utilities shown on the drawings shall be adequately protected from damage and removed or relocated only as indicated or specified. Where active utilities are encountered but are not shown on the drawings, the Engineer shall be advised; the work shall be adequately protected, supported or relocated as directed by the Architect. In-active and abandoned utilities encountered in excavating and grading operations shall be reported to the Architect; they shall be removed, plugged or capped as directed by the Architect.

I. Trench Excavation: The bottom of the trenches shall be accurately graded to provide uniform bearing and support for the pipe or concrete trench as shown on the drawings. Pipe shall be supported at every point along its entire length. Unless otherwise indicated, excavation shall be by open cut and trench sides shall be vertical. The trench bottom shall follow a uniform grade as shown on the drawings in the direction of flow insofar as possible. Where the trench has been excavated below grade, either inadvertently or purposely, the trench shall be backfilled and thoroughly tamped so as to provide full length bearing for the pipe barrel.

J. Laying Pipe: Laying of pipe on blocks, brick or wood to bring the pipe to a uniform invert shall not be permitted. Drainage lines shall be layed to conform to the drawings. All pipe joints shall be inspected and approved prior to backfilling.

K. Backfilling Trenches: The trenches shall not be backfilled until all required pressure tests are performed and until the system as installed conforms to the requirements specified, except that pipe may be covered between joints to maintain alignment during testing. Except as otherwise specified for special conditions of overdepths, trenches shall be backfilled to the ground surface with selected excavated material or other material that is suitable for the specified compaction and as hereinafter specified. Four (4) inches of crushed stone (#9 gravel), chips, or sand shall be placed in the bottom of the ditch and properly graded to assure firm bedding. After pipe is in place, tests and required inspections completed, the ditch shall be backfilled with crushed stone (#9 gravel), chips, or sand to a depth of elevation no less than 4 inches above the pipe. Commencing above the pipe, the backfill shall be loose earth placed and thoroughly tamped (in layers not to exceed six (6) inches in depth) to finished grade. Where trench undercuts any foundation, provide a minimum of six (6) inches of lean concrete fill below foundation in addition to requirements listed above. Trenches under paved surfaces shall be backfilled to the surface with crushed stone, chips or dense grade. See the drawings for any special requirements noted or shown in details.

L. Backfilling Drain Lines: Compacted earth shall be placed around and over the drain lines to the elevation shown on the drawings.

3.4 WELDING AND BRAZING

A. Welders Qualification

1. Welder's qualifications shall specify results of test, or retest, positions qualified and type of welding in which qualified.

2. All welds shall be of sound metal thoroughly fused to the base metal at all points, free from cracks; and reasonably free from oxidation, blow holes, and non- metallic inclusions. No fins or weld metal shall project within the pipe; and should they occur shall be removed. All pipe beveling shall be done by machine. The surface of all parts to be welded shall be thoroughly cleaned free from paint, oil, rust or scale, at the time of welding except that a light coat of oil may be used to preserve the beveled surfaces from rust.

3. All pipe and fittings shall be carefully aligned with adjacent parts and this alignment must be preserved in a rigid manner during the process of welding.

4. It is required that all welding of piping covered by this specification, regardless of conditions of service, be installed as follows:

   a. Pipe welding shall comply with the provision of the latest revisions of the applicable code whether ASME "Boiler Construction Code", ANSI "Code for Pressure Piping", AWS and/or Kentucky KRS-236 "Boiler Safety Law". The contractor shall make arrangements for inspection visits by the state boiler inspector as required by KRS-236.

   b. The Contractor's welding procedure shall clearly set forth P-numbers of parent metal to be welded, rod or filter metal to be used and positions required.

   c. Before any pipe welding is performed, the Contractor shall submit to the Architect a copy of his welding procedure specifications together with proof of its qualification as outlined and required by the most recent issue of the code having jurisdiction.

   d. Before any operator shall perform any pipe welding, the Contractor shall also submit to the Architect, the operator's qualification record in conformance with provisions of the Code having jurisdiction, showing that the operator was tested under the approved procedure specification submitted by the Contractor.

   e. Welding work shall not be performed by welders who are not approved by the Architect and any such work performed shall be summarily removed and replaced without further recourse by the Contractor.

   f. Standard Procedure Specifications and operators qualified by the National Certified Pipe Welding Bureau shall be considered as conforming to the requirements of the specifications.

g. Each manufacturer or Contractor shall be responsible for the quality of welding done by his organization and shall repair any work not in accordance with these specifications.

h. Brazing, when specified or indicated on the contract drawings, shall be in accordance with Part UB of Section VIII of the ASME Code. Filler metal shall conform to AWS B260, Class B AG-1 or B AG-2. Procedure and performance qualification requirements for brazing shall be the same as for welding, as required above.

5. Flanges and Unions shall be faced true. Flanges shall be provided with 1/16 inch composition gasket, unless otherwise specified, and made square and tight. Union or flange joints shall be provided in each line immediately preceding the connection to each piece of equipment or material requiring maintenance such as coils, pumps, control valves, and other similar items. Gaskets shall conform to ANSI Standard B16.21.

6. Valves in horizontal lines shall be installed with stems horizontal or above. Isolation valves shall be installed on each side of each piece of equipment such as pumps, and other similar items; and at any other points indicated or required for draining, isolation, or sectionalizing purposes.

3.5 PIPE SLEEVES

A. General: Pipes passing through concrete or masonry walls or concrete floor or roofs shall be provided with pipe sleeves fitted into place with epoxy sealing grout at the time of construction. Sleeves shall not be installed in structural members except where indicated or approved. Each sleeve shall extend through its respective wall, floor or roof, and shall be cut flush with each surface, except sleeves through floor where not in chase shall extend 1/4 inch above finished floor. Unless otherwise indicated, sleeves shall be of such size as to provide a minimum of 1/4 inch all around clearance between bare pipe and sleeves or between jacket over insulation and sleeves. Except in pipe chases or interior walls, the annular space between pipe and sleeve or between jacket over insulation and sleeve shall be sealed as specified.

B. Sleeves are not required for core drilled holes.

C. Pipes Passing Through Waterproofing Membranes: Pipes passing through floor waterproofing membrane shall be installed through a 4-pound lead-flashing sleeve, or a 0.032-inch thick aluminum sleeve, each with an integral skirt or flange. Flashing sleeve shall be suitably formed, and the skirt of flange shall extend not less than 8 inches from the pipe and shall set over the floor membrane in a troweled coating of bituminous cement. The flashing sleeve shall extend up the pipe a minimum of 1 inch above the floor. The annular space between the flashing sleeve and the metal-jacket-covered insulation shall be sealed. At the Contractor's option, pipes

passing through floor waterproofing membrane may be installed through a cast iron sleeve with caulking recess, anchor lugs, flashing clamp device, and a pressure ring with brass bolts. Waterproofing membrane shall be clamped into space and sealant shall be placed in the caulking recess.

D. Pipes Passing Through Roof: Pipes passing through the roof shall be installed where shown on the drawings. Any penetration in roof shall be approved by the Roofing Manufacturer.

3.6 ESCUTCHEONS

A. Escutcheons shall be provided at all finished surfaces where exposed piping, bare or insulated, passes through floors, walls, or ceilings. Escutcheons shall be fastened securely to pipe sleeves or to extensions of sleeves without any part of sleeves being visible. Where sleeves project slightly from floors, special deep-type escutcheons shall be used.

3.7 PROTECTIVE COATINGS FOR PIPE AND FITTINGS

A. Protective Coating for Pipe and Fittings: Metallic pipe and fittings, except cast iron and copper, that are installed underground shall be provided with a field- or shop-applied coal-tar coating and wrapping or a shop-applied extruded polyethylene sheath. The coating shall consist of a coat of coal-tar primer, a coat of coal-tar enamel, a second coat of coal-tar enamel, a second wrapper of coal-tar saturated felt, and a wrapper of kraft paper applied in the order named and conforming to the requirements of AWWA Standard C203 for materials, thicknesses, methods of application, tests, and handling, except that interior lining will not be required. Upon completion of satisfactory tests hereinafter specified, the joints shall be hand-wrapped with hot-applied preformed coal-tar tape. Preparation of surface and hand-applied wrapping shall be done in such a manner that a covering equal in effectiveness to that of the shop-applied coating will be produced. When extruded polyethylene sheath is used for the protective coating, fittings and joints shall be covered in the manner and with the materials recommended by the manufacturer of the sheath.

3.8 TESTS

A. General: All tests shall be conducted in the presence of the Engineer who shall be given 2 days notice before any test is to be conducted. Any utilities, materials, equipment, instruments, and personnel required for the tests shall be provided by the Contractor.

B. Piping: After cleaning, all piping (except soil, waste and vent piping) shall be hydrostatically tested at a pressure equal to 150 percent of the total system operating pressure but not less than 100 psi for a period of time sufficient to inspect every joint in the system and in no case less than 2 hours. No loss of pressure will be allowed.

Leaks found during tests shall be repaired by rewelding or replacing pipe or fittings. Caulking or peening of joints or fittings will not be permitted. Concealed and insulated piping shall be tested in place before covering or concealing.

3.9 CLEANING

A. General: Clean all piping and equipment systems as required to leave the piping and equipment clean and free from scale, silt, contamination, etc., as normally required and as specified herein.

B. Utilities and Equipment: The Contractor shall provide all necessary temporary materials and equipment to clean the piping and equipment installed under this specification. No permanent equipment shall be used for storage, mixing, settling, compressing, pumping, etc., without the approval of the Architect. The Contractor shall supply a separate and independent source of clean, dry, oil-free air for the blowdown of systems requiring this method of cleaning.

C. Use of Chemicals: No chemicals, wetting or drying agents shall be used to clean systems or equipment where the materials of the system undergo any changes in their physical or structural characteristics. In case of any doubt as to the compatibility of any materials to the cleaning solution used, the Contractor shall obtain prior written approval for the use of the solution from the manufacturer of the equipment. Piping systems, equipment and sub-assemblies shall be cleaned after completion of welding, machining, threading, testing and any other operations capable of contaminating the system piping or equipment. After cleaning, the permanent strainers shall be removed, cleaned and replaced. Temporary strainers shall be periodically removed, cleaned and replaced during cleaning in lines ahead of equipment to protect against particles becoming lodged in the equipment.

3.10 FIRESTOPPING

A. Firestopping shall be provided around all pipe, duct and chimney penetrations of fire rated floors, masonry walls and other fire rated walls and ceilings.

B. Clean surfaces to be in contact with penetration seal materials, of dirt, grease, oil, loose materials, rust or other substances that may affect proper fitting, adhesion, or the required fire resistance.

C. Install penetration seal materials in accordance with manufacturer's instruction.

D. Seal holes or voids may be penetrations to ensure an effective smoke barrier.

E. Protect materials from damage on surfaces subject to traffic.

F. Stop insulation flush with wall on insulated pipe and seal edges.

3.11 SMOKE-STOPPING

A. Smoke-stopping shall be provided around all pipe, duct and chimney penetrations through floor or floor/ceiling assemblies and any other smoke walls or barriers.

B. Clean surfaces to be in contact with penetration seal materials, of dirt, grease, oil, loose materials, rust or other substances that may affect proper fitting, adhesion, or the required fire resistance.

C. Install penetration seal materials in accordance with manufacturer's instruction.

D. Seal holes or voids may be penetrations to ensure an effective smoke barrier.

E. Protect materials from damage on surfaces subject to traffic.

3.12 DEMOLITION AND SCHEDULE

A. All existing mechanical equipment noted on drawings and listed herein that is to be removed or demolished, shall be removed on schedule and disposed of as hereinafter directed.

B. All items removed shall become the property of the contractor and shall be immediately disposed of off site at contractor's expense except as noted on drawings unless otherwise directed by owner.

C. All demolition shall be carefully accomplished in accordance with master construction schedule so as not to remove any item required for support operation during the planned schedule. No item shall be removed until full schedule is worked out with contractors according to owners demands and agreed to in writing by the Engineer.

D. Storage will be arranged during scheduling process. Contractors to provide own storage and security.

E. Contractor doing the demolition of equipment must conform to the Clean Air Act of 1990. Refrigerant must be recovered from any air conditioning or refrigeration equipment prior to disconnecting and disposal. The contractor must own and use recovery equipment to meet this requirement. The contractor will be responsible for disposal of refrigerant, refrigerant oil or equipment.

F. If pipe, insulation or equipment to remain is damaged in appearance or is unserviceable, remove damage or unserviceable portion and replace with new products of equal capacity and quality. All existing piping to remain shall be permanently capped, new or existing valves are not adequate.

End of Section 220500

SECTION 220700 - PIPING INSULATION

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Piping Insulation

B. Jackets and Accessories

1.2 RELATED WORK

A. The General and Special Conditions and all other Contract Documents (ESPECIALLY DIVISIONS 21, 22, 23 AND 26) are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 220100 - GENERAL PROVISION FOR MECHANICAL WORK

C. Section 220500 - COMMON WORK RESULTS FOR MECHANICAL SYSTEMS

D. Section 220553 - IDENTIFICATION OF MECHANICAL PIPING AND EQUIPMENT

1.3 QUALITY ASSURANCE

A. Materials: Flame spread smoke developed rating of 25/50 in accordance with ASTM E84.

B. All pipe insulation shall be installed by mechanics specializing in this type of work. The finished product shall present a neat and workmanlike appearance. Insulation shall not be applied until all tests except operating tests have been completed, all foreign material, such as rust, scale, or dirt, has been removed and the surfaces are clean and dry. Insulation shall be clean and dry when installed and during the application of any finish.

C. The insulation, insulating materials and related items shall be delivered to the jobsite in the manufacturer's unopened containers. The containers shall have labels stating the manufacturer's name, contents, quantity and other pertinent data.

PART 2 - PRODUCTS

2.1 INSULATION

A. Type A glass fiber insulation; ANSI/ASTM C547; 'k' value of 0.24 at 75 degrees F;

noncombustible.

B. Type B cellular foam; flexible, plastic; 'k' value of 0.27 at 75 degrees F; ASTM C534. APArmaflex W (white) or APArmaflex SS (black) or equal.

C. Type C vinyl plastisol prefabricated assemblies with 1/8 minimum wall thickness. Trap wrap protective kit by Brocar, Truebro or approved equal.

2.2 JACKETS

A. Vapor Barrier Jackets: Kraft reinforced foil vapor barrier with self-sealing adhesive joints.

B. PVC Jackets: One piece, premolded type.

C. Canvas Jackets: UL listed treated cotton fabric, 6 oz/sq yd.

2.3 ACCESSORIES

A. Insulation Bands: 3/4 inch wide; 0.015 inch thick galvanized steel, stainless steel. 0.007 inch 0.18 thick aluminum.

B. Metal Jacket Bands: 3/8 inch wide; 0.015 inch thick aluminum. 0.010 inch thick stainless steel.

C. Insulating Cement: ANSI/ASTM C195; hydraulic setting mineral wool.

D. Finishing Cement: ASTM C449.

E. Fibrous Glass Cloth: Untreaded; 9 oz/sq yd weight.

F. Adhesives: Compatible with insulation.

G. Treated wooden blocks.

PART 3 - EXECUTION

3.1 PREPARATION

A. Install materials after piping has been tested and approved.

3.2 INSTALLATION

A. Install materials in accordance with manufacturer's instructions.

B. Continue insulation with vapor barrier through penetrations, except on fire rated

walls.

C. In exposed piping, locate insulation and cover seams in least visible locations.

D. On insulated piping with vapor barrier, insulate fittings, valves, unions, flanges, strainers, flexible connections, and expansion joints.

E. Provide an insert, not less than 6 inches long, of same thickness and contour as adjoining insulation, between support shield and piping, but under the finish jacket, on piping 2 inches diameter or larger, to prevent insulation from sagging at support points. Inserts shall be cork or other heavy density insulating material suitable for the planned temperature range. Factory fabricated inserts may be used. Insert shall extend around bottom 120 degrees of pipe barrel and shall be included inside vapor barrier jacket where applied. See Section 220529 for shields and hangers.

F. Neatly finish insulation at supports, protrusions, and interruptions.

G. Jackets

1. Indoor, Concealed Applications: Insulated pipes shall have standard jackets, with vapor barrier, factory-applied or field-applied. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass cloth and adhesive. PVC jackets may be used.

2. Indoor, Exposed Applications: For pipe exposed in mechanical equipment rooms or in finished spaces, insulate as for concealed applications. Finish with canvas jacket; size for finish painting. Do not use PVC jackets.

3. Flanges, Valves, Anchors and Fittings: Unless otherwise specified, all flanges, valves, anchors and fittings shall be insulated with factory premolded or field fabricated segments of insulation of the same materials and thickness as the adjoining pipe insulation. When segments of insulation are used, elbows shall be provided with not less than three segments. For other fittings and valves, segments shall be cut to required curvatures, or nesting size sectional insulation shall be used. The segments of the insulation shall be properly placed and jointed with fire-resistant adhesive. After the insulation segments are firmly in place, fire-resistant vapor barrier coating shall be applied over the insulation in two coats with glass tape embedded between coats. The coating shall be applied to a total dry film thickness of 1/16 inch minimum. All glass tape seams shall be terminated neatly at the ends of the unions with insulating cement troweled on the bevel. For piping operating below ambient temperature, the beveled ends shall receive a coat of vapor barrier coating. Where anchors are used and secured directly to low temperature piping, they shall be insulated for a distance to prevent condensation, but not less than 6 inches from the surface of the pipe insulation. For jacket facing to receive finish painting, the factory applied

jacket shall be as specified herein, except that the kraft paper shall be light colored with the kraft paper exposed. Field applied vapor barrier jacket shall conform to the above conditions where finish painting is required.

Piping	Type	Pipe Size (inch)	Thickness (inch)
Domestic Hot Water Supply/Recirculation	A/B	all	1
Domestic Cold Water	A/B	all	1
Copper Water Piping Below Slab and Inside Walls	B	all	½
Chrome Plated Piping to Handicapped Lavatories	C	all	½
Chrome Plated Piping to Plumbing Fixtures		None	

END OF SECTION 220700

SUBMITTALS

In accordance with the requirements of the General Conditions and Supplementary General Conditions, the following information is required to be submitted for this Section. The Contractor shall submit 11 copies of the required information to Architect for approval within 30 days after notice to proceed.

ITEM DESCRIPTION	SHOP DRAWINGS	CATALOG DATA	PARTS LISTS	OPERATING MANUAL	WIRING DIAGRAM	CERTIFICATION	SAMPLES	OTHER
Pipe Insulation	X	X					X	
Fitting Insulation	X	X						
Insulation Block Inserts		X					X	

SECTION 221000 - PLUMBING PIPING AND VALVES

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Pipe and Pipe Fittings

B. Valves

C. Sanitary Sewer Piping

D. Domestic Water Piping

1.2 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents (ESPECIALLY DIVISIONS 21, 22, 23 AND 26) are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 220100 - GENERAL PROVISION FOR MECHANICAL WORK

C. Section 220500 - COMMON WORK RESULTS FOR MECHANICAL SYSTEMS

D. Section 220553 - IDENTIFICATION FOR MECHANICAL PIPING AND EQUIPMENT

E. Section 220700 - PIPING INSULATION

F. Section 223000 - PLUMBING SPECIALTIES

G. Section 224000 - PLUMBING FIXTURES

1.3 QUALITY ASSURANCE

A. Valves: Manufacturer's name and pressure rating marked on valve body.

B. Welding Materials and Procedures: Conform to ASME Code.

C. Welders Certification: In accordance with ANSI/ASME Section 9.

D. Cast Iron Pipe: All cast iron pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute (CISPI) and shall be listed by NSF International.

E. Hubless Cast Iron Couplings: All couplings for Hubless cast iron soil pipe and fittings shall conform to CISPI 310 and be certified by NSF International.

F. **All drinking water system components that convey or dispense water for human consumption through drinking or cooking shall be "lead-free" in accordance with NSF/ANSI 61 and/or NSF/ANSI 372 standards and any and all state and local requirements.**

PART 2 - PRODUCTS

2.1 SANITARY SEWER PIPING, BURIED INSIDE AND OUTSIDE OF BUILDING.

A. Cast Iron Pipe: ASTM A74, extra heavy or service weight. Fittings: Cast iron. Joints: ASTM C564, neoprene gasketing system.

B. PVC Pipe (House Line): ASTM D2665. Fittings: PVC. Joints: ASTM D2855, solvent weld.

2.2 SANITARY SEWER PIPING, INTERIOR, ABOVE GRADE

A. Cast Iron Pipe: ASTM A74, service weight. Fittings: Cast iron. Joints: Hub-and-spigot, CISPI HSN compression type with ASTM C564 neoprene gaskets.

B. Cast Iron Pipe: CISPI 301, hubless, service weight. Fittings: Cast iron. Joints: Neoprene gaskets and stainless steel clamp-and-shield assemblies. Above grade only.

C. Copper Pipe: ASTM B306, DWV. Fittings: ANSI/ASME B16.3, cast bronze, or ANSI/ASME B16.29, wrought copper. Joints: ANSI/ASTM B32, solder, Grade 50B.

D. Steel Pipe: ASTM A53 or A120, Schedule 40 galvanized. Fittings: Galvanized malleable cast iron drainage pattern. Joints: screwed.

2.3 WATER PIPING, INTERIOR

A. Copper Tubing: ASTM B88, Type K below slab, Type L above slab. Fittings: ANSI/ASME B16.23, cast brass, or ANSI/ASME B16.29, wrought copper. Joints: ANSI/ASTM B32, solder, Grade 95TA.

B. Galvanized Steel Pipe: ASTM A53 or A120, Schedule 40. Fittings: Cast iron. Joints: Grooved mechanical couplings. For equipment connections only.

2.4 FLANGES, UNIONS, AND COUPLINGS

A. Pipe Size 2 Inches and Under: 150 psig, malleable iron unions for threaded ferrous piping; Schedule 40 250 psig malleable iron unions for threaded ferrous piping, Schedule 80 malleable unions for copper pipe, soldered joints.

B. Pipe Size Over 2 Inches: 150 and 300 psig as required by equipment , forged steel slip-on flanges for ferrous piping; bronze flanges for copper piping; neoprene gaskets for gas service; 1/16 inch thick preformed neoprene bonded to asbestos.

C. Grooved and Shouldered Pipe End Couplings: Malleable iron housing clamps to engage and lock, designed to permit some angular deflection, contraction, and expansion; "C" shape composition sealing gasket; steel bolts, nuts, and washers; galvanized couplings for galvanized pipe.

D. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.5 BALL VALVES

A. Up to 2 Inches: Bronze body, stainless steel ball, teflon seats and stuffing box ring, lever handle and balancing stops, threaded ends with union.

B. Over 2 Inches: Cast steel body, chrome plated steel ball, teflon seat and stuffing box seals, lever handle or gear drive handwheel for sizes 10 inches and over, flanged.

C. Manufactured by Apollo, Crane, Nibco, Stockham and Watts.

2.6 BUTTERFLY VALVES (150# WOG)

A. Iron body, bronze disc, resilient replaceable seat for service to 180 degrees F, water or lug ends, infinite position lever handle with memory stop.

B. Manufactured by Apollo, Crane, Nibco, Stockham and Watts.

2.7 SWING CHECK VALVES (150# WOG)

A. Up to 2 Inches: Bronze 45 degree swing disc, solder or screwed ends.

B. Over 2 Inches: Iron body, bronze trim, 45 degree swing disc, renewable disc and seat, flanged ends.

C. Manufactured by Apollo, Crane, Nibco, Stockham and Watts.

2.8 SPRING LOADED CHECK VALVES

A. Iron body, bronze trim, spring loaded, renewable composition disc, screwed, wafer, or flanged ends.

B. Manufactured by Apollo, Crane, Nibco, Stockham and Watts.

2.9 WATER PRESSURE REDUCING VALVES

A. Bronze body, stainless steel and thermoplastic internal parts, fabric reinforced diaphragm, strainer, threaded ends.

B. Manufactured by Apollo, Consolidated, Kunkel, Watts and Zurn.

2.20 RELIEF VALVES

A. Bronze body, teflon seat, steel stem and springs, automatic, direct pressure actuated, capacities ASME certified and labeled.

B. Manufactured by Apollo, Consolidated, Kunkel, Watts and Zurn.

PART 3 - EXECUTION

3.1 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.2 INSTALLATION

A. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

B. Route piping in orderly manner and maintain gradient.

C. Install piping to conserve building space and not interfere with use of space. Do not change the designed path of piping, add excessive turns or offsets, or change pipe sizes without first consulting the Engineer.

D. Group piping whenever practical at common elevations.

E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

F. Provide clearance for installation of insulation and access to valves and fittings.

G. Provide access where valves and fittings are not exposed.

H. Slope water piping and arrange to drain at low points.

I. Establish elevations of buried piping outside the building to ensure not less than 3 feet of cover.

J. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

K. Prepare pipe, fittings, supports, and accessories not prefinished, ready for finish painting.

L. Establish invert elevations, slopes for drainage to be 1/8 inch per foot one percent minimum. Maintain gradients.

M. Excavate in accordance with Section 220100 for work of this Section.

N. Backfill in accordance with Section 220100 for work of this Section.

O. Install bell and spigot pipe with bell end upstream.

P. Install valves with stems upright or horizontal, not inverted.

3.3 APPLICATION

A. Use grooved mechanical couplings and fasteners only in accessible locations.

B. Install unions downstream of valves and at equipment or apparatus connections.

C. Install brass male adapters each side of valves in copper pipe system. Sweat solder adapters to pipe.

D. Install ball and/or butterfly valves for shut-off and to isolate equipment, parts of systems, vertical risers and branch piping serving fixtures without a means of shut-off. Valves to be located in such a manner to be accessible for service personnel. Provide access panel(s) if required to access valves.

E. Install ball valves for throttling, bypass, or manual flow control services.

F. Provide spring loaded check valves on discharge of water pumps.

G. Do not install above grade piping in areas subject to freezing. Where such an area is encountered, notify the engineer for instruction.

3.4 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

A. Prior to starting work, verify system is complete, flushed and clean.

B. Ensure PH of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).

C. Inject disinfectant, free chlorine in liquid, powder, tablet or gas form, throughout system to obtain 50 to 80 mg/L residual.

D. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.

E. Maintain disinfectant in system for 24 hours.

F. If final disinfectant residual test less than 25 mg/L, repeat treatment.

G. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.

H. Take samples no sooner than 24 hours after flushing, from outlets and from water entry, and analyze in accordance with AWWA C601.

3.5 SERVICE CONNECTIONS

A. Provide new sanitary sewer service. Before commencing work check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.

B. Provide new water service complete with reduced pressure backflow preventor.

END OF SECTION 221000

SUBMITTALS

In accordance with the requirements of the General Conditions and Supplementary General Conditions, the following information is required to be submitted for this Section. The Contractor shall submit 11 copies of the required information to Architect for approval within 30 days after notice to proceed.

ITEM DESCRIPTION	SHOP DRAWINGS	CATALOG DATA	PARTS LISTS	OPERATING MANUAL	WIRING DIAGRAM	CERTIFICATION	SAMPLES	OTHER
Sanitary Piping	X	X						
Domestic Water Piping	X	X						
Valves	X	X						

SECTION 224000 - PLUMBING FIXTURES AND EQUIPMENT

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Water Closets
B. Lavatories
C. Showers
D. Shower Trim
E. Floor Drains

1.2 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents (ESPECIALLY DIVISIONS 21, 22, 23 AND 26) are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 220100 - GENERAL PROVISION FOR MECHANICAL WORK

C. Section 220500 - COMMON WORK RESULTS FOR MECHANICAL SYSTEMS

1.3 GENERAL REQUIREMENTS

A. All plumbing fixtures and their installation shall conform to the requirements of the Kentucky State Plumbing Code.

B. Exposed metal work shall be bright chrome-plated brass except as noted.

C. All fixtures shall be by the same manufacturer.

D. All ADA accessible water closets provided with manual flush valve/trip lever shall have the flush valve handle/trip lever mounted on the wide(open) side of the water closet.

E. **All drinking water system components that convey or dispense water for human consumption through drinking or cooking shall be "lead-free" in accordance with NSF/ANSI 61 and/or NSF/ANSI 372 standards and any and all state and local requirements.**

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Acorn, Ancorn Aqua, American Standard, Bemis, Briggs/Proflo, Chicago, Clarion Bathware, Church, Component Hardware, Crane, Delany, Delta, Eljer, Elkay, Encon, Fiat, Guardian, Haws, Intersan, Jay R. Smith, Just, Kohler, Lawler, Leonard, Moen, Murdock, Mustee, Oasis, Olsonite, Powers, Sioux Chief, Sloan, Speakman, Steam-Williams, Stingray Systems, Symmons, T&S Brass, Toto, Willoughby, Watersaver, Watts and Zurn. SEE SCHEDULES ON DRAWINGS.

2.2 Products listed in schedule on drawings shall determine quality and grade required. If other than those listed in schedule are to be used, equivalent or parallel grade shall be used.

2.3 All drains shall be constructed of the finest quality cast iron, coated with the manufacturer's standard protective paint and furnished with all items specified. Drain shall be as manufactured by Josam, Sioux Chief, Smith, Wade, Watts and Zurn.

PART 3 - INSTALLATION

3.1 Install each fixture with traps, easily removable for servicing and cleaning.

3.2 Provide bright chrome plated annealed copper supplies to fixtures with screwdriver stops, reducers and escutcheons.

3.3 All wall-hung fixtures shall be furnished with carriers.

3.4 Work shall be accurately laid out and roughed-in so that all piping will be straight and true without bends and offsets and no such bends and offsets will be acceptable unless they are unavoidable and are allowed by the Architect.

3.5 Seal fixtures to wall and/or floor surfaces with sealant, color to match fixtures.

3.6 If fixture mounting surfaces do not allow mounting to be level and plumb, surfaces are to be grounded smooth and flat.

3.7 Install ADA accessible water closets with flush valve handle/trip lever mounted on the wide(open) side of the water closet.

END OF SECTION 224000

SUBMITTALS

In accordance with the requirements of the General Conditions and Supplementary General Conditions, the following information is required to be submitted for this Section. The Contractor shall submit 11 copies of the required information to Architect for approval within 30 days after notice to proceed.

ITEM DESCRIPTION	SHOP DRAWINGS	CATALOG DATA	PARTS LISTS	OPERATING MANUAL	WIRING DIAGRAM	CERTIFICATION	SAMPLES	OTHER
Water Closets	X	X						
Lavatories	X	X		X				
Showers	X	X		X				
Shower Trim	X	X		X				
Floor Drains	X	X		X				

SECTION 233423 - POWER VENTILATORS

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Ceiling Exhaust Fans

1.2 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents (ESPECIALLY DIVISIONS 21, 22, 23 AND 26) are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 220500 - COMMON WORK RESULTS FOR MECHANICAL SYSTEMS

1.3 REFERENCES

A. AMCA 99 - Standards Handbook.

B. AMCA 210 - Laboratory Methods of Testing Fans for Rating Purposes.

C. AMCA 300 - Test Code for Sound Rating Air Moving Devices.

D. AMCA 301 - Method of Publishing Sound Ratings for Air Moving Devices.

E. SMACNA - Low Pressure Duct Construction Standard.

1.4 QUALITY ASSURANCE

A. Performance Ratings: Conform to AMCA 210.

B. Sound Ratings: AMCA 301, tested to AMCA 300.

C. Fabrication: Conform to AMCA 99.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Greenheck, Penn, Carnes, Loren Cook, Jenn-Aire, Acme, Adco, ILG, Shipman, Breident, Venmar, Spinnaker.

2.2 GENERAL

A. Provide all fans with disconnect.

B. Provide all fans with motor starters. See Section 220100 for details.

C. Integral phase relay shall be provided as a part of all three phase motor starters. Relay shall shut motor down on phase loss or phase unbalance and automatically reset when normal phasing is restored. Phase failure relay shall have adjustable restart time capabilities. Mechanical contractor shall coordinate staggered restart times as required.

2.3 CEILING EXHAUST FANS

A. Centrifugal Fan Unit: V-belt or direct drive, with galvanized steel housing lined with 1/2 inch acoustic insulation resilient mounted motor, gravity backdraft damper in discharge.

B. Disconnect Switch: Factory wired, non-fusible, in housing for thermal overload protected motor and wall mounted multiple speed switch/solid state speed controller.

C. Grille: Molded white plastic or aluminum with baked white enamel finish.

D. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed, variable and adjustable pitch motor sheaves selected so required rpm is obtained with sheaves set at mid-position, fan shaft with self-aligning pre-lubricated ball bearings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install equipment in a manner to provide required clearances for proper operation and maintenance.

C. Secure roof exhausters with lag screws to roof curb.

END OF SECTION 233423

SUBMITTALS

In accordance with the requirements of the General Conditions and Supplementary General Conditions, the following information is required to be submitted for this Section. The Contractor shall submit 11 copies of the required information to Architect for approval within 30 days after notice to proceed.

ITEM DESCRIPTION	SHOP DRAWINGS	CATALOG DATA	PARTS LISTS	OPERATING MANUAL	WIRING DIAGRAM	CERTIFICATION	SAMPLES	OTHER
Ceiling Exhausters	X	X	X	X	X			

SECTION 260500 - COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

1.2 SCOPE

A. Include furnishing of all labor, materials, equipment and other related items required to complete the work called for and indicated on the Contract Drawings and specified for a complete system.

B. The work covered by this section of the contract shall include the furnishing of all labor, materials, tools and equipment necessary to complete the electrical work as herein specified, or implied and as shown or implied on the contract drawings.

C. All materials shall be new and the best of their respective kinds unless otherwise specified and shall be listed by UL and shall be so labeled. All equipment shall conform to the latest approved standards of the IEEE, NEMA, ANSI and OSHA.

1.3 ABBREVIATIONS OF ORGANIZATIONS AND PUBLICATIONS

NEC	- National Electrical Code
UL	- Underwriters Laboratories, Inc.
IPCEA	- Insulated Power Cable Engineers Association
ANSI	- American National Standards Institute
OSHA	- Occupational Safety Health Act
IMC	- International Mechanical Code

1.4 DRAWINGS AND SPECIFICATIONS

A. The contract drawings and specifications are intended to cover all work enumerated under the respective headings. Examine all contract drawings and specifications to determine any references to work of an electrical nature and be guided accordingly in prosecuting the electrical work. The contract drawings are diagrammatic only, as far as final location is concerned. Any item of work not clearly included, specified or shown, and any errors or conflict between contract drawings, specifications, codes and field conditions shall be clarified by a written request to the architect prior to bidding; otherwise all labor and materials required to make good any damage or defect in finished work caused by such error, omission or conflict shall be provided at no additional cost to the Owner.

1.5 CODE COMPLIANCE

A. The minimum standards for all electrical work shall be the 2011 revision of the NEC. Whenever and wherever OSHA and/or federal, state, and/or local laws or regulations and/or design require higher standards than the NEC, then these laws and/or regulations and/or design shall be followed.

1.6 "OR EQUAL" CLAUSE

A. The specifications covering this work are open; wherever a specific manufacturer's item is specified, it is intended as a standard to be met and items which are approved equal or superior will be accepted.

1.7 WARRANTY

A. All equipment shall be warranted for a period of at least one (1) year from the date of acceptance, as evidenced by date of substantial completion for the entire project of for the last phase of the project, whichever occurs later, against defective materials, design, and workmanship. In addition to the equipment warranty, the Contractor shall provide all repair and adjustment service necessary for the proper operation of the entire system for the length of the entire warranty period.. Upon receipt of notice from the Owner's representative of failure of any part of the warranted system or equipment during the warranty period, the affected part shall be replaced promptly with a new part without cost to the Owner. Upon failure to take action within 24 hours after being notified, the work will be accomplished by the Engineer at the expense of the Contractor. See General Conditions and individual equipment specifications. Note that the warranty period of time specified in this section represents the minimum warranty period required for work performed under specification Divisions 260000, 270000, and 280000. Where the General Conditions and/or individual equipment/system specifications require a warranty period of longer duration or earlier start date than specified in this paragraph, the longer duration/earlier start date shall supercede for those portions of work covered by that specification. In the event the contractor is notified of warranty issues but does not correct or address the warranty issues prior to the end of the specified warranty period, the contractor will not be relieved of the responsibility to correct the deficient items after the warranty end date has passed.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.1 COOPERATION

A. Check with other trades on the scope of their work and coordinate on all locations of

various items of equipment and outlets before they are finally placed and connected. Any relocation of material or equipment necessitated by failure to coordinate work shall be at no cost to the Owner.

B. Do not cut the work of any other trade without first consulting the Architect's representative. Repair any work damaged employing the services of the trade whose work is damaged.

3.2 INSPECTION AND CERTIFICATES

A. Furnish electrical inspection by a licensed electrical inspector. Notify the electrical inspector in writing, immediately upon the start of the work with a copy of the notice to the architect. The inspector shall be scheduled for rough as well as finished work. Approval from the electrical inspector will not be allowed as reason for deviation from the contract drawing and specifications. All cost incidental to the electrical inspection shall be borne by the contractor.

3.3 CLEANING

A. At the completion of the work required under this contract and just prior to acceptance by the Owner, thoroughly clean all exposed equipment fittings, fixtures and accessories.

3.4 CONNECTIONS TO EQUIPMENT BY OTHERS

A. Provide all conduit, boxes and wire with required connections, including any disconnect switches called for by NEC to all electrically powered or controlled equipment furnished and set in place by others. Examine all divisions of the specifications and all contract drawings to determine location and size of all electrically powered or controlled equipment.

3.5 SPECIAL NOTE

A. All openings in electrical equipment, enclosures, cabinets, outlets and junction boxes shall be by means of standard knockouts or shall be sawed or drilled. The use of a cutting torch is prohibited.

3.6 PIPE SLEEVES AND FIRE RATING OF OPENINGS

A. Holes through walls and ceilings, chases, shafts, etc., for the passage of cable or conduit shall be made so as to substantially preserve the integrity of the fire rating of such surfaces or passages in accordance with NEC 300-21.

3.7 OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS

A. At completion of the contract, the Owner shall be provided with three (3) bound copies of operations and maintenance instructions for the various items of the electrical equipment.

B. In addition to manufacturer's approved shop drawings, manual shall include a listing of equipment and distribution or supplier of the equipment. In case of lighting fixtures, the type replacement lamp including voltage and other necessary designation shall be included.

3.8 SHOP DRAWINGS

Submit the required number of copies of Shop Drawings including, but not limited to the following items:

1. Lighting Fixtures

2. Switches and Receptacles

END OF SECTION 260500

SECTION 260510 - ELECTRICAL DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

1.2 SCOPE

A. Electrical demolition is required in the existing building as indicated on the architectural drawings. Where circuits or other electrical items feed through to adjoining spaces they shall be maintained or re-routed as required to be compatible with new work. See architectural drawings for more information on areas to demolish.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

A. The contractor shall visit the site, prior to submitting bids and familiarize himself with existing field conditions relative to demolition work and routing, interferences and all other difficulties that may be encountered relative to this contract. Failure to visit the site shall not constitute sufficient reason to warrant a change order for difficulties not apparent in the contract documents.

B. The contractor shall seal floor openings from removed conduits with thermo setting fire resistive compound.

C. Any outlet boxes left empty after demolishing a device may be reused for installation of a new device if in close proximity to a new device going in, if box is at correct mounting height, and if outlet box and conduit are of sufficient size for new device. Otherwise, cover empty box with blank plate.

D. If circuitry within the area of demolition serves equipment located outside the boundaries of the demolition, the continuity of the circuits shall be maintained as required to keep the equipment operational.

E. The electrical contractor shall be responsible for damage caused by said contractor to existing-to-remain materials. Repair or replace damaged material or equipment as directed at no additional cost.

F. Repairing, painting and patching of walls shall be by others, as described in other sections of the specifications.

G. The owner has the option of retaining or rejecting all demolished materials. The electrical contractor shall be responsible for removing from the site any electrical-related material not claimed by the owner.

END OF SECTION 260510

SECTION 260526 - GROUNDING AND BONDING OF ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 260500 - Common Work Results for Electrical Systems is applicable to work under this section of the specifications.

1.2 SCOPE

A. The conduit system and neutral conductors of the wiring system shall be grounded in accordance with NEC.

PART 2 - PRODUCTS

2.1 CONDUCTORS

A. Conductors shall be copper unless otherwise noted. Conductors shall be rated for 600V. Conductors must meet ASTM and NEC requirements.

PART 3 - EXECUTION

A. The entire grounding system shall be installed in a workmanlike manner and shall be inconspicuous.

B. Continuity of the ground shall be maintained throughout the building. Continuity of equipment and raceway ground shall be insured by the use of double locknuts and insulated grounding bushings bonded to enclosures at service equipment, at all panelboards, safety switches, pull boxes, etc., and at the terminations of all conduit which (1) house the supply conductors to the main bus or main breaker of a panelboard; (2) house the conductors of any branch or feeder circuit protected at 60 amperes or more. Convenience outlets shall be grounded by means of a bonding wire attached to the outlet box in a manner approved by NEC Article 250-148.

C. All equipment or device grounds at panelboards, service or distribution equipment shall be connected to ground bars in such equipment with set screw connectors.

D. Whether shown on the drawings or not, all equipment and device feeders (receptacles, light fixtures, motor connections, etc.) shall include a green ground wire, sized per NEC, to be run in conduit with power conductors. Provide grounding

connections per NEC 250.

END OF SECTION 260526

SECTION 260533 - GENERAL MATERIALS AND INSTALLATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 260500 - Common Work Results for Electrical Systems is applicable to work under this section of the specifications.

PART 2 - PRODUCTS

2.1 CONDUIT

A. In general, conduit shall be zinc-coated, steel conduit and shall meet in all respects, the UL Standards for Rigid Steel Conduit.

B. Electrical metallic tubing (EMT) may be used in all places unless otherwise noted.

2.2 OUTLET BOXES

A. Only zinc-coated or cadmium plated, sheet-steel boxes according to NEC, of a class to satisfy the conditions for each outlet shall be used in concealed work.

B. For masonry or drywall construction, square cornered boxes measuring 3-3/4" high by approximately 2" wide and having interior device mounting holes shall be used.

C. Single gang boxes for devices shall be not less than 2-1/2" deep unless limited by depth of construction and shall accommodate up to five #12 conductors. When construction depth permits, 3-1/2" deep boxes shall be used for devices where the number of conductors entering a single gang outlet is 6 to 8. Where more than 8 conductors enter an outlet housing a single device, boxes shall be 4" square by 2-1/8" deep to accommodate a maximum of 14 conductors and shall be provided with single device, square cornered tile wall covers of a suitable depth. Where construction depth is limited or to facilitate installation in cavity walls, 4" square boxes 1-1/2" deep may be used with single gang square cornered tile wallcovers in lieu of single gang, 2-1/2" or 3-1/2" deep boxes. Such installation shall be increased to conform with NEC requirements for conductors larger than #12 AWG.

D. Where two or more devices are to be ganged at one outlet, 3-3/4" high boxes as specified above and with the required number of gangs shall be used. Each gang

shall be subject to the same "fill" limitations as for single gang installation.

2.3 WIRES AND CABLES (CONDUCTORS)

A. LOW VOLTAGE (0 - 600V)

1. All conductors shall be copper unless otherwise specified.

2. Insulation unless otherwise noted shall be thermoplastic Type THHN-THWN. The color code shall be in accordance with the National Electric Code.

3. Branch circuit conductors shall be not smaller than No. 12 A.W.G. Branch circuits longer than 100' shall be run with minimum No. 10 A.W.G. Conductors for signal and pilot control circuits may be No. 14 A.W.G.

4. All building wires shall be as manufactured by Capital, General Electric, General Cable, American, Southwire, US Wire or approved equal.

2.4 JUNCTION BOXES AND TERMINAL CABINETS

A. All junction and terminal cabinets used under this contract shall be constructed of code gauge, galvanized steel and shall be as manufactured by Steel City, Appleton, O-Z/Gedney, RACO, Killark, or approved equal.

2.5 SURFACE RACEWAY

A. Where existing conduit and backboxes cannot be used, contractor shall utilize surface raceway equal to Wiremold V700 series, but sized accordingly. Provide base, cover, 2-hole support straps, backboxes, etc. as required.

PART 3 - EXECUTION

3.1 CONDUIT

A. All thick wall terminals shall be capped with insulating bushings. Electrical metallic tubing shall be terminated with connectors with insulated throat. Metallined terminating fittings will not be acceptable. All terminating fittings shall be secured to box or cabinet with double lock-nut type of construction.

B. Couplings and connectors for electrical metallic tubing shall be steel and shall be of the compression type. Set screw and indentation type connectors will not be acceptable, except that approved type steel set screw connectors may be used on EMT 2-1/2" or larger an on rigid conduit unless otherwise noted.

C. Runs of conduit or tubing shall have supports spaced in accordance with the NEC,

and exposed conduit shall be installed with runs parallel or perpendicular to walls, structural members or intersections of vertical planes and ceilings, with right angle turns consisting of cast metal fittings or symmetrical bends. Bends or offsets shall be avoided were possible but where necessary shall be made with an approved conduit bending machine. Conduit or tubing which has been crushed or deformed in any way shall not be installed. Expansion fittings or other approved devices shall be used to provide for expansion or contraction where conduit or tubing crosses expansion joints. Conduit and tubing shall be supported on an approved type of ceiling trapeze, beam clamps, strap hangers, or pipe straps, secured by means of toggle bolts on hollow masonry units, expansion shields in concrete or brick and machine screws on metal surfaces. The use of tie wire for suspending conduits or securing same to joists, purlins, beams, etc., will not be allowed. Conduit shall be securely fastened to all sheet metal outlets, junction and pull boxes with double galvanized locknuts and insulating bushings.

D. Conduit and tubing shall be installed in such manner as to insure against trouble from the collection of trapped condensation, and all runs shall be arranged so as to be devoid of traps wherever possible.

E. The final 18 inch section of conduit connecting each motor shall be liquid tight flexible type.

F. All conduit shall be installed concealed unless otherwise noted or shown on the drawings.

G. No conduit smaller than 3/4" shall be used except as noted. No flexible conduit smaller than 1/2" shall be used except as permitted by NEC 348. Flexible conduit shall be used only for light fixture whips unless otherwise noted.

3.2 OUTLET BOXES

A. Outlets shall be installed in the locations shown on the contract drawings. The general building plans shall be studied in relation to the spaces surrounding each outlet in order that work under this division of the specifications may fit the work required under other divisions. When necessary, outlets shall be relocated so that when fixtures or other fittings are installed they will be symmetrically located according to room layout and will not interfere with other work or equipment.

B. Boxes shall be installed in a rigid and satisfactory manner either by wood screws on wood, expansion shields on masonry, or machine screws on steel.

C. All supports required for outlet boxes in addition to that furnished under the general building construction, shall be furnished and installed under this division of the specifications. All supports shall be steel.

D. Partitions shall be provided in ganged boxes as required for conformity with NEC

380-8.

E. Where tile covers are used, they shall be of sufficient depth to bring the box opening within 1/4" of the finished wall surface.

F. Provide and install blank metal cover plates for all boxes which do not receive devices.

3.3 WIRES AND CABLES (CONDUCTORS)

A. LOW VOLTAGE (0 - 600V)

1. Conductors shall be continuous from outlet to outlet and no splices shall be made except within outlet or junction boxes. Junction boxes may be utilized where required.

2. Wire connectors of insulating materials or solderless pressure connectors properly insulated shall be utilized for all splices and wiring where possible. Rubber and friction tape shall conform to NEC and be UL approved. Vinyl plastic tape will be acceptable in lieu of rubber and friction tape. For branch circuit wires sizes #6 and smaller, and for fixture wiring, all splices shall be made with approved type crimp-on sleeves with separate outer insulating cap. In lieu of this, preinsulated, twist on torsion spring type connectors equal to "Scotchlok" may be utilized. The use of threaded connectors with integral insulation of bakelite or other material will not be allowed.

3.4 SURFACE RACEWAY

A. Paint raceway to match wall.

END OF SECTION 260533

SECTION 262700 - WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 260500 - Common Work Results for Electrical Systems is applicable to work under this section of the specifications.

PART 2 - PRODUCTS

2.1 SWITCHES

A. All switches shall be of the flush tumbler type. All wall switches shall be rated at 20 ampere, 120 volts.

B. Switches shall be specification grade and shall be as follows, or approved equal:

	HUBBELL	PASS & SEYMOUR	LEVITON
20A Single Pole	1221	20AC1	1221-2

2.2 RECEPTACLES

A. Convenience outlets shall be 20 amp rated, Hubbell No. 5352, Leviton No. 5362-1, or Pass & Seymour No. 5362-A, of the grounding type.

B. GFI duplex outlets shall be fully UL 943 compliant, equivalent to Hubbell No. GF 5352A, or equal by Pass & Seymour or Leviton.

2.3 PLATES

A. All plates for concealed devices shall be jumbo sized, ivory, nylon type.

2.4 All wiring devices shall be of one manufacturer and shall be ivory.

END OF SECTION 262000

SECTION 265000 - LIGHTING SYSTEMS AND FIXTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General and Special Conditions and all other Contract Documents are applicable to work under this section of the specifications. All the work under this section of the specifications shall be governed by any alternates and unit prices called for in the FORM OF PROPOSAL insofar as they affect this portion of the work.

B. Section 260500 - Common Work Results for Electrical Systems is applicable to work under this section of the specifications.

PART 2 - PRODUCTS

2.1 LIGHT FIXTURES

A. Furnish and install the lighting fixtures complete with lamps, as shown on the Contract Drawings. Proposed substitutions for lighting fixtures shall be submitted to the Engineer no later than ten (10) days prior to bid date.

B. The proper number and type of fixture shall be provided for each lighting outlet. See below for Light Fixture Schedule.

2.2 LIGHT FIXTURE SCHEDULE

LF-1 Wall mounted 38" vanity light with 20-gauge steel housing, translucent acrylic diffuser, brushed aluminum trim, polished end caps, 120V programmed start electronic ballast, UL listing, and two (2) F25T8 lamps.
ASL #DRBV-225T8-120-3500K-FBE-CLE
Original Cast and Lightolier equal

LF-2 Surface mounted 4' architectural ceiling mount fixture with 20-gauge steel housing, translucent acrylic lens, decorative end caps, 120V programmed start electronic ballast, UL listing, and two (2) F32T8 lamps.
Lithonia #10521RE-WH
Lightolier and Williams equal

LF-3 Recessed LED downlight with 16-gauge galvanized steel mounting frame, torsion spring brackets, vertically adjustable mounting brackets, 16-gauge flat bar hangers, height adjustment, one-piece die cast trim, finned heat sink, wet location rated lens, elliptical upper reflector, micro-prism lens, matt-white splay, thermal protection, 70% lumen output for more than 50,000 hours, 1000 delivered lumens, 14.2 input watts, wet location listed and 5-year limited warranty.

Lithonia #REALC-D6MW-1000L-35K-.95SC
Omega and Pathway equal

2.3 LAMPS AND BALLASTS

A. All lamps shall be rated at 120 volts. All lamps shall be as manufactured by General Electric, Osram, Phillips, or approved equal. All ballasts shall be Advance, Motorola, General Electric or approved equal. Ballasts to be energy-saving magnetic or electronic, as specified with each fixture type. All lamps shall be of the same manufacture. All fluorescent and compact fluorescent lamps shall have a minimum CRI of 82.

PART 3 - EXECUTION

2.1 LIGHT FIXTURES

A. All steel supports required for lighting fixtures, in addition to those furnished and installed under the general building construction, shall be furnished and installed under this section of the specifications.

B. Fixtures in suspended ceilings shall be independently secured to framing members in accordance with NEC 410-16. Electrical contractor is responsible for the installation of a minimum of two grid support wires at opposing corners of each light fixture installed in a lay-in or gypsum ceiling, from the fixture to the structure. Each grid light fixture shall be installed with grid-clips.

END OF SECTION 265000