Project Manual and Specifications

Office Building

for the

Powell's Valley Water District
Clay City, Kentucky

MSE Project Number: 9524-21

March 2026

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Powell's Valley Water District

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SECTION 00020 - ADVERTISEMENT FOR BIDS
Office Building for the
Powell's Valley Water District
Clay City, Kentucky

Sealed bids for the construction of the Powell's Valley Water District Office Building, Clay City, KY, will be received in the office of Randy Ledford, Superintendent at 31 Adams Ridge Rd, Clay City KY 40312, until 1:00 p.m., local time, Thursday, March 26, 2026. The bid opening will be at 2:00 p.m., local time, Thursday, March 26, 2026, at the Powell County Emergency Management Office, 33 Commerce Drive, Stanton, KY 40383 and will be publicly opened and read aloud. Hand carried bids will be received from 1:00 – 2:00 p.m. local time, at the Powell County Emergency Management Office, Thursday, March 26, 2026.

The CONTRACT DOCUMENTS may be reviewed at the following locations:
MSE Web Site: mselex.com under Bid Opportunities
Powell's Valley Water District Office at location stated above

All Contract Documents and Addenda will be posted on our web page, mselex.com under Bid Opportunities.

Copies of the Contract Documents may be obtained at the office of Lynn Imaging, 328 E. Vine St. Lexington, KY 40507, (859) 226-5850 upon receipt of a check made payable to Lynn Imaging in the amount of $250.00 (non-refundable). All orders must be prepaid. There will be a 24 hour turn-around on all orders.

A certified check or bank draft, payable to Powell's County Water District, government bonds, or a satisfactory bid bond executed by the bidder and acceptable sureties in an amount equal to five percent of the bid shall be submitted with bid. The successful bidder will be required to furnish and pay for the following: 1) 5% Bid Bond; and 2) Performance and payment bond for 100% of the contract price.

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions of this advertisement and/or the specifications and may waive any informalities or reject any and all Bids. Any proposal received after the time and date specified shall not be considered and will be returned unopened to the proposer.

Sealed bid should be labeled "Powell's Valley Water District Office". If mailed/shipped, bid should be enclosed in another envelope and addressed to: Powell's Valley Water District, 31 Adams Ridge Rd, Clay City KY 40312.

Federal Wage Rates **do not** apply to this project.

No Bidder may withdraw his Bid for a period of ninety (90) days after the actual date of the opening thereof.

Award will be made to the lowest, responsive, responsible bidder. Bidding is for the sole benefit of the Powell County Fiscal Court.

The Powell's Valley Water District is an Equal Employment Opportunity Employer.

End of Section

SECTION 00100 - INSTRUCTIONS TO BIDDERS
ADDITIONAL INFORMATION

PART 1 - GENERAL

1.01 DEFINITIONS

A. AIA Document A701/1997, Instructions to Bidders, Articles 1 through 8, inclusive, is a part of this Contract.

B. General Conditions of the Contract for Construction, AIA Document A201/2007 or current edition, Articles 1 through 14 inclusive, are a part of this Contract.

1.02 BIDDING DOCUMENTS

A. The Bidding Documents are the Bidding and Contract Requirements, the Specifications, the Drawings and any addenda issued prior to receipt of bids.

B. Documents are on file and may be examined or obtained for bidding purposes as stated in Section 00020 - Advertisement for Bids.

1.03 SUBSTITUTIONS AND APPROVALS DURING BIDDING

A. Whenever products or materials are specified as "Standards" or they are otherwise named, approval of other equal quality products shall be obtained by requesting in writing and presenting for evaluation, such product or material, to the Architect, no later than seven (7) days prior to date set for receipt of bids. Submittals circumventing the above time frame will not be processed.

1. If approval is granted, product or material will be added by Addendum.

2. No direct reply will be made to any requests for changes, but any requested changes approved by the Architect will be stated in an Addendum issued to all prime-bidders.

3. Issuance of Bidding Documents does not constitute approval of products, materials, or subcontractors.

1.04 ADDENDA

Article 3: Bidding Documents. 3.4 Addenda, 3.4.3. Change the four days to read as follows: Addenda will be issued by the Architect when in the opinion of the Architect the issuance of an addenda is in the interest of the bid process and the Owner.

1.05 BIDDER'S REPRESENTATION

A. Each Bidder, by making his bid, represents that he has read and understands the bidding documents.

B. Each Bidder, by making his bid, represents that he has familiarized himself with the local conditions under which the Work is to be performed.

1. No additional costs of any type will be allowed by the failure of the Bidder to avail himself of the privilege of a complete and thorough, on-site inspection.

C. Each bidder must visit and inspect the site.

1.06 BID SECURITY

A. Provide bid security in the form of Bid Bond, AIA Documents A310, for five percent (5%) of bid made payable to the Powell's Valley Water District . This security shall be forfeited if the bidder is awarded the contract and subsequently fails to enter into a contract with and furnish the required contract bond to the OWNER within ten (10) days after notice of acceptance of his proposal is made.

B. The bid security of all unsuccessful bidders will be returned promptly after an award has been made, or in the event that all bids are rejected. The bid security of the successful bidder will be returned when a satisfactory performance and labor and material payment bond has been furnished and the contract executed.

1.07 PREPARATION OF BIDS

A. Bids shall be submitted in duplicate only on proposal bid form as included herein.

B. Any interlineation, alteration, or erasure will be grounds for rejection of the Bid. Bids shall contain no recapitulation of the work to be done.

C. Bids shall be based on the materials, construction, equipment and methods named or described in the specifications and on the drawings, and any addenda issued prior to receipt of bids.

D. Proposals shall be sealed in an opaque envelope marked with the bidder's name and business address, and bearing the following caption:

1. Proposal for:
   Powell's Valley Water District
   Office

2. Proposals shall be addressed and delivered to:
   Powell's Valley Water District
   31 Adams Ridge Rd.,
   Clay City, KY 40312

1.08 BID SUPPLEMENTS

A. Bids shall be accompanied by the following supplemental documents, all properly signed and notarized:
   1. Bid Security, Bid Bond, AIA Document A310
   2. Document SC-1 - Subcontractors List (may use your own form)
   3. Document PC-1 - Project Cost Breakdown (may use your own form)
   4. Non-Collusion Affidavit

1.09 SELECTION OF BIDS

A. The Owner reserves the right to reject any and/or all bids and to waive any informality in bidding.

1.10 AWARD OF CONTRACTS

A. Contracts shall be deemed to have been awarded when Notice of Award shall have been duly served upon the Bidder by any officer or agent of the Owner duly authorized to give such notice. Before the contract becomes valid, the Bidder must provide all necessary bonds, insurance and other information herein called for.

1.11 THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FURNISH THE FOLLOWING:

A. A One Hundred Percent (100%) Performance/Payment Bond, in an amount equal to the total contract price. This bond shall guarantee all labor and materials to be as required, the faithful performance of the contract and the prompt and faithful payment of any claim or liens form any cause for which the Contractor is liable, including those for labor, materials, utility services, transportation costs and for supplies, equipment and machinery (or rental thereof).

B. Such guarantee bonds shall remain in effect and full force for one (1) year after final acceptance of the work. Such bond shall not be executed as of a date prior to the executing of the contract.

1.12 DETAILED COST BREAKDOWN

A. Upon award of contract, Contractor will have seven (7) working days to generate a finalized detailed cost breakdown and a detailed project schedule of the project. All construction draws made on the project will require updating the Contractor's cost breakdown. Architect and Owner approval will be required on all pay requests.

1.13 CONTRACTOR'S RESPONSIBILITY REGARDING SUB-CONTRACTORS

A. It shall be prime contractor's responsibility to check all sub-bids carefully to determine whether or not any exceptions, omissions, or alterations to the drawings and specifications have been noted therein, as he is solely responsible for a complete job in strict accordance with drawings and specifications.

1.14 COMMENCING WORK

A. Contractor shall commence work within ten (10) days after written Notice to Proceed is issued by the Owner, unless otherwise arranged by the Owner.

1.15 OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970

A. These construction documents are to be governed, at all times, by applicable provisions of the federal laws, including but not limited to the latest amendments of the following:

1. William - Steiger Occupational Safety and Health Act of 1970, Public Law 91-596.

2. Part 1910 - Occupational Safety and Health Standards, Chapter XVII of Title 29, Code of Federal Regulations.

B. All prime contractors, sub-contractors and their employees shall be solely responsible to conduct their work in conformance with the regulations contained in this act and as amended. All material suppliers and manufacturers shall be fully aware of their responsibilities and the requirements of the finished project under the regulations of this Act, and as amended. Such materials and fabricated products incorporated in this project shall, at the time of installation or application, be in conformance with the regulations of this act, and as amended.

END OF SECTION

SECTION 00310 - BID SCHEDULE

Proposal of _____ (hereinafter called "BIDDER"), organized and existing under the laws of the State of _____ doing business as _____ * to the Powell's Valley Water District (hereinafter called "OWNER").

In compliance with your Advertisement for Bids, BIDDER hereby proposes to perform all WORK for the construction of the Powell's Valley Water District Office in strict accordance with the CONTRACT DOCUMENTS, within the time set forth and the prices stated below.

By submission of this BID, each BIDDER certifies, and in the case of a joint BID, each party thereto certifies as to its own organization, that this BID has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this BID with any other BIDDER or with any competitor.

BIDDER hereby agrees to commence Work under this contract on or before a date to be specified in the Notice to Proceed and to complete the Project within Two Hundred and Seventy (270) consecutive calendar days following the Notice to Proceed. BIDDER further agrees to pay as liquidated damages, the sum of $500.00 for each consecutive calendar day thereafter as provided in the General Conditions and the Special Conditions.

BIDDER agrees to perform all the WORK described in the CONTRACT DOCUMENTS for the lump sum contained in the following Bid Schedule.

Federal Wage Rates do not apply to this project.

*Insert "a corporation", "a partnership", or "an individual" as applicable.

Item	Description	Unit	Cost of Item
1.	Architectural Components	LS	$
2.	Mechanical	LS	$
3.	Electrical	LS	$
4.	Site Utilities	LS	$
5.	Site Concrete, Sidewalks, etc.	LS	$
6.	Site Grading	LS	$
7.	Testing/Special Inspection Allowance	LS	$ 15,000
8.	All Other Miscellaneous Costs	LS	$
	TOTAL COST OF ITEMS 1 - 8		**$**

The bid prices shall include all labor, materials, overhead, profit, insurance, and other costs necessary to install the finished work of the several items called for. Changes shall be processed in accordance with the General Conditions.

This is an invitation for offer to bid, not an offer to enter into a contract.

Accompanying this Proposal is a certified check or standard Bid Bond in the sum of _____

_____Dollars ($_____),
in accordance with the Information for Bidders. The BIDDER, by submittal of this Bid, agrees with the OWNER that the amount of the bid security deposited with this Bid fairly and reasonably represents the amount of damages the OWNER will suffer due to the failure of the BIDDER to fulfill his agreements as provided in this Proposal.

Addenda to the Drawings and Specifications issued heretofore are hereby acknowledged by the undersigned as being:

No._____Date:_____ No._____Date:_____

No._____Date: _____ No._____Date: _____

BIDDER understands that the OWNER reserves the right to reject any or all Bids and to waive any informalities in the Bidding.

BIDDER agrees that this Bid shall be good and may not be withdrawn for a period of sixty (60) calendar days after the actual date of bid opening.

Within ten (10) calendar days after receiving written notice of the acceptance of this Bid by the OWNER, the Bidder will execute and deliver to the OWNER four (4) copies of the Agreement and such other required Contract Documents.

BIDDER: _____

(Name of Company or Partnership)

By: _____ _____

(Signature) (Date)

_____ _____

(Print Name) (Title)

_____ _____

(Street Address/P.O. Box) (Phone Number)

_____

(City, State, Zip)

Attested By:

_____ _____

(Signature) (Date)

Seal (If bid is by a corporation)

END OF SECTION

SECTION 00410 - BID SECURITY FORM

PART 1 - GENERAL

1.01 DESCRIPTION

A. Bid security for this project shall be in the form of a Bid Bond executed on AIA Document A310 form in the amount of five percent (5%) of the bid, made payable to the Owner.

1. The bid security of all unsuccessful bidders will be returned promptly after an award has been made or in the event that all bids are rejected. The bid security of the successful bidder will be returned when satisfactory performance and labor and material payment bonds (AIA Document A312) have been furnished and contract executed, including one year warranty period.

END OF SECTION

SECTION 00480 - NON-COLLUSION AFFIDAVIT

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Non-Collusion Affidavit for the project shall be submitted with the bid proposal, and a copy of this document is bound herewith.

1. When properly executed, this Document shall become a part of the successful bidder's Contract Document.

END OF SECTION

NON-COLLUSION AFFIDAVIT

The undersigned bidder, on behalf of its officers and agents or representatives being duly sworn, states that it has not in any way, directly or indirectly, entered into any arrangement or agreement with any other bidder, or with any other person or public officer whereby bidder has paid or is to pay to such other bidder or other person or public officer any sum or money, or has given of is to give to such other bidder or other person or public officer anything of value whatever, or such avant or affiants or either of them has not, directly or indirectly, entered into any arrangement or agreement with any other bidder or bidders, which tends to or does lessen or destroy free competition in the letting of the contract sought for by the attached bids; that no inducement of any form or character other than that which appears upon the face of the bid will be suggested, offered, paid or delivered to any person whomsoever to influence the acceptance of the said bid or awarding of the contract, nor has this bidder any agreement or understanding of any kind whatsoever, with any person whomsoever to pay, deliver to, or share with any other person in any way or manner, any of the proceeds of the contract sought by this bid.

_____

_____

_____

_____

Subscribed and sworn to before me by_____this _____day of_____, 20____.

My Commission expires:

_____ _____

Notary Public

END OF AFFIDAVIT

SECTION 00490 - NOTICE OF AWARD

To: _____

_____

_____

Project Description: Powell's Valley Water District

The Owner has considered the Bid submitted by you for the above-described Work in response to its Advertisement for Bids dated_____, and Information for Bidders.

You are hereby notified that your Bid has been accepted for items in the amount of $_____.

You are required by the Information for Bidders to execute the Agreement and furnish the Required Contractor's Performance Bond, Payment Bond and certificates of insurance within ten (10) calendar days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said Bonds within ten (10) days from the date of this Notice, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Bid as abandoned and as a forfeiture of your Bid Bond. The Owner will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Award to the Owner.

Dated this_____day of_____, 20_____.

Powell's Valley Water District
Owner

By_____

Name/Title _____

ACCEPTANCE OF NOTICE

Receipt of the above Notice of Award is hereby acknowledged by_____,

this the_____day of_____, 20_____.

By _____

Name/Title _____

SECTION 00500 - AGREEMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. The contract Agreement for this project shall be AIA Document A101, Owner - Contractor Agreement Form - Stipulated Sum, 2007 edition.

B. This form, when fully executed, shall become a part of the successful bidder's Contract Documents.

END OF SECTION

SECTION 00610 - PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

PART 1 - GENERAL

1.01 DESCRIPTION

A. A performance bond for 100% of the final contract amount shall be executed in favor of the Owner; the forms for this bond shall be AIA Document A 312, "Performance Bond", 2010 edition.

B. A Payment Bond on part of the contractor for 100% of the contract price as it may be increased, the forms for this bond shall be, AIA Document A312, "Payment Bond", 2010 edition.

C. Consent of Surety to Reduction in or Partial Release of Retainage: AIA Document G707A, 1994 Edition.

D. Consent of Surety to Final Payment: AIA Document G707, 1994 Edition.

E. Furnish the required bonds within seven (7) days of receipt of Notice of Award.

F. When fully executed, these bonds shall become part of the successful bidder's Contract Documents.

G. Application and Certificate for Payment: AIA Document G702 and G703, 1992 Edition.

H. Contractors Affidavit of Payment of Debts: AIA Document G706, 1994 Edition.

I. Contractors Affidavit of Release of Liens: AIA Document G706A, 1994 Edition.

J. Certificate of Substantial Completion: AIA Document G704, 2000 Edition.

END OF SECTION

SECTION 00650 - CERTIFICATES OF INSURANCE

PART 1 - GENERAL

1.01 GENERAL

A. Certificates of Insurance shall be filed with the Owner prior to the commencement of any work. Insurance shall be purchased by the General Contractor.

1. These certificates shall contain a provision that coverages afforded under the policies shall not be canceled or in any way terminated until at least thirty days prior written notice has been given to the Owner and Architect.

2. The Owner and the Architect shall be specifically named as additional insureds on all insurance coverage for this project.

B. Detailed insurance requirements are covered in Section 00800 - Supplementary General Conditions, and all certificates shall reflect these minimum requirements for the project.

END OF SECTION

SECTION 00670 - CERTIFICATE OF OWNER'S ATTORNEY

I, the undersigned, _____, the duly authorized and acting legal representative of_____, do hereby certify as follows:

I have examined the attached contract(s) and surety bonds and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon; and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions and provisions thereof.

_____
Signature

_____
Date

NOTE: Delete phrase "performance and payment bonds" when not applicable.

SECTION 00680 - NOTICE TO PROCEED

TO: _____ Date: _____

_____ Project: Powell's Valley Water District Office

_____ _____

You are hereby notified to commence WORK in accordance with the Agreement dated _____ _____, on or before_____, and you are to complete the WORK within____consecutive calendar days thereafter. The date of completion of all WORK is therefore_____.

_____
Owner

_____
Signature

_____
Name/Title

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by _____ this the_____day of_____, 20_____.

_____
Contractor

_____
Signature

_____
Name/Title

End of Section

SECTION 00800 - SUPPLEMENTAL CONDITIONS

PART 1 - GENERAL

1.01 DESCRIPTION

A. The "General Conditions of the Contract for Construction," AIA Document A201, 2007 edition, Articles 1 through 15, inclusive, is a part of this Contract.

1.02 SUPPLEMENTS

A. The following supplements modify, change, delete or add to the "General Conditions of the Contract for Construction." Where any Article, Paragraph, Sub-Paragraph or Clause thereof is modified or deleted by these supplements, the unaltered provisions of that Article, Paragraph, SubParagraph or Clause shall remain in effect.

PART 2 - ARTICLE 2: OWNER

2.01 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.2.5 The Contractor can download pdf's of the contract documents and plan sheets from mselex.com located under Bid Opportunities.

PART 3 - ARTICLE 3: CONTRACTOR

3.01 REVIEW OF CONTRACT SUB-PARAGRAPHS

A. Add the following sub-paragraphs:

3.2.2 The Contractor shall not perform any work at any time requested by persons other than the Architect. Any interpretations to the documents, or request for minor changes in the work will be by the Architect.

3.2.3 Where there is a conflict in or between the Drawings and Specifications, the Contractor shall be deemed to have estimated on the more expensive way of doing the work and/or the larger quantity required. Only changes in interpretations covered by Addenda or in writing from the Architect will be permitted during construction of the work.

3.02 WARRANTY

A. Add the following sub-paragraph:

3.5.2 General Contractor shall guarantee the work for a period of one year from the date of acceptance by the Owner, except where a longer guarantee is specified and will thus control and leave the work in perfect order at completion. Neither the final certificate of payment any provision in the Contract Documents shall relieve the Contractor of responsibility within the extent and period provided by said guarantee or by law whichever is longer. Upon written notice, he shall remedy any damage to other work resulting therefrom, including necessary labor for removing and replacing.

PART 4 - ARTICLE 8: TIME OF COMPLETION AND LIQUIDATED DAMAGES

See the Bid Schedule, Section 00310, for the time allotted for this contract. The time allowed for completion shall begin at midnight, local time, on the date which the Owner shall instruct the Contractor, in writing, to start work, but not later than 7 days after Notice to Proceed.

The Contract completion time stipulated above includes an allowance for an average number of inclement weather days as follows:

	JAN	FEB	M AR	APR	M AY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Precip.	7	7	9	8	8	8	8	7	6	5	6	7
Freeze	10	6	1								1	5

When number of days (including Saturdays, Sundays and Holidays) of precipitation in excess of 0.1" per day or maximum daily temperatures of 32°F exceed those shown above in any month, the Contractor shall be entitled to an equal number of additional days for Contract Completion.

This provision for inclement weather shall only apply to that time while foundations are being constructed and prior to the building being “under-roof”.

It is understood that time is the essence of this contract and that the Owner will sustain damages, monetary and otherwise, in the event of delay in completion of the work hereby contracted.

Therefore, if the said Contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the Owner, then the Contractor does hereby agree, as part consideration for the awarding of this contract, to pay the Owner the amount specified in the contract, not as a penalty, but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the Contractor shall be in default after the time stipulated in the contract for completing the work.

The said amount is fixed and agreed upon by and between the Contractor and the Owner because of the extreme difficulty in fixing and ascertaining the actual damages the Owner would in such event sustain, and said amount is agreed to be the amount of damages which the Owner would sustain and said amount shall be retained from time to time by the Owner from current periodical estimates.

PART 5 - ARTICLE 9: PAYMENTS AND COMPLETION

5.01 APPLICATIONS FOR PAYMENT

A. Add the following sub-paragraph:

9.3.1.1 Monthly payments will be based on ninety (90%) percent of the value of the work done and materials delivered and suitably stored until work under this contract is fifty (50%) completed. If at that time, progress of the work has been satisfactory, there will be no additional retainage, provided the Contractor submits Consent of Surety for each application, authorizing any remaining partial payments to be paid in full. The form of Application for Payment shall be AIA Document G702, Application for Certificate for Payment, supported by AIA Document G702A Continuation Sheet.

PART 6 - ARTICLE 11: INSURANCE AND BONDS

6.01 11.1 CONTRACTOR'S LIABILITY INSURANCE

A. Change as follows:

General Contractor shall take out and maintain insurance of such types and in such amounts as are necessary to cover his responsibilities and liabilities on all projects, and shall require all his subcontractors to carry similar insurance.

1. The Owner will accept in lieu of all subcontractors carrying similar insurance an "Owner's and Contractor's Protective Liability Policy" paid for by the Contractor and written in the name of the Owner for the amount specified hereinafter including all the special coverages. Said policy must protect the Owner for all claims for bodily injury and/or property damage arising out of operations for the named insured by said Contractor, or any subcontractor of said Contractor.

B. No Contractor shall commence work under this contract until he has obtained all insurance required under this section and such insurance has been approved by the Owner, nor shall any Contractor allow any subcontractor to commence work on his subcontract until the same insurance has been obtained by the subcontractor and approved by the Owner. Each and every contractor and subcontractor shall maintain all insurance required under paragraphs (1) and (2) of this section for not less than one year after completion of this contract.

C. Each Contractor shall file with the Owner and Architect, a Certificate of Insurance. Any certificate submitted and found to be altered or incomplete will be returned as unsatisfactory.

D. If requested by the Owner, Contractor shall furnish the Owner with true copies of each policy required of him or his subcontractors. Said policies will not be canceled or materially altered, except after fifteen (15) days advance written notice to the Owner and Architect, mailed to the addresses indicated herein.

E. Insurance under this section, as a minimum, shall include the following coverages:

1. Workman's Compensation and Employer's Liability Insurance: Workman's Compensation and Occupational Disease Insurance of statutory limits as provided by the state in which his contract is performed and Employers' Liability Insurance at a limit of not less than $100,000.00 for all damages arising from each accident or occupational disease.

2. Comprehensive General Liability Insurance covering:

a. Operations- Premises Liability:
Including, but not limited to, Bodily Injury, including death at any time resulting therefrom, to any person or Property Damage resulting from execution of the work provided for in this contract, or due to or arising in any manner from any act of omission or negligence of the Contractor and any Subcontractor, their respective employees or agents.

b. Contractor's Protective Liability:
Including, but not limited to, Bodily Injury, including death at any time, resulting therefrom to any person, or Property Damage arising from acts or omissions of any subcontractor, their employees or agents.

c. Products-- Completed Operation Liability:
Including, but not limited to, Bodily Injury, including death at any time, resulting therefrom to any person, or Property Damage because of goods, products, materials or equipment used or installed under this contract, or because of completed operation, which may become evident within one year after acceptance of the building, including damage to the building or its contents.

d. Contractual Liability:

Each and every policy for liability insurance, carried by each Contractor and Subcontractor, as required by this section shall specifically include Contractual Liability coverage with respect to Section F of this Division.

e. Special Requirements:

The insurance required under Paragraph (2) of this Section shall specifically include the following special hazards:

Property Damage caused by conditions otherwise subject to exclusions "x, c, u," Explosion, Collapse or Underground Damage.

Broad Form Property Damage endorsement, which has reference to property in the "care, custody, or control" of the insured.

"Occurrence" Bodily Injury coverage in lieu of "caused by accident."

"Occurrence" Property Damage coverage in lieu of "caused by accident."

f. Limits of Liability:

The insurance under Paragraph (2) of this Section shall be written in the following limits of liability, as a minimum:

Bodily injury	Property Damage
$1,000,000 Each Person	$1,000,000 Each Occurrence
$3,000,000 Each Occurrence	$2,000,000 General Aggregate
$500,000 Aggregate Products	$1,000,000 Aggregate Protective
	$1,000,000 Aggregate Contractual

3. Comprehensive Automobile Liability covering:
   a. All owned, hired, or non-owned vehicles including the loading or unloading thereof.

   b. Special Requirements: The insurance required under paragraph (3) of this section shall specifically include the following special hazards:

      "Occurrence" Bodily Injury in lieu of "caused by accident."

      "Occurrence" Property Damage in lieu of "caused by accident."

      The insurance under Paragraph (3) of this section shall be written in the following limits of liability as a minimum:

Automobile Bodily Injury	Automobile Property Damage
$1,000,000 Each Person	$1,000,000 Each Occurrence
$3,000,000 Each Occurrence	
$3,000,000 Excess/Umbrella Liability	

F. Hold Harmless Agreement:

1. The Contractor shall indemnify and hold harmless the Owner and the Architect and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the work, provided that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself) including the loss of use resulting therefrom and (b) is caused in whole or part by any negligent act or omission of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

2. In any and all claims against the Owner or the Architect or any of their agents or employees by any employee of the Contractor, Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Hold Harmless agreement shall not be limited in any way by any limitation on the amount payable by or for the Contractor or any Subcontractor under workman's compensation acts, disability benefit acts or other employee benefit acts.

3. The obligations of the Contractor under this Hold Harmless Agreement shall not extend to any claim, damage, loss or expense arising out or professional services performed by the Architect, his agents, or employees, including (a) the preparation of maps, plans, opinions, reports, surveys, designs or specifications, and (b) supervisory, inspection or engineering services.

PART 7 - ARTICLE 11.3: PROPERTY INSURANCE (Purchased by the General Contractor)

7.01 A. Change the first sentence of paragraph 11.3.1 to read: The contractor shall purchase....

B. Change the second sentence of Paragraph 11.3.1 to read:

11.3.1 "This insurance shall include the interests of the Owner, the Contractor, the Subcontractor and Sub-Subcontractors in the work and shall insure against the perils of fire, extended coverage, vandalism, malicious mischief and theft."

C. Add the following subparagraph:

"11.3.1.1 If by the terms of this insurance any mandatory deductibles are required, or if the Owner should elect to increase the mandatory deductible amounts or purchase this insurance with voluntary deductible amounts, the Owner shall be responsible for payment of the amount of the deductible in the event of a paid claim."

11.3.6 Revise a portion on the first sentence in Subparagraph to read as follows:

"...and (2) the Architect, his consultants, and separation contractors, if any..."

D. Add the following Article to the General Conditions of the Contract for Construction:

PART 8 - ARTICLE 15: EQUAL OPPORTUNITY

8.01 15.1 Employment Policies

15.1.1 The Contractor and all Subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin or age. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex, national origin or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates or pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

15.1.2 The Contractor and all Subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sect, national origin or age.

PART 9 - ARTICLE 16: CHARACTER OF WORKERS, METHODS, AND EQUIPMENT

16.1 The Contractor shall, at all times, employ sufficient and equipment for prosecuting the work to full completion in the manner and time required by the contract, drawings, and specifications. Suitable number of foremen and supervisors shall be available on the job to insure proper prosecution and coordination of the work. All workers shall have sufficient skill and experience to perform properly the work assigned to them. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work satisfactorily.

16.2 Any person employed by the Contractor or by any subcontractor who, in the opinion of the Owner and Architect, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the Architect, be removed forthwith by the Contractor or Subcontractor employing such person, and shall not be employed again in any portion of the work.

16.3 Should the Contractor fail to remove such person or persons or fail to furnish suitable and sufficient personnel for the proper prosecution of the work, the Architect may suspend the work by written notice until compliance with such orders.

16.4 After the beginning of work on the site, the Contractor may not remove his Superintendent from the project without the prior written approval of the Owner.

END OF SECTION

Section 00815 - Supplemental General Conditions
Part Two

1) General Contractors and Sub-contractors are hereby notified that they are encouraged, to the greatest extent practicable, to purchase American-made equipment and products with funding provided under this Award.

End of Section

SECTION 01010 - SUMMARY OF WORK

PART 1 - GENERAL

1.01 SUMMARY OF WORK

A. Work covers construction of the new Powell's Valley Water District Office.

B. Related requirements specified elsewhere:

1. Submittals- Section 01300

2. Temporary Facilities- Section 01500

3. Project Closeout - Section 01700

C. Contractor's Duties:

1. Except as specifically noted, provide and pay for:
   a. Labor, materials, tools, and equipment.
   b. Permits.
   c. Fees.
   d. Licenses.
   e. Taxes.

2. Give required notices.

3. Comply with codes, ordinances, rules, regulations, orders, and other legal requirements of public authorities which bear on performance of work.

4. Promptly submit written notice to Architect of observed variance of Contract Documents from legal requirements.

5. Contractor shall verify all grades, lines, levels, and dimensions indicated on the drawings and shall report any inconsistencies before commencing work.

6. Each Sub Contractor shall be responsible for the layout for their specific phase of work.

1.02 CONTRACT (OWNER AND GENERAL CONTRACTOR)

A. Construction work shall be under a single lump sum contract, which shall include all general construction, steel, concrete, mechanical, electrical, plumbing and site work, etc.

1.03 CONTRACTORS' USE OF PREMISES

A. Confine operations at site to areas permitted by:

1. Law.
2. Ordinances.
3. Permits.
4. Contract Documents.
5. Owner.

B. Do not unreasonably encumber site with materials or equipment.

C. Do not load structure with weight that will endanger structure.

D. Assume full responsibility for protection and safekeeping of products stored on site.

E. Move any stored products which interfere with operations of the Owner.

END OF SECTION

SECTION 01027 - APPLICATIONS FOR PAYMENT
REQUIREMENTS OF CONTRACTOR

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Procedures of Contractor for preparation and submittal of applications for payment.

1.02 RELATED SECTIONS

A. Document 00500 - Agreement: Contract Sum amounts of progress payments and retainages.

B. Section 00800 - Supplementary Conditions: Progress payments and final payment.

C. Section 01028 - Modification Requirements: Procedures for changes to the Work.

D. Section 01300 - Submittals: Submittal procedures.

E. Section 01700 - Contract Closeout - Final Payment

1.03 FORMAT

A. For each item, provide a column for listing each of the following:
   1. Item Number.
   2. Description of Work.
   3. Scheduled Values.
   4. Previous Applications.
   5. Work in Place and Stored Materials under this Application.
   6. Authorized Change Orders.
   7. Total Completed and Stored to Date of Application.
   8. Percentage of Completion.
   9. Balance to Finish.
   10. Retainage.

1.04 PREPARATION OF APPLICATIONS

A. Present required information in typewritten form on specified AIA Documents.

B. Execute certification by signature of authorized officer.

C. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored Products.

D. List each authorized Change Order as an extension on AIA G703 Continuation Sheet, listing Change Order number and dollar amount as for an original item of Work.

E. Prepare Application for Final Payment as specified in Section 01700.

F. Submit partial release of liens waiver for all work completed to date with each payment application.

G. Submit up-to-date (revised) construction schedule.

1.05 SUBMITTAL PROCEDURES

A. Submit three copies of each Application for Payment.

B. Submit an updated construction schedule with each Application for Payment.

C. Payment Period: Submit at intervals stipulated in the Agreement.

D. Submit with transmittal letter as specified for Submittals in Section 01300.

1.06 DETAILED COST BREAKDOWN

A. Upon award of contract, Contractor will have seven working days to generate a finalized cost breakdown of the project.

1.07 SUBSTANTIATING DATA

A. When Architect/Engineer requires substantiating information, Contractor shall submit data justifying dollar amounts in question.

B. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

Not Applicable.

END OF SECTION

SECTION 01028 - MODIFICATION REQUIREMENTS OF CONTRACTOR

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Submittals.
B. Documentation of change in Contract Sum and Contract Time.
C. Change procedures.
D. Construction Change Directive.
E. Stipulated Sum change order.
F. Execution of change orders.
G. Correlation of Contractor submittals.

1.02 SUBMITTALS

A. Submit name of the individual authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

B. Change Order Forms: AIA G701 Change Order.

1.03 DOCUMENTATION OF CHANGE IN CONTRACT SUM AND CONTRACT TIME

A. Maintain detailed records of work performed. Provide full information required for evaluation of proposed changes, and to substantiate costs of changes in the Work.

B. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation.

C. Provide additional data to support computations:
   1. Quantities of products, labor, and equipment.
   2. Taxes, insurance, and bonds.
   3. Overhead and profit.
   4. Justification for any change in Contract Time.
   5. Credit for deletions from Contract, similarly documented.

D. Support each claim for additional costs, and for work performed, with additional information:
   1. Origin and date of claim.
   2. Dates and times work was performed, and by whom.
   3. Time records and wage rates paid.
   4. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

1.04 CHANGE PROCEDURES

A. The Architect/Engineer will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized by AIA A201, 2007 Edition, Paragraph 7.4 by issuing supplemental instructions on AIA Form G710.

B. The Architect/Engineer may issue a Proposal Request which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change. Contractor will prepare and submit an estimate within seven (7) days.

1.05 CONSTRUCTION CHANGE DIRECTIVE

A. Architect/Engineer may issue a document, signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

B. The document will describe changes in the Work, and will designate method of determining any change in Contract Sum or Contract Time.

C. Contractor shall include in his costs any and all costs associated with contract documents modification required by the Architect/Engineer as a part of modifications.

D. Promptly execute the change in Work.

1.06 STIPULATED SUM CHANGE ORDER

A. Based on Proposal Request and Contractor's fixed price quotation.

1.07 CHANGE ORDER

A. Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

B. Architect/Engineer will determine the change allowable in Contract Sum and Contract Time as provided in the Contract Documents pending Owner approval.

C. Maintain detailed records of work performed.

D. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.

1.08 EXECUTION OF CHANGE ORDERS

A. Execution of Change Orders: Architect/Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

1.09 CORRELATION OF CONTRACTOR SUBMITTALS

A. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

B. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

C. Promptly enter changes in Project Record Documents.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01041 - PROJECT COORDINATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Project coordination.

B. Construction mobilization.

C. Schedules.

D. Submittals.

E. Coordination drawings.

F. Closeout procedures.

1.02 RELATED SECTIONS

A. Section 00800 - Supplementary Conditions

B. Section 01011 - Summary of Project: Work sequence.

C. Section 01700 - Contract Closeout: Contract Closeout Procedures.

1.03 CONSTRUCTION MOBILIZATION

A. Comply with procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.

B. Comply with instructions for use of temporary utilities and construction facilities.

C. Coordinate field engineering and layout work.

1.04 SCHEDULES

A. Submit preliminary progress schedule in accordance with Section 01310.

B. After review, revise and resubmit schedule to comply with revised Project schedule. Submit revised or up-to-date schedule with each application for payment.

C. During progress of work revise and resubmit as directed.

1.05 SUBMITTALS

A. Provide submittals for review and transmittal to Architect/Engineer.

B. Submit applications for payment on AIA G702 forms for review, and for transmittal to Architect/Engineer.

C. Submit requests for interpretation of Contract Documents, and obtain instructions through the Architect/Engineer.

D. Process requests for substitutions, and change orders.

E. Deliver closeout submittals for review and preliminary inspection reports, for transmittal to Architect/Engineer.

1.06 COORDINATION DRAWINGS

A. Provide information required by Architect/Engineer for preparation of coordination drawings.

B. Review drawings prior to submission to Architect/Engineer.

1.07 CLOSEOUT PROCEDURES

A. Notify Architect/Engineer when Work is considered ready for Substantial Completion.

B. Comply with Architect/Engineer's instructions to correct items of work listed in executed Certificates of Substantial Completion and for access to Owner occupied areas.

C. Notify Architect/Engineer when Work is considered finally complete.

D. Comply with instructions for completion of items of Work determined by Architect/Engineer's final inspection.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01045 - CUTTING AND PATCHING
REQUIREMENTS OF CONTRACTOR

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Requirements and limitations for cutting and patching of Work, including:
   1. Cutting, fitting, or patching that may be required to complete the work or make its several parts fit together properly.

   2. Uncovering work to provide for installation of ill-timed work.

   3. Removing and replacing defective work.

   4. Removing and replacing work not conforming to requirements of the Contract Documents.

   5. General Contractor shall be responsible for cutting and patching of construction as required to facilitate work, including work by his mechanical and electrical subcontractors. He shall assign proper trades normally associated with the materials being cut and patched to perform work.

1.02 RELATED SECTIONS

A. Section 01010 - Summary of Work.

B. Section 01300 - Submittals.

C. Section 01620 - Product Delivery, Storage and Handling.

D. Individual Product Specification Sections:

   1. Cutting and patching incidental to work of the section.

   2. Advance notification to other sections of openings required in work of those sections.

1.03 SUBMITTALS

A. Submit written request in advance of cutting or alteration which affects:

   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   4. Visual qualities of sight exposed elements.
   5. Work of Owner or separate contractor.

B. Include in request:

1. Identification of Project.
2. Location and description of affected Work.
3. Necessity for cutting or alteration.
4. Description of proposed Work and Products to be us.
5. Alternatives to cutting and patching.
6. Effect on work of Owner or separate contractor.
7. Written permission of affected separate contractor.
8. Date and time work will be executed.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Primary Products: Those required for original installation.

B. Product Substitution: For any proposed change in materials, submit request for substitution.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.

B. After uncovering existing Work, assess conditions affecting performance of work.

C. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.

B. Provide protection from elements for areas which may be exposed by uncovering work.

C. Maintain excavations free of water.

3.03 CUTTING

A. Execute cutting and fitting including excavation and fill to complete the Work.

B. Uncover work to install improperly sequenced work.

C. Remove and replace defective or non-conforming work.

D. Provide openings in the Work for penetration of mechanical and electrical work.

E. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

3.04 PATCHING

A. Execute patching to complement adjacent Work.

B. Fit Products together to integrate with other Work.

C. Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.

D. Employ original installer to perform patching for weather exposed and moisture resistant elements, and sight-exposed surfaces.

E. Restore work with new products in accordance with requirements of Contract Documents.

F. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

G. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire resistant material to full thickness of the penetrated element.

H. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit. When possible, do not cut-and-patch work which is exposed in occupied spaces of building, in a manner resulting in reductions of visual qualities or resulting substantial evidence of cut-and-patch work, both as judged solely by Architect. Remove and replace work judged by Architect to be cut-and-patched in a visually unsatisfactory or otherwise objectionable manner.

END OF SECTION

SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Submittal procedures.
B. Shop Drawings.
C. Test reports.
D. Certificates.
E. Erection drawings.

1.02 REFERENCES

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

1.03 SUBMITTAL PROCEDURES FOR SHOP DRAWINGS

A. All shop drawings must be reviewed be the General Contractor before submitting them to the Architect.

B. Transmit each submittal with accepted form, containing the following:

1. Date
2. Project title
3. Contractor's name and address
4. Notification of any deviations from the contract documents.
5. Identify project as "Powell's Valley Water District Office"
6. Other pertinent data as required.

C. Identify Project, Contractor, Subcontractor, Manufacturer or supplier; pertinent drawing and detail number, and specification section number, as appropriate.

1. Provide identification of product or material size, type, finish and color as appropriate.
2. Field dimensions, clearly identified as such.
3. All working and erection dimensions, views, as required to indicate fully all construction and fabrication methods, profiles and materials.

D. On all shop drawings apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.

1.04 CERTIFICATES

A. When specified in individual specifications sections, submit certification by the manufacturer, installation/application/subcontractor, or the Contractor to Architect/ Engineer, in quantities specified for Product Data.

B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect/Engineer.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01310 - CONSTRUCTION PROGRESS SCHEDULES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Format.
B. Content.
C. Revisions to schedules.
D. Submittals.

1.02 RELATED SECTIONS

A. Section 01011 - Summary of Work.
B. Section 01027 - Applications for Payment: Application for payment.
C. Section 01300 - Submittals: Shop drawings.

1.03 REFERENCES

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

1.04 FORMAT

A. Prepare schedules starting with Notice to Proceed date through substantial completion, as a horizontal bar chart or Gantt chart with separate bar for each major portion of Work or operation, identifying first work day of each week.

B. Sequence of Listings: The chronological order of the start of each item of Work.

C. Scale and Spacing: To provide space for notations and revisions.

D. Sheet Size: Maximum 30" x 42" OR multiples of 8½" x 11".

1.05 CONTENT

A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.

B. Identify each item by specification section number.

C. Identify work of separate stages and other logically grouped activities.

D. Provide sub-schedules for each stage of Work.

E. Provide sub-schedules to define critical portions of the entire schedule.

F. Include conferences and progress meetings in schedule.

G. Show accumulated percentage of completion of each item, and total percentage of Work completed, to coincide with schedule of values in each application for payment.

H. Provide separate schedule of submittal dates for shop drawings, product data, and samples, including Owner furnished products and dates reviewed submittals will be required from Architect/Engineer. Indicate decision dates for selection of finishes.

I. Include scheduling for fabrication of structural steel.

J. Include scheduling of erection sequence of building structural steel, precast walls and delivery to site.

K. Include scheduling of erection sequence of building precast walls and delivery to site.

1.06 REVISIONS TO SCHEDULES

A. Indicate progress of each activity to date of submittal, and projected completion date of each activity.

B. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.

C. Provide narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect including the effect of changes on schedules of separate contractors.

1.07 SUBMITTALS

A Submit initial schedules within 15 days after date of Owner-Contractor Agreement. After review, resubmit required revised data within seven days.

B. Submit revised Progress Schedules with each Application for Payment.

C. Submit the number of opaque reproductions which Contractor requires, plus two copies which will be retained by Architect/Engineer.

1.08 DISTRIBUTION

A. Distribute copies of reviewed schedules to Project site file, Subcontractors, suppliers, and other concerned parties.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01400 - QUALITY CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Quality assurance - control of installation.
B. Tolerances
C. Mock-up.
D. Manufacturers' field services.

1.02 RELATED SECTIONS

A. Section 01300 - Submittals: Submission of manufacturers' instructions and certificates.
B. Section 01410 - Testing Services.
C. Section 01620 - Product Delivery, Storage and Handling.
D. Section 01650 - Starting of Systems

1.03 QUALITY ASSURANCE - CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

G. Perform Work by persons qualified to product required and specified quality.

1.04 TOLERANCES

A. Monitor fabrication and installation tolerance control of Products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

C. Adjust Products to appropriate dimensions; position before securing Products in place.

1.05 MOCK-UP

A. Tests will be performed under provisions identified in this section and identified in the respective Product specification sections.

B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

C. Accepted mock-ups shall be a comparison standard for the remaining Work.

D. Where mock-up has been accepted by Architect/Engineer and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so.

1.06 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment and additional products as specified, as applicable, and to initiate instructions when necessary.

B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

B. Examine and verify specific conditions described in individual specification sections.

C. Verify that utility services are available, of the correct characteristics, and in the correct locations.

3.02 PREPARATION

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

B. Seal cracks or openings of substrate prior to applying next material or substance.

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

END OF SECTION

SECTION 01500 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS REQUIREMENTS OF CONTRACTOR

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Temporary Controls: Barriers, enclosures and fencing, protection of the Work, and water control.
B. Construction Facilities: Access roads, parking and progress cleaning.

1.02 RELATED SECTIONS

A. Section 01510 - Temporary Utilities.
B. Section 01540 - Security.
C. Section 01550 - Access Roads and Parking Areas.
D. Section 01580 - Project Identification and Signs.
E. Section 01590 - Field Offices and Sheds.
F. Section 01700 - Project Closeout: Final cleaning.

1.03 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.

B. Provide protection for plants designated to remain. Replace damaged plants.

C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.04 WATER CONTROL

A. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

1.05 PROTECTION OF INSTALLED WORK

A. Protect installed Work and provide special protection where specified in individual specification sections.

B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to prevent damage.

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

F. Prohibit traffic from landscaped areas.

1.06 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and rubbish from site periodically and dispose off-site.

E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01510 - TEMPORARY UTILITIES
REQUIREMENTS OF CONTRACTOR

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Temporary Utilities: Electricity, lighting, heat, ventilation, telephone service, water, and sanitary facilities.

1.02 RELATED SECTIONS

A. Section 01580 - Project Identification and Signs.

B. Section 01590 - Field Offices and Sheds.

C. Section 01700 - Contract Closeout: Final cleaning.

1.03 TEMPORARY ELECTRICITY

A. Cost: By Contractor; provide and pay for power service required from utility source or on-site generators.

B. Provide temporary electric feeder from electrical service at approved point of available service. Do not disrupt Owner's need for continuous service.

C. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.

D. Provide main service disconnect and over-current protection at convenient location.

E. Permanent convenience receptacles may be utilized during construction.

1.04 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Provide and maintain incandescent lighting for construction operations.

B. Permanent building lighting may be utilized during construction upon written approval from Owner.

1.05 TEMPORARY HEATING AND AIR CONDITIONING

A. Provide and pay for heating and air conditioning devices and heat and air condition as needed to maintain specified conditions for construction operations.

B. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in specifications and provided by manufacturer instructions.

1.06 TEMPORARY COOLING

A. Provide and pay for cooling devices and cooling as needed to maintain specified conditions for construction operations.

1.07 TEMPORARY VENTILATION

A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

B. Utilize existing ventilation equipment. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.

1.08 TELEPHONE SERVICE

A. Provide, maintain, and pay for telephone service to field office at time of project mobilization.

1.09 FACSIMILE SERVICE

A. Provide, maintain and pay for facsimile service to field office at time of project mobilization.

1.10 TEMPORARY WATER SERVICE

A. Provide, maintain and pay for suitable quality water service required for construction operations at time of project mobilization.
B. Extend branch piping with outlets located so water is available by hoses with threaded connections. Provide temporary pipe insulation to prevent freezing.

1.11 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

1.12 WARRANTY PERIOD

A. The warranty period for all permanent equipment used for temporary purposes by the Contractor including lighting, heating and cooling equipment shall commence from date of final completion of the entire project.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01580 - PROJECT IDENTIFICATION AND SIGNS REQUIREMENTS OF CONTRACTOR

PART 1 - GENERAL

There will be one (1) sign for this project.

1.01 SECTION INCLUDES

A. Project identification sign.

1.02 RELATED SECTIONS

A. Section 01010 - Summary of Work.

1.03 QUALITY ASSURANCE

A. Design sign and structure to withstand 60 miles/hr wind velocity.

B. Sign Painter: Experienced as a professional sign painter for minimum three years.

C. Finishes, Painting: Adequate to withstand weathering, fading, and chipping for duration of construction.

1.04 SUBMITTALS

A. Section 01300 - Submittals: Shop drawings.

B. Show content, layout, lettering, color, foundation, structure, sizes, and grades of members.

PART 2 - PRODUCTS

2.01 SIGN MATERIALS

A. Structure and Framing: New wood, structurally adequate.

B. Sign surfaces: Exterior grade plywood with medium density overlay, minimum 3/4 inch thick, standard large sizes to minimize joints.

C. Rough Hardware: Galvanized.

D. Paint and Primers: Exterior quality, two coats; sign background of color as selected.

E. Lettering: Exterior quality paint, contrasting colors as selected.

2.02 PROJECT IDENTIFICATION SIGN

A. One painted sign of construction, design, and content shown on Drawings, location designated.

B. Content:
   1. Project title, logo and name of Owner as indicated on Contract Documents.
   2. Names and titles of authorities.
   3. Names and titles of Architect/Engineer and Consultants.
   4. Name of Prime Contractor and major Subcontractors.

C. Graphic Design, Colors, Style of Lettering: Designated by Architect/Engineer and approved by Owner.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install project identification sign within 30 days after date fixed by Owner-Contractor Agreement.

B. Erect at designated location.

C. Erect supports and framing on secure foundation, rigidly braced and framed to resist wind loadings.

D. Install sign surface plumb and level, with butt joints. Anchor securely.

E. Paint exposed surfaces of sign, supports, and framing.

3.02 MAINTENANCE

A. Maintain signs and supports clean, repair deterioration and damage.

3.03 REMOVAL

A. Remove signs, framing, supports, and foundations at completion of Project and restore the area.

END OF SECTION

Temporary Black & White Construction Sign for projects funded by the Department for Local Government (DLG)

Matthew G. Bevin
Governor

Sandra K. Dunahoo
Commissioner

Office of the Governor
Department for Local Government

Project Title
Centered, Black Letters

Project Sponsor: Powell County Fiscal Court

Sponsor Address: 525 Washington St., Stanton, KY 40380

Architect or Engineer: MSE of Kentucky, Inc.

Contractor:

Kentucky UNBRIDLED SPIRIT™

This project is funded by a Community Development Block Grant administered by the Department for Local Government and financed by the U.S. Department of Housing and Urban Development.

Equal Opportunity Employer

Sign Dimensions: 1200mm x 2400mm x 19 mm (app. 4' x 8' x ¾") Plywood Panel (APA Rated A-B grade – Exterior)

SECTION 01590 - FIELD OFFICES AND SHEDS
REQUIREMENTS OF CONTRACTOR

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Temporary field offices and sheds.

B. Maintenance and cleaning.

C. Removal.

1.02 RELATED SECTIONS

A. Section 01010 - Summary of Work.

B. Section 01550 - Access Roads and Parking Areas.

C. Section 01580 - Project Identification and Signs.

D. Section 01620- Product Delivery, Storage and Protection.

1.03 USE OF PERMANENT FACILITIES

A. Permanent facilities shall not be used for field offices or for storage.

PART 2 - PRODUCTS

2.01 MATERIALS, EQUIPMENT, FURNISHINGS

A. Materials, Equipment, Furnishings: Serviceable, new or used, adequate for required purpose.

2.02 CONSTRUCTION

A. Portable or mobile buildings, or buildings constructed with floors raised above ground, securely fixed to foundations, with steps and landings at entrance doors.

B. Construction: Structurally sound, secure, weather tight enclosures for office and storage spaces. Maintain during progress of Work; remove at completion of Work.

C. Temperature Transmission Resistance of Floors, Walls, and Ceilings: Compatible with occupancy and storage requirements.

D. Exterior Materials: Weather resistant, finished.

E. Interior Materials in Offices: Sheet type materials for walls and ceilings, pre-finished or painted; resilient floors and bases.

F. Lighting for Offices: 50 footcandles at desk top height, exterior lighting a. entrance doors.

G. Fire Extinguishers: Appropriate type fire extinguisher at each office and each storage area.

H. Interior Materials in Storage Sheds: As required to provide specified conditions for storage of products.

2.03 ENVIRONMENTAL CONTROL

A. Heating, Cooling, and Ventilating for Offices: Automatic equipment to maintain 68 degrees F heating and 76 degrees F cooling.

B. Storage Spaces: Heating and ventilation as needed to maintain Products in accordance with Contract Documents; adequate lighting for maintenance and inspection of Products.

2.04 CONTRACTOR OFFICE AND FACILITIES

A. Size: For Contractor's needs and to provide space for project meetings.

B. Telephone: As specified in Section 01510.

C. Fax: As specified in Section 01510.

D. Furnishings in Meeting Area: Conference table and chairs to seat at least eight persons; racks and files for Contract Documents, submittals, and project record documents.

E. Other Furnishings: Contractor's option.

2.05 STORAGE AREAS AND SHEDS

A. Size to storage requirements for products of individual Sections, allowing for access and orderly provision for maintenance and for inspection of products to requirements of Section 01620.

PART 3 - EXECUTION

3.01 MAINTENANCE AND CLEANING

A. Maintain approach walks free of mud, water, and snow.

C. Sanitary service as needed to maintain clean, odor-free environment.

3.02 REMOVAL

A. At completion of Work remove buildings, foundations, utility services, and debris. Restore areas.

END OF SECTION

SECTION 01620 - PRODUCT DELIVERY, STORAGE & PROTECTION

PART 1 - GENERAL

1.01 APPLICABILITY

A. This Section applies to all products furnished under this Agreement. Shipments of equipment or materials to be used by the Contractor or its subcontractors shall be delivered to the site only during regular working hours. All shipping papers and shipments shall be addressed and consigned to the Contractor giving the name of the Project with address. Under no circumstances will Owner accept shipments directed to it or the Architect/Engineer unless otherwise specified.

1.02 DELIVERY

A. Products shall not be delivered to the Owner or the Architect/Engineer.

B Products shall not be delivered to the project site until related shop drawings have been reviewed by the Architect/Engineer.

C. Products shall not be delivered to the project site until appropriate storage facilities are in place (on-site storage space is very limited).

D. Products shall be delivered to the site in manufacturer's original, unopened, labeled containers.

E. The Contractor shall not drop, roll or skid products off delivery vehicles. Hand carry or use suitable materials-handling equipment.

1.03 STORAGE AND PROTECTION

A. General:

1. The Contractor shall store and protect products in accordance with the manufacturer's recommendations and the requirements specified herein. No on-site existing storage facilities are available for use by the Contractor. All on-site facilities for storage shall be furnished by the Contractor.

2. The Contractor shall not block or restrict the use of public right-of way, access roads or private property with stored materials.

3. The Contractor shall not store products where they will interfere with operations of the Owner.

4. The Contractor shall protect all products from damage or deterioration by weather.

5 . The Contractor shall not store any products directly on the ground.

6. The Contractor shall not store any products in drainage ditches or areas where water may stand.

7. The Contractor shall label containers to identify materials inside using the terminology found in these Specifications.

B. Uncovered Storage:

1. The following types of materials may be stored out of doors without cover:

   a. Masonry units
   b. Reinforcing steel
   c. Piping
   d. Precast concrete items
   e. Castings

2. The above mentioned materials shall be stored on wood blocking.

C. Fully Protected Storage:

1. The Contractor shall store all products not named above in buildings or trailers which have a concrete or wooden floor, a roof; and fully enclosed walls on all sides.

2. The Contractor shall provide heated storage space for materials which would be damaged by freezing.

3. The Contractor shall protect mechanical and electrical equipment from being contaminated by dust and dirt.

4. The Contractor shall maintain temperature and humidity at levels recommended by manufacturer(s) for electrical and electronic equipment.

END OF SECTION

SECTION 01700 - PROJECT CLOSEOUT
REQUIREMENTS OF CONTRACTOR

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Closeout procedures.

B. Final cleaning.

C. Adjusting.

D. Project record documents.

E. Operation and maintenance data.

F. Spare parts and maintenance products.

G. Warranties and bonds.

1.02 RELATED SECTIONS

A. Section 01650 - Starting of Systems: System start-up, testing, adjusting, and balancing.

1.03 CLOSEOUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect/Engineer's review.

B. Provide submittals to Architect/Engineer that are required by governing or other authorities.

C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

D. Deliver all close-out documents to the Architect within forty-five (45) days of the date of Substantial Completion. Indemnify the Architect for failure to perform this requirement including legal fees incurred by the Architect in enforcing this requirement. Failure to deliver all required close-out documents to the Architect within forty-five (45) days from sign-off of AIA Document G704, "Certificate of Substantial Completion," shall invoke costs of the Architect's services to be borne by the Contractor.

E. Submit Certificate of Substantial Completion: AIA Document G704, 1992 Edition.

F. Submit Contractor's Affidavit of Payment of Debts and Claims: AIA Document G706, 1994 Edition.

G. Submit Contractor's Affidavit of Release of Liens: AIA Document G706A, 1994 Edition.

1.04 FINAL CLEANING

A. Execute final cleaning prior to final project assessment. Use experienced workmen or professional cleaners for final cleaning.

B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

C. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

D. Replace filters of operating equipment.

E. Clean debris from roofs, gutters, downspouts, and drainage systems.

F. Clean site; sweep paved areas, rake clean landscaped surfaces.

G. Remove waste and surplus materials, rubbish, and construction facilities from the site weekly (or more often as required by accumulation). Remove waste materials, rubbish and debris from the site and legally dispose of at public or private dumping areas off-site at least once a week. Site to be approved by Owner.

H. Each subcontractor has the responsibility for protecting equipment and finishes at the job site from damages resulting from work under his control, for all cleaning required as a result of his failure to protect equipment and finishes, and for removal of protective covers.

I. Safety Standards: Maintain project in accordance with the OSHA safety standards, as stipulated under the Occupational Safety and Health Act of 1970 and printed May 29, 1971 in the Federal Register.

J. Fire Protection: Store volatile waste in covered metal containers and remove from premises daily.

K. Pollution Control: Conduct cleanup and disposal operations to comply with local ordinances and anti-pollution laws.

1. Disposal of volatile fluid wastes (such as mineral spirits, oil, or paint thinner) in storm or sanitary sewer systems or into streams or waterways is not permitted.

L. Vacuum clean interior building areas when ready to receive finish painting and continue vacuum cleaning on an as-needed basis until building is ready for acceptance or occupancy.

M. Repair, patch and touch-up marred surfaces to match adjacent finishes. Coordinate with requirements specified under the various sections of these specifications.

N. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly-painted surfaces.

1.05 ADJUSTING

A. Adjust operating Products and equipment to ensure smooth and unhindered oper-ation.

1.06 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents in clean, dry, legible condition; record actual revisions to the Work:
   1. Drawings
   2. Specifications
   3. Addenda
   4. Change Orders and other modifications to the Contract.
   5. Reviewed Shop Drawings, Product Data, and Samples.
   6. Manufacturer's instruction for assembly, installation, adjusting, maintenance and operation.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress. Label each document "Project Record."

E. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

F. Record Drawings: Legibly mark each item to record actual construction including:
   1. Measured depths of foundations in relation to finish first floor datum.
   2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
   4. Field changes of dimension and detail.
   5. Details not on original Contract drawings.
   6. Review applied changes to C.A.D. drawings.

G. Submit documents to Architect/Engineer prior to claim for final Application for Payment.
   1. The Contractor shall submit to the Architect one set of "Record" drawings which accurately reflect the actual installation of any and all materials, piping, conduit, etc., which were not installed exactly in accordance with the contract drawings.
   2. Contractor shall submit to the Architect two (2) (corrected) final record copies of shop drawings marked "for job use" which reflect all changes required in previous submittals including these marked "Approved as Noted," or similarly revised by the Engineer.

1.07 OPERATION AND MAINTENANCE DATA

A. Submit data bound in 8½ x 11 inch (A4) text pages, three D side ring binders with durable plastic covers.

B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS."

C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

D. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, typed on white paper, in three parts as follows:
   1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/ Engineer, Contractor, Subcontractors, and major equipment suppliers.

   2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
      a. Significant design criteria.
      b. List of equipment.
      c. Parts list for each component.
      d. Operating instructions.
      e. Maintenance instructions for equipment and systems.
      f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.

   3. Part 3: Project documents and certificates, including the following:
      a. Shop drawings and product data.
      b. Air and water balance reports.
      c. Certificates.
      d. Originals of warranties.

E. Submit 1 draft copy of completed volumes 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect/Engineer comments. Revise content of all document sets as required prior to final submission.

F. Submit three (3) sets of revised final volumes to Architect/Engineer within thirty (30) days of Architect/Engineer review.

1.08 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Provide spare parts, maintenance, and extra Products in quantities specified in individual specification sections.

B. Deliver to Project site and place in location as directed by Owner; obtain receipt prior to final payment.

1.09 WARRANTIES AND BONDS

A. Provide notarized copies.

B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.

C. Provide Table of Contents and assemble in three D side ring binder with durable plastic cover.

D. Submit one (1) original and two (2) copies prior to final Application for Payment. All such documents shall indicate the name and location of the project and the name of the purchaser.

E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 02010 - SOILS INVESTIGATION

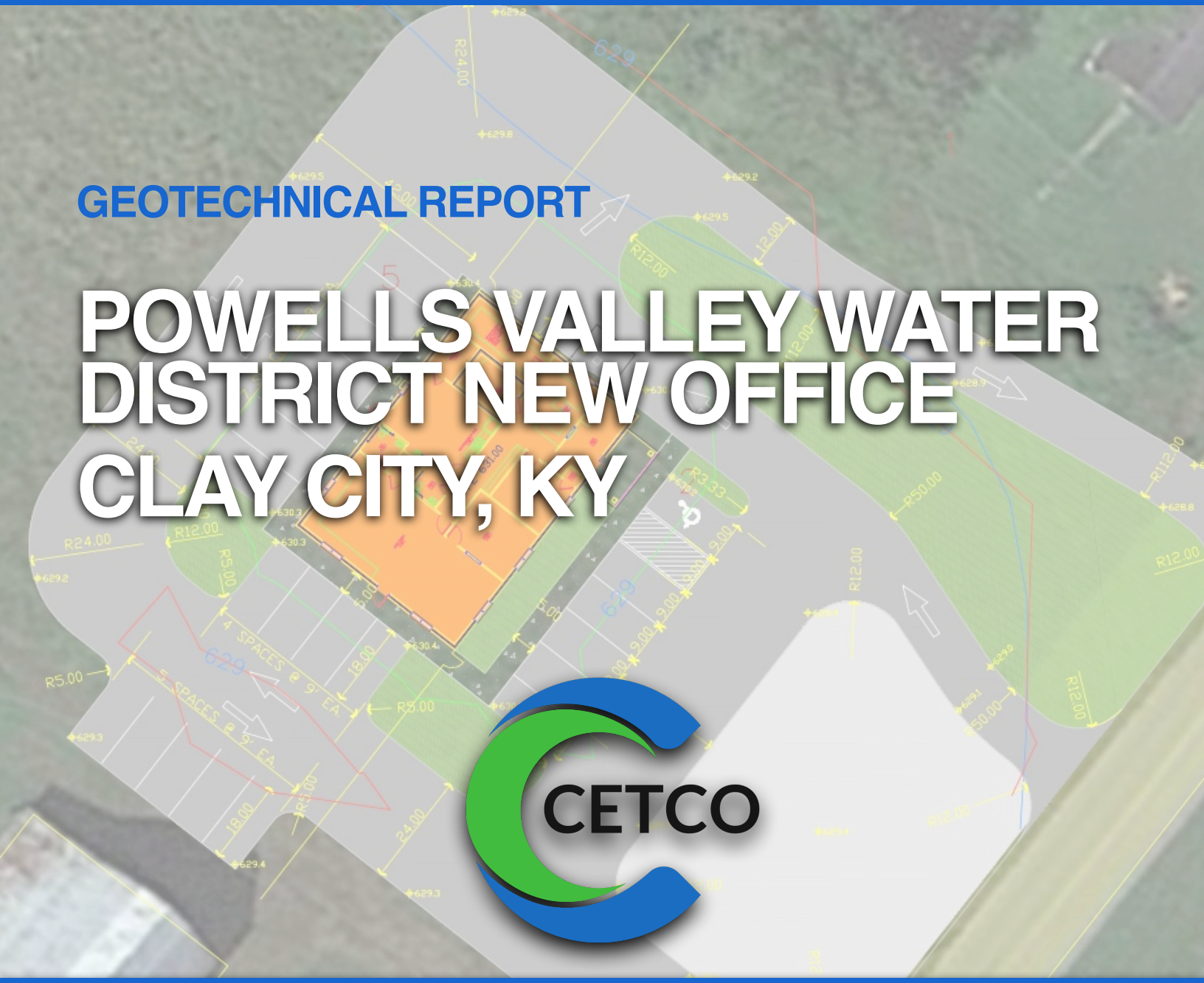
The recommendations of The Report of Geotechnical Exploration for the Powell County Water District Office by Cetco dated 9/21/23 is incorporated into the requirements of the contract documents and shall be followed in its entirety.

END OF SECTION

September 21, 2023

GEOTECHNICAL REPORT

POWELLS VALLEY WATER DISTRICT NEW OFFICE CLAY CITY, KY



CETCO

Cooke Engineering and Testing Company

September 21, 2023

Powells Valley Water District
Sent % MSE of Kentucky, ATTN: Mr. Eric Loy, RA
via email: eloy@mselex.com

Subject: **Geotechnical Report**
Powells Valley Water District New Office Building
Clay City, Kentucky
CETCO Project No. 1776-23-0123

Dear Mr. Loy:

CETCO appreciates the opportunity to provide our services to you and your project. As follows, we are providing our geotechnical report. Also, please note the report Appendix which contains many detailed findings as well as our standard of care for providing our services.

We appreciate the opportunity to provide our geotechnical services to you and the project team. Please do not hesitate to contact us for questions or comments about the information contained herein.

Cordially,
CETCO

Joseph S. Cooke, P.E.
Principal
Licensed KY 21244

Attachments: Geotechnical Report and Appendix
cc: Mr. Scott Taylor, PE w/MSE

Cooke Engineering and Testing Company

TABLE OF CONTENTS

Powells Valley Water District, New Office Building

CLAY CITY, KENTUCKY

GEOTECHNICAL REPORT SUMMARY

We provided our services in general accordance with our previous discussions and our proposal number 1776-23-0226, dated August 21, 2023 as approved by your office. CETCO has consulted with your office and discussed the need for CETCO to provide geotechnical services including sampling and exploration with soil test borings, a site field services by our office, lab testing and analysis and providing a geotechnical report. These services included providing our opinion of the conditions encountered for the purpose of design and development of a vacant site into a potential new office building project. The site is located off of 11th Street in Clay City, Kentucky. Provided information indicates a “footprint” for the building of less than 3,000 square feet. The building will be single story with surrounding parking, driveway and a “drive through” lane. This introductory section, which has previously been discussed with your office, provides a brief summary for quick reference. The report that follows provides much greater details for design and construction purposes.

In general, we encountered the typical, sandy soil overburden found in Clay City (most areas near the river). Free water was encountered in all borings, ranging in depth from about 4 to 6 feet. Below the sandy soil overburden, black shale bedrock was encountered at about 6 to 7 feet deep at the site. The native soils were typically firm down to about 2 feet deep, then becoming soft.

The site is suitable for the development. We believe shallow spread footings can be used for proposed building. Conventional slab-on-grade floors would also be suitable for most new building types.

The primary concerns for the site are the “normal” risks for areas near the river in Clay City. This include: shallow water, soft soil condition (mostly due to water) and construction in sandy soils. Normal construction and planning practices for the area are expected. Details for these issues and recommendations for design and construction as well as our other recommendations are discussed in the report.

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1 PROJECT BACKGROUND

1.1 CETCO SCOPE OF SERVICES

Our scope of services included review of provided drawings, exploration of the proposed site with soil test borings at select locations and laboratory testing and geotechnical analysis. After we completed our reviews, field work and laboratory testing, we are issuing this geotechnical report as follows.

1.2 PROVIDED INFORMATION

We were provided information for the project as follows:

Provided Document	Source
The provided sketch shows the potential footprint/building layouts on the site.	MSE
Civil site plan showing the building and a proposed pavement layout (parking and drives)	MSE

The following information summarizes our understanding of the project conditions

Condition	Specifics
Building/Structure Information	The building will likely be less than 3,500 square feet in size and would be single story. The framework will likely be a slab-on-grade floor, with stud walls/joist roofing.
Site Grading	The site is relatively flat. However, at least 2 feet of new fill expected to “raise” the site elevations.
Foundations/Floor Slabs	At this stage in the project, foundation loading conditions have been assumed as: less than 25 kips for any isolated columns and less than 2 kips per linear foot for continuous footings. Floor slab loading would be expected to be less than 250 pounds per square foot.

If any of the aforementioned information is incorrect or requires modification, please let CETCO know. Changes to our reporting, recommendations and opinions may be required.

1.3 PUBLISHED SITE AND AREA INFORMATION

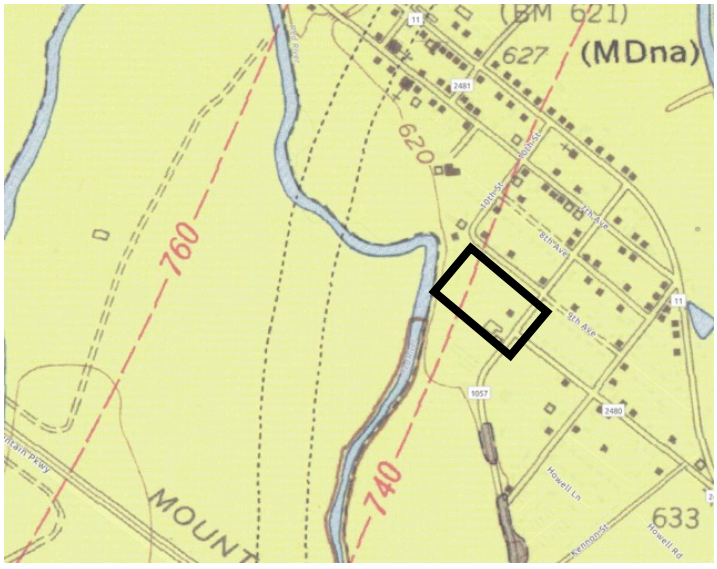
We have reviewed the following published/public domain site information.

AREA TOPOGRAPHY AND PHYSIOGRAPHY

The site is located in the “Eastern Kentucky Coalfield Region” of Kentucky is dominated by forested hills and highly dissected by V-shaped valleys. These areas can have resistant Pennsylvanian-age sandstones with steep and generally stable slopes, but also have soft, shale bedrock areas with “unstable” slopes.The southern boundary of this physiographic region in Kentucky consists of knobs which consist of hundreds of steep sloping cone shaped hills. Elevations within the site vicinity generally ranged from 600 feet along the Red River to 800 feet along ridges. The specific site topography is relatively flat with elevations approximately ranging from 620-628 feet.

SITE GEOLOGY AND AERIAL MAPPING

The Kentucky Geologic Survey (KGS) public information was reviewed including the USGS Clay City Geologic Quadrangle. The site is underlain by a thin veneer/surface layer of alluvial material, further underlain by the New Albany Shale Formation. The alluvium is mostly clay, silt and shale with some gravel. The New Albany is a dark gray to black shale that weathers to brownish coloring. Our borings confirmed the mapping. The New Albany Shale contains thin layers to pyretic materials that can be prone to swelling (oxidizing of the pyretic sulfur to form crystals) if exposed to both moisture and oxygen.



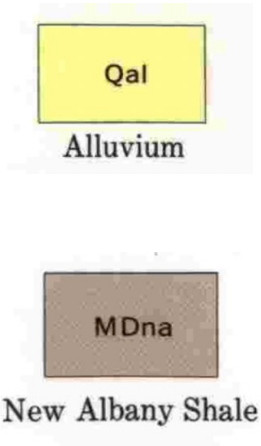


Image from the KGS website showing Original GQ Image: Site location is the black rectangle.

AERIAL MAPPING

Aerial information back as far as 1995 was readily available for the site. Images showing site progression. The photo below on the left is the aerial from 1995, showing the existing barn south of the site, with what appears to be a gravel road near the northwest corner of the outlined rectangle. In the 2004 aerial, there is a gravel road leading off of 11th street that runs along the border of the property just east of the barn and is shown in the 2008 aerial below. The 2008 aerial also indicated that a concrete structure was built near the northwestern property border. From 2008 to 2019 the site appears to have minimal changes, where the gravel road appeared to be unused and some vegetation surrounding the concrete structure. The most recent aerial shows current site conditions where the vegetation around the concrete structure was removed and few trees near 11th street were removed also. The white outline represents approximate property boundaries and the yellow outline indicates the approximate office building location.

1995 : Aerial from Google Earth

2008 : Aerial from Google Earth

2022 : Aerial from Google Earth

SITE SOIL SURVEY MAPPING

The Soil Survey of the site area was also reviewed. Issues affecting the site development included: shallow depth to saturated zone and shrink/swell of soil. The shrink/swell likely deals with potential New Albany Shale materials at bedrock depths. We are providing recommendations to address these issues. Also, the soil survey lists the some of the site as having “high risk” for corrosion of steel. Typically, the main risk for corrosion would be for steel reinforcement in concrete foundations and slabs. The primary means to address this risk is to specify at least 2 inches of concrete cover over all steel reinforcement for concrete exposed to soil.

2 CETCO FINDINGS

We provided a site and area reconnaissance, logged soil test borings and explored the site using those borings. The following sections discuss our findings. Mr. Hunter Hawkins, staff geologist, provided our field services including a site reconnaissance and logging of the borings in the field, during the exploration on September 1, 2022. Mr. Joe Cooke, PE, also conducted a site visit and observed recovered samples.

2.1 CURRENT SITE SURFACE CONDITIONS AND OBSERVATIONS

The site is located adjacent to 257 11th Street in Clay City, Kentucky. Upon turning off of 11th street there is a gravel entrance leading you to the vacant property. The site is a relatively flat open grassy area with minimal elevation changes at the proposed building location which is located at the southern portion of the property. The property is rectangular starting from 11th street and extending just before the Red River. Just before the red river is a rectangular concrete structure approximately 1000 square feet in size. One barn is located just southwest of the site edge, near to where the proposed new office building location. The property is bordered by tree-lines east and north of the site, with the Red River beyond the northern tree line and residential areas east of the site.

The ground surface appeared to be “firm” and did not appreciably rut under the weight of the drill rig during our drilling operations. The site appears to drain well, as the weather conditions prior to drilling drilling included rainy days, but no large-scale ponding of water due to the rain was observed and minimal muddy conditions were observed. However, several “crawdad” holes were observed on-site, which is usually an indicator of soft soils and wet conditions near the surface. Also, at an area near 11th Street, we observed an isolated “bushy” area with dense vegetation and a plastic truck bed liner and some other debris. Possible debris lies within the vegetation (see photos).

The following pages show photos at the site at the time of our field work.

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Project Photos

Description	Photo
Showing southwest section of the site, showing barn just off site, facing southwest.	
Example view of proposed building pad area, showing treelined with houses in the background. Facing northeast.	

Project Site Photos (cont.)

Description	Photo
Showing open, grassy area of he northern sections of the site, facing northwest.	
Example view at boring B-5 location in the proposed parking areas with 11th street in the background. Facing south.	

Project Site Photos (cont.)-1

Description	Photo
Showing example “crawdad” hole.	
Debris and “bushy” area. Possible further debris inside vegetation. Located near 11th Street.	

2.2 SUBSURFACE INFORMATION SUMMARY

A total of five (5) soil test borings were utilized to explore the subsurface conditions at the site. Three were located in the proposed building area and two were located in pavement areas. The borings were drilled in locations to provide an overall indication of the site subsurface conditions as well as in areas that within the provided plan's building location. The boring location plan in the appendix shows the approximate drilling locations.

SUBSURFACE CONDITIONS: At our sampling locations, we encountered topsoil overlying generally gray and brownish shades of sandy soils. The upper 1 to 2 feet of soil appears to be "sandy clay". Below this upper strata, the material becomes much more sandy, soft/loose and wet, and these extend down to the top of shale bedrock. The soils were generally firm in the upper strata, but soft to very soft below about 2 feet deep. Below is a table summarizing the soil conditions at the site. Detailed findings are in the Appendix boring logs and laboratory testing pages.

Strata	Thickness	Notes
Topsoil	4 to 7 inches	
Native soils: upper strata of brownish, sandy lean clay. Generally firm and moist.	About 2 feet	
Native soils: gray, with some brown and orange, sand and clay mixture. Generally soft/loose and very moist to wet.	About 3 to 6 feet thick	
Weathered black shale bedrock to competent black shale.	NA	

Auger refusal was encountered in all six borings, ranging from 6.7 to 7.8 feet deep. Refusal material is interpreted at the top of black shale bedrock. The table below shows depth to auger refusal (i.e., top of bedrock).

Boring Number	Depth to auger refusal (feet)
B-1	7.8
B-2	7.2
B-3	6.9
B-4	6.7
B-5	7.3

GROUNDWATER CONDITIONS: Free water or “wet” conditions were encountered in all 5 borings. The site area is part of the alluvial valley for the Red River and contains larges areas of sandy soils. As such, shallow wet/water conditions are expected and are widespread. **Depth to water in our borings ranged from 4.5 to 6.5 feet from the existing top of ground.** Area geologic mapping also shows water wells with similar depths to ground water.

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3 OPINIONS AND DISCUSSION

SUMMARY: In general, the project site is suitable for the proposed new development and site improvements. This includes the use of shallow spread footings and conventional building slab-on-grade floors.

3.1 PRIMARY GEOTECHNICAL ISSUES

The following issues are our opinion of the primary geotechnical-related issues at the site. Other issues are likely present, but we believe the following represent the greatest impact to the project budget, schedule, design and construction. Our recommendations address these issues.

- Shallow water/wet conditions and soft/loose soils
- Sandy soil conditions
- Shallow bedrock and swelling shale

Shallow water/wet conditions and soft/loose soils

The entire site is prone to shallow water conditions. “Crawdad” holes were seen on numerous areas, the geologic and soil mapping states “shallow water” and all of our borings encountered water/wet conditions. ***These wet conditions appear to be prevalent at or near bottom of footing elevations. Dewatering measures such as long-term (over night or more) pumping should be expected to obtain sufficient dry conditions for foundation concrete placement.***

Wet conditions also create soft/loose soils. This means some undercutting of foundations should be expected as well as some areas “failing proof-rolling” and requiring some undercutting. ***However, CETCO should be retained to inspect foundation bearing conditions as well as observing proof rolling to avoid excessive undercutting. Undercutting to find “solid” underlying material may be futile as the conditions seem to get softer with depth. Select undercutting and widening of foundations as well as the use of geo-grid under pavements/slabs may be the best solution for dealing with soft conditions.***

Sandy soil conditions

The entire site is underlain by alluvial soils, most of which are sandy. Sandy soils tend to slump in excavation and also tend to "fluff" when left open to the air. ***Foundation excavations will likely cave-in and wider than normal excavation (i.e., additional concrete) should be expected***. Also, excavations deeper than 4 feet will require a trench box to remain open. Lastly, sandy soils tend to hold water.

Shallow Bedrock and Swelling Shale

Our borings encountered the top of bedrock from about 6 to 7 feet deep across the site. Excavations at or near this depth will encounter shale bedrock. The upper 2 feet or so of the bedrock appears to be somewhat soft and could likely be removed with a large excavator. Below this elevation "rock removal" techniques such as hoe-ramming may be needed for excavation.

Of note, the shale bedrock material is New Albany Shale. This material can be prone to severe, quick and excessive swelling when exposed to weathering conditions (air and water). ***For any rigid structure's excavation that comes in contact with this material, CETCO should be contacted for guidance to minimize the risk of severe swelling in that area.***

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4 RECOMMENDATIONS

The following recommendations are provided to assist in the planning, design and construction of the project.

4.1 SITE PREPARATION

We recommend that site grading should take place between about late April to early November. Earthwork taking place outside this time period will likely encounter wet conditions and weather conditions that will provide little to no assistance with drying the soils. Additionally, the following bulleted items are critical to prepare the site for earthwork and additional construction.

- Topsoil and organic materials should be removed (stripped) from the construction area and all structural fill areas. These materials should be wasted from the site or used as topsoil in landscape areas;
- CETCO should be present during stripping to avoid over-stripping. Over-stripping may unnecessarily expose very soft soils at the site, creating excessive unstable conditions;
- Areas ready to receive new fill should be proofolled with a loaded dump truck or similar equipment judged acceptable by CETCO;
- Proofrolling should not be performed on wet subgrade. If possible, perform proof rolls after suitable dry weather periods of time;
- ***CETCO should determine amounts of undercutting (if any)*** for any area which pumps or ruts. CETCO should also determine acceptable backfill materials and backfill methods. In general any backfill should be accomplished in general accordance with section 4.2;
- Remove deleterious materials or materials that are unsuitable for use in supporting the overlying new fill. Minimal debris was encountered in our borings, but ***some debris was observed at the top of ground.*** The backfill should be consistent with the requirements listed in section 4.2;
- CETCO should observe the proofrolling operations and make recommendations for any unstable or unsuitable conditions encountered.

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4.2 EARTHWORK

Before new fill construction, representative samples should be obtained of the proposed fill material to determine the moisture-density and overall classification of the material. The tests also would assist in determining if the material is suitable for use as structural fill.

The site is somewhat “level/flat”, but we understand that 1 to 3 feet of new fill may be needed to “raise” the building pad and/or site area. As such, we are providing the following for any mass earthwork/filling. After the subgrade has been approved to receive new fill, the fill may commence with the following procedures and guidelines recommended:

Mass Earthwork

- Based on our observations and laboratory testing, the on-site soils appear to be suitable for use as structural fill;
- Fill placement guidelines:
    - Structural fill should be placed in maximum 8-inch thick loose lifts;
    - Maximum particle size of the soil should be limited to 8 inches in any dimension;
    - Materials should have a plasticity index (PI) of less than 30.
    - ***DO NOT USE NEW ALBANY SHALE (OR SIMILAR) AS NEW FILL FOR THE BUILDING PAD AREA.***
- Quality control testing guidelines:
    - Density testing of newly placed clay soils should be performed. The rate of testing should be at least 3 per lift and at least one per 10,000 square feet of soil placement. Soil should be compacted to at least 95 percent of standard Proctor (ASTM D698) maximum dry density. Moisture content should be from minus 1 to plus 3 percent of optimum moisture content (range is such due to moderately high plasticity of the on-site clay soils);
    - Soil should never be placed “dry” (dusty). CETCO should observe fill placement to determine acceptable soil moisture;
- ***Due to a shallow water table, no vibration should be used on new mass fill.***
- Observation of fill “stability” is critical. The roller and earthwork equipment traversing over the new fill should be observed to document minimal movement occurs. This includes sheepsfoot roller action observed to ensure the compactor is “walking out” of each lift;
- CETCO should observe and document fill placement and compaction operations.

Backfill Construction

These materials are placed in more confined areas than mass earthwork materials and therefore cannot be placed in full compliance with the previous recommendations. The following are general recommendations for backfill areas:

- Gravel/granular materials are recommended for confined fill areas;
- Fill lift thicknesses will vary dependent on compaction equipment available and material types, but in no case should exceed 8 inches;
- For crushed stone/aggregate backfills in trenches or wall backfill, the lift thickness should not exceed 4 inches;
- ***Again, due to shallow water tables on site, no vibration should be used on backfill areas;***
- Observation of stability and moisture should be similar to those mentioned previously;
- CETCO should provide addition recommendations for backfill.

Again, we recommend that site grading be started in the period from about late April to about November in order to prevent additional undercutting due to wet conditions. Drying of the site soils during other portions of the year is typically difficult.

Site Drainage

Site drainage (water flow into, along and from the site) is key to minimize damaging effects of water flow. Excess water ponding can destabilize soils. Excessive water flow can erode soils and destabilize soils, especially at or near slopes.

For shallow groundwater seepage (less than 5 feet deep or so), the water encroaching upon construction excavations can be removed by placing a sump near the source of seepage and then pumping from the sump. ***Heavy seepage and a shallow ground water table are expected (about 3 feet or shallower from current top of ground).*** Overnight (or longer) pumping may be required to obtain sufficiently dry excavations for placement of concrete in footings or other deeper excavations. If more excessive means of dewatering are needed, then the geotechnical engineer should be contacted.

The following are general guidelines for site drainage.

- For all earthwork operations, positive surface drainage is prudent to keep water from ponding on the surface and to assist in maintaining surface stability;
- The surface should be sealed prior to expected wet weather. This can usually be accomplished with rubber-tired construction equipment or a steel-drum roller;
- During construction, water should not be allowed to pond in excavations or undercutting will likely be required;
- During the life of the project, slope the subgrade and other site features so that surface water flows away from the site structures;
- **Future building structure roof drains should be piped into proper storm drainage systems (critical for managing the risk of karst/sinkhole future formation);**
- The site is relatively flat and normal dewatering such as brief pumping and open channel flow (ditches) may prove futile.

4.3 SITE SEISMIC DESIGN

The Kentucky Building Code (KBC), as updated was reviewed to determine the Site Seismic Classification. Based on our review of geologic data, our experience, and subsurface conditions encountered, we recommend a Seismic SITE CLASS "B" for the site.

A detailed geotechnical earthquake engineering analysis was not performed. However, based on a review of published literature and our experience with similar subsurface conditions, we believe the potential for slope instability, liquefaction (sandy soils at the site are very clayey), and surface rupture due to faulting or lateral spreading resulting from earthquake motions is low.

4.4 FOUNDATIONS

The following recommendations are also based on the previously described project information, typical single story commercial building types, the subsurface conditions encountered in the borings, the results of laboratory testing, empirical correlations for the soil types encountered, and CETCO's analyses and experience.

Shallow Spread Footings

The site conditions encountered and/or newly/properly compacted engineered fill can support the proposed single story building with shallow spread footings. ***A maximum allowable net***

bearing pressure of 1,500 pounds per square foot (psf) is recommended for footings bearing on firm or better native soils or compacted engineered fill. Additional design considerations for project foundations are outlined as follows:

- Design footings with a minimum dimension of 24 inches wide;
- Place all exterior footing bottoms to at least 24 inches below finished exterior grade (frost depth for Powell County);

Shallow Foundation Construction Considerations

The soils encountered in this exploration may lose strength if they become wet during construction. Therefore, we recommend the foundation subgrades be protected from exposure to water. The following guides address protection of footing subgrades and our recommended remediation for any soft soils encountered.

- Bearing condition evaluations must be conducted using dynamic cone penetration (DCP) and hand auger borings at all footing locations. ***Soft zones are expected*** and CETCO can determined the depth of undercutting or "width" of excavation needed to adjust to such soft conditions. ***Avoid excessive undercutting/depths due to likely shallow water/wet conditions.***
- To protect against "moisture loss" or "soil drying" during warmer months, foundation concrete should be placed the same day as excavation.
- Remove any soils disturbed by exposure prior to foundation concrete placement.
- Level or suitably bench the foundation bearing area.
- Remove loose soil, debris, and excess surface water from the bearing surface prior to concrete placement.
- Sandy soils and a shallow water table are expected. ***The excavations will likely slough and wider than normal trenches would be expected (i.e., additional spoils and concrete). Overnight pumping may be needed to achieve sufficiently dry foundation excavations for concrete placement.***
- CETCO must observe all foundation excavations and provide recommendations for treatment of any unsuitable conditions encountered.
- CETCO should be retained to evaluate actual conditions.

4.5 FLOOR SLABS

Normal conventional type slabs can be supported by engineered fill soils or native/existing soils. Again, the areas should be proof rolled at the direction of CETCO prior to slab gravel base placement. Further, the subgrade should be prepared according to the recommendations contained within this report. The following features are recommended as part of the floor slab construction:

- ***Due to shallow water conditions, a vapor barrier of at least 20 mil thickness should be used.***
- If possible, avoid construction of slabs during the hottest/driest months (typically July, August or September) due to potential “dry soil” conditions.
- Keep the crushed stone or gravel moist, but not wet, immediately prior to slab concrete placement to minimize curling of the slab due to differential curing conditions between the top and bottom of the slab.
- Retain CETCO to review the actual subgrade conditions prior to slab construction and make recommendations for any unsuitable conditions encountered.
- If soft conditions are encountered, undercutting may prove futile and a better option may be to use a geo-grid to bridge the soft soils. CETCO would provide those recommendations upon observation of the conditions.

4.6 PAVEMENT RECOMMENDATIONS

The heaviest/most severe traffic for the site would likely be concrete or delivery trucks and fork lifts during construction. The project should include additional budget for some undercut and replacement for the lay-down area for materials and haul paths for such traffic. Also, the construction entrance road will likely need double the normal thickness of gravel.

For the final pavement, light duty (passenger car traffic) areas of parking as well as medium duty (passenger cars and delivery trucks) are assumed for the site. The most significant areas of traffic are the main entrances and main intersections of the parking lot and we have considered these to be the “medium duty” areas. Please note, we are also providing recommendation for dumpster areas in the last portion of this section.

If the site areas “pass” a proof roll, the subsurface materials appear to be suitable to support the new pavement areas. Adequate soil/subgrade support is critical for any pavement area. Please refer the Earthwork section of this report for subgrade preparation. Prior to stone base

placement we recommend an additional proofroll of the subgrade should be performed to verify subgrade conditions. Recommendations for undercutting/repair of the subgrade can be made at that time by CETCO. Please note: ***the site has a shallow water table and widespread shallow soft conditions***. Undercutting to find "hard" ground may proof futile and often the best way to manage soft conditions is to use geo-grid under the gravel sections. ***We recommend budgeting at least one roll of Tensar InterAx geo-grid for the project.***

We have have assumed a CBR of 3 for the area. We have also assumed a 15 year life with the "relatively low" EAL.

Adequate drainage and slope of the pavement subgrade and pavement section should be provided to promote adequate drainage. Edges of the pavement should be provided a means of water outlet by extending the aggregate base course through to side ditches or providing drain pipes and weep holes at catch basin walls.

Light Duty Parking

Based on the above traffic and design parameters and our experience with similar projects, we recommend using the following pavement section for parking lot areas:

Parking Pavement Sections

Component	Parking Lots Only
Surface Course	1
Asphalt Base Course	2
Base Material (DGA)	8

The asphalt should be mixed, placed, and compacted in accordance with Kentucky Transportation Cabinet Standard Specifications. Also, the dense graded aggregate (DGA) should be placed and compacted in accordance with KyTC Specifications.

Medium Duty: Entrances, and Intersections Areas

The main entrances and intersection areas will received the bulk of heavy forces, twisting and turning and large-scale stopping and starting that typically wear down pavement areas and create failures in pavement sections. For these areas, we recommend a thicker pavement section (increase the stone by 2 inches ***OR*** the base asphalt by 1 inch), or alternatively the areas can add a layer of Tensar InterAx geogrid.

Dumpster Area

The dumpster pad and dumpster unloading area should be concrete pavement. At least 6 inches of concrete thickness should be used overlying at least 6 inches of compacted DGA base stone. Extend the concrete in the unloading area to at least 2 feet beyond the full length of both axles of conventional garbage trucks and at least 3 feet beyond the conventional width (each side).

4.7 POST-REPORT GEOTECHNICAL CONSULTING

CETCO services as “geotechnical engineer of record” include answering questions pertaining to the materials presented in this report and the appendix. However, if conditions arise during construction that are different than those encountered during our exploration or if additional recommendations are needed, CETCO should be retained to provide that guidance. Construction observation and testing are beyond the typical scope of the geotechnical engineer, but are essential to completing the geotechnical engineer’s anticipated completion of their recommendations. CETCO should always be contracted as the testing/inspection firm for any project that applies their geotechnical report information. This always saves time, risk and project costs.

5 NOTES ON THE REPORT

The assessment of site environmental conditions or the presence of contaminants in the soil, rock, surface water or groundwater of the site was beyond the scope of this exploration.

The recommendations provided are based in part on project information provided to us and they only apply to the specific project and site discussed in this report. If the project information section in this report contains incorrect information or if additional information is available, you should convey the correct or additional information to us and retain us to review our recommendations. We can then modify our recommendations if they are inappropriate for the proposed project.

Regardless of the thoroughness of a geotechnical exploration, there is always a possibility that conditions between borings/test pits will be different from those at specific boring/test pit locations and that conditions will not be as anticipated by the designers or contractors. In addition, the construction process may itself alter soil conditions. Therefore, experienced geotechnical personnel should observe and document the construction procedures used and the conditions encountered. Unanticipated conditions and inadequate procedures should be

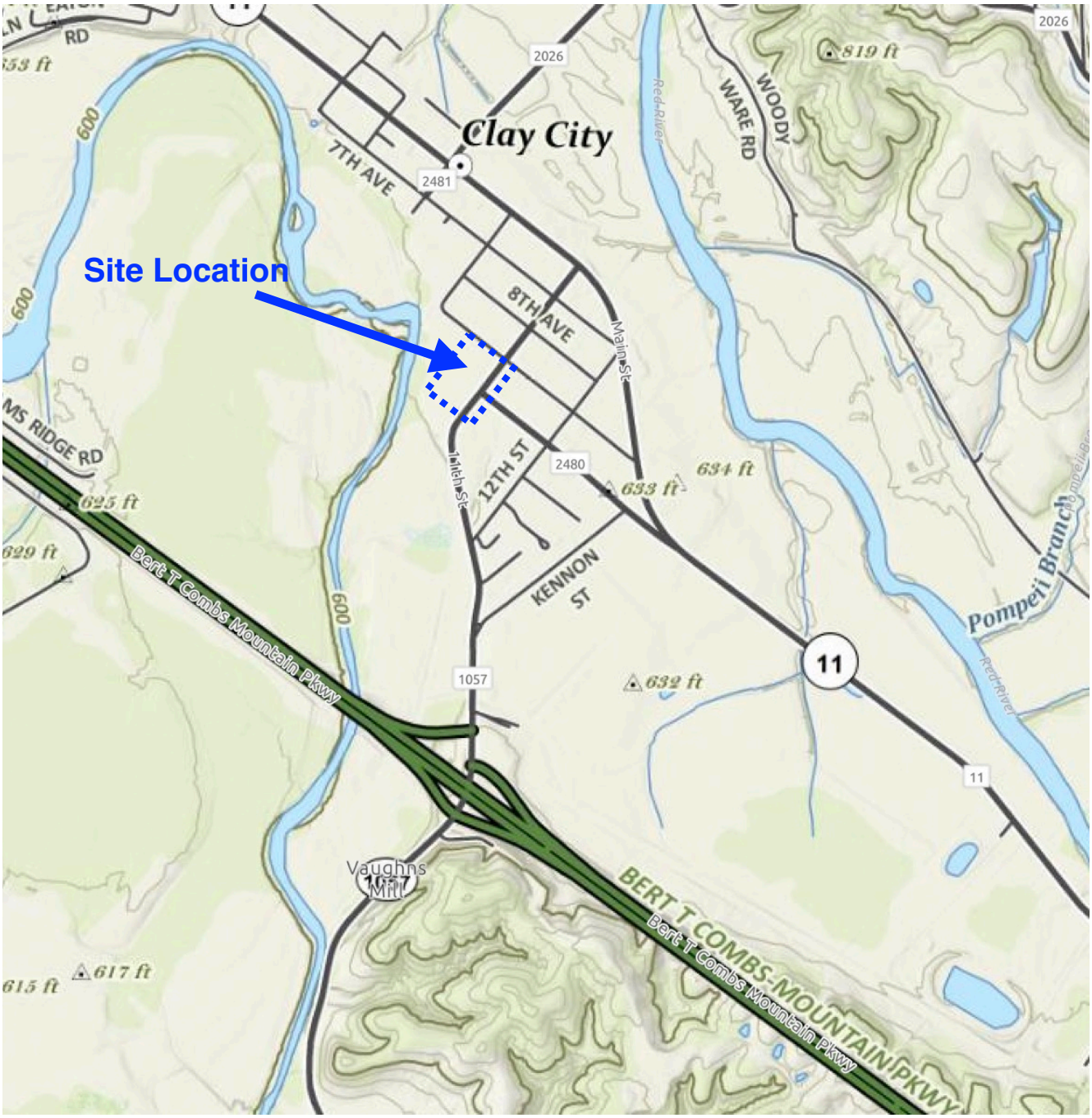
reported to the design team along with timely recommendations to solve the problems created. We recommend that the owner retain CETCO to provide this service based upon our familiarity with the project, the subsurface conditions and the intent of the recommendations.

We recommend that this complete report be provided to the various design team members, the contractors and the project owner. Potential contractors should be informed of this report in the "instructions to bidders" section of the bid documents. The report should not be included or referenced in the actual contract documents.

We wish to remind you that our exploration services include storing the samples collected and making them available for inspection for 30 days. The samples are then discarded unless you request otherwise.

APPENDIX

SITE LOCATION PLAN
BORING LOCATION PLAN
TEST BORING LOGS
FIELD STANDARDS
LABORATORY TESTING
LABORATORY STANDARDS



Site location plan adapted from Kentucky Geological Survey, with further adaptations from CETCO professionals.

CETCO, PLLC
624 Wellington Way
Lexington, KY 40515
859.475.3933
www.cetcopllc.com

SITE LOCATION PLAN
for Powells Valley Water District Office Building

Clay City, Kentucky

CETCO Project: 1776-23-0123
Date: September 19, 2023
Drawn by: Hunter Hawkins
Checked by: Joe Cooke, PE
Drawing: 1 of 1

N

Boring location plan adapted MSE of Kentucky, with further adaptations from CETCO professionals.

Legend

Boring location, B-X

CETCO, PLLC
624 Wellington Way
Lexington, KY 40503
859.475.3933
www.cetcopllc.com

BORING LOCATION PLAN
Powells Valley Water District - Office Building

Cave City, Kentucky

CETCO Project: 1776-23-0123
Date: September 19, 2023
Drawn by: Hunter Hawkins
Checked by: Joe Cooke, PE
Drawing: 1 of 1

CETCO
624 Wellington Way
Lexington, KY 40503
Telephone: 859-475-3933

BORING NUMBER B-1

CLIENT Powells Valley Water District
PROJECT NAME Powells Valley Office Building
PROJECT NUMBER 1776-23-0123
PROJECT LOCATION Clay City, Kentucky
DATE STARTED 9/1/23 **COMPLETED** 9/1/23
GROUND ELEVATION _____ **HOLE SIZE** 4 inches
DRILLING CONTRACTOR Strata Group
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING --- Water table at 6.5 feet
LOGGED BY Hunter Hawkins **CHECKED BY** Joe Cooke, PE
AT END OF DRILLING ---
NOTES Mostly Sunny, 70's
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0.0		TOPSOIL (4")					
		Brownish gray sandy LEAN CLAY (CL), moist, FIRM	SPT S-1	83	2-2-2 (4)		
2.5		Brownish gray sandy ALLUVIUM (SC), very moist, SOFT	SPT S-2	94	1-1-1 (2)		
		Water table at 6.5 feet					
5.0			SPT S-3	100	1-2-2 (4)		
		Brown sandy ALLUVIUM (SC), with some gravel, very moist to wet, SOFT	SPT S-4	81	4-5-50/4"		
7.5		New Albany black SHALE					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

>>

Refusal at 7.8 feet.
Bottom of borehole at 7.8 feet.

CETCO
624 Wellington Way
Lexington, KY 40503
Telephone: 859-475-3933

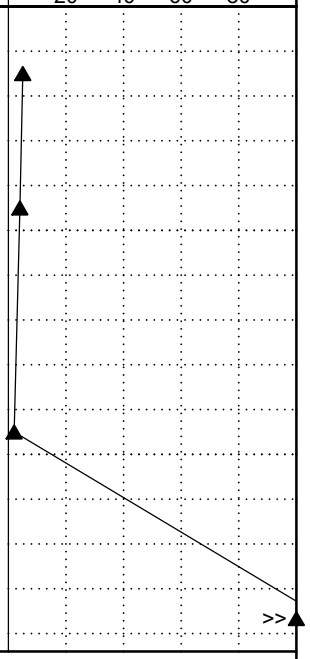
BORING NUMBER B-2

CLIENT Powells Valley Water District
PROJECT NAME Powells Valley Office Building
PROJECT NUMBER 1776-23-0123
PROJECT LOCATION Clay City, Kentucky
DATE STARTED 9/1/23 **COMPLETED** 9/1/23
GROUND ELEVATION _____ **HOLE SIZE** 4 inches
DRILLING CONTRACTOR Strata Group
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING --- Water table at 6.5 feet
LOGGED BY Hunter Hawkins **CHECKED BY** Joe Cooke, PE
AT END OF DRILLING ---
NOTES Mostly Sunny, 70's
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0.0		TOPSOIL (5")					
		Brownish gray sandy LEAN CLAY (CL), moist, FIRM	SPT S-1	89	1-2-3 (5)		
		Black interbedded SHALE layer					
		Brownish gray and orange sandy ALLUVIUM (SC), moist, SOFT	SPT S-2	100	3-2-2 (4)		
2.5		Water table at 6.5 feet					
			SPT S-3	89	1-1-1 (2)		
5.0		Brown sandy ALLUVIUM (SC), with few gravel, very moist to wet, SOFT	SPT S-4	100	8-50/2"		
		New Albany black SHALE					

Refusal at 7.2 feet.
Bottom of borehole at 7.2 feet.

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



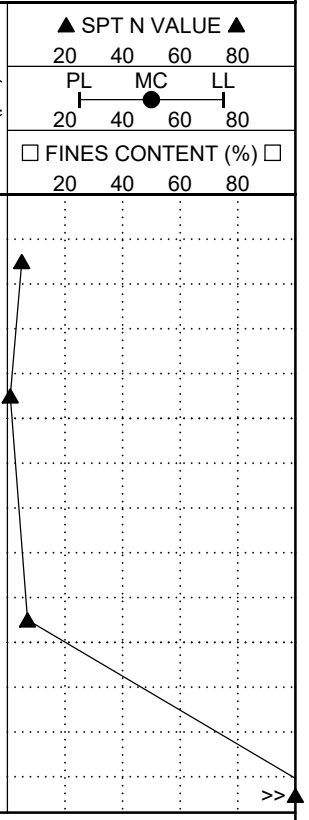
CETCO
624 Wellington Way
Lexington, KY 40503
Telephone: 859-475-3933

BORING NUMBER B-3

CLIENT Powells Valley Water District
PROJECT NAME Powells Valley Office Building
PROJECT NUMBER 1776-23-0123
PROJECT LOCATION Clay City, Kentucky
DATE STARTED 9/1/23 **COMPLETED** 9/1/23
GROUND ELEVATION _____ **HOLE SIZE** 4 inches
DRILLING CONTRACTOR Strata Group
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING --- Water table at 4.5 feet
LOGGED BY Hunter Hawkins **CHECKED BY** Joe Cooke, PE
AT END OF DRILLING ---
NOTES Mostly Sunny, 70's
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0.0		TOPSOIL (5")					
		Brownish gray sandy LEAN CLAY (CL), with few fine organics, moist, FIRM	SPT S-1	100	1-2-3 (5)		
		Brownish gray and orange sandy ALLUVIUM (SC), moist, SOFT					
2.5		Water table at 4.5 feet	SPT S-2	0	1-0-1 (1)		
		Browish orange sandy ALLUVIUM (SC), with some interbedded shale, very moist to wet, SOFT	SPT S-3	100	1-3-4 (7)		
5.0							
		New Albany black SHALE	SPT S-4	80	50/5"		

Refusal at 6.9 feet.
Bottom of borehole at 6.9 feet.



CETCO
624 Wellington Way
Lexington, KY 40503
Telephone: 859-475-3933

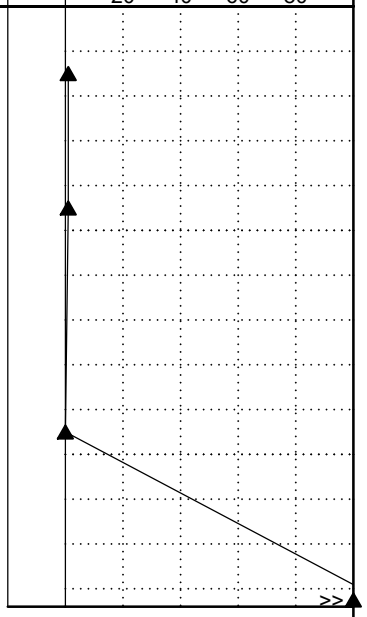
BORING NUMBER B-4

CLIENT Powells Valley Water District
PROJECT NAME Powells Valley Office Building
PROJECT NUMBER 1776-23-0123
PROJECT LOCATION Clay City, Kentucky
DATE STARTED 9/1/23 **COMPLETED** 9/1/23
GROUND ELEVATION _____ **HOLE SIZE** 4 inches
DRILLING CONTRACTOR Strata Group
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING --- Water table at 5.5 feet
LOGGED BY Hunter Hawkins **CHECKED BY** Joe Cooke, PE
AT END OF DRILLING ---
NOTES Mostly Sunny, 70's
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0.0		TOPSOIL (4")					
		Brownish gray sandy LEAN CLAY (CL), with few fine organics, moist, SOFT	SPT S-1	100	2-1-0 (1)		
		Brownish gray and orange sandy ALLUVIUM (SC), very moist, SOFT	SPT S-2	83	0-1-0 (1)		
2.5		Water table at 5.5 feet					
			SPT S-3	100	1-0-0 (0)		
5.0		Browish orange sandy ALLUVIUM (SC), very moist to wet, SOFT					
		New Albany black SHALE	SPT S-4	67	50/3"		

Refusal at 6.7 feet.
Bottom of borehole at 6.7 feet.

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



CETCO
624 Wellington Way
Lexington, KY 40503
Telephone: 859-475-3933

BORING NUMBER B-5

CLIENT Powells Valley Water District
PROJECT NAME Powells Valley Office Building
PROJECT NUMBER 1776-23-0123
PROJECT LOCATION Clay City, Kentucky
DATE STARTED 9/1/23 **COMPLETED** 9/1/23
GROUND ELEVATION _____ **HOLE SIZE** 4 inches
DRILLING CONTRACTOR Strata Group
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING --- Water table at 5 feet
LOGGED BY Hunter Hawkins **CHECKED BY** Joe Cooke, PE
AT END OF DRILLING ---
NOTES Mostly Sunny, 70's
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0.0		TOPSOIL (6")					
		Dark brown LEAN CLAY (CL), with some organics, moist, SOFT	SPT S-1	72	2-1-2 (3)		
		Gray sandy ALLUVIUM (SC), with few orange striations, very moist, SOFT	SPT S-2	100	0-1-0 (1)		
2.5		Water table at 5 feet					
		Grayish orange sandy ALLUVIUM (SC), very moist to wet, SOFT	SPT S-3	89	1-0-2 (2)		
5.0		New Albany black SHALE	SPT S-4	100	10-50/4"		

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

>>

Refusal at 7.3 feet.
Bottom of borehole at 7.3 feet.

Cooke Engineering and Testing Company

Laboratory Testing Summary Table

Project Name:	Powells Valley Water District Office	Date:	September 14, 2023
Project Location:	Clay City, KY	Reviewed by:	Joe Cooke, PE
Client:	Powells Valley Water District	CETCO Project Number:	1776-23-0114

Sample ID	Depth (ft)	Natural Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Finer than #200 Sieve	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
B-1	0.0-1.5	18.0	NP	NP	NP	49.6		
B-1	1.5-3.0	18.1						
B-1	4.0-5.5	22.1	NP	NP	NP	57.3		
B-1	6.5-8.0	15.7						
B-2	0.0-1.5	22.6						
B-2	1.5-3.0	16.5						
B-2	4.0-5.5	24.6						
B-2	6.5-7.2	20.5						
B-3	0.0-1.5	17.4						
B-3	1.5-3.0	19.4						
B-3	6.5-6.9	14.7						
B-4	0.0-1.5	18.7						
B-4	1.5-3.0	22.1						
B-5	0.0-1.5	15.4						
B-5	1.5-3.0	22.7						

NP = Not Plastic

LABORATORY STANDARDS AND PROCEDURES

Soil Classification: Soil classifications provide a general guide to the engineering properties of various soil types and enable the engineer to apply past experience to current problems. In our investigations, samples obtained during drilling operations are examined in our laboratory and visually classified by an engineer. The soils are classified according to consistency (based on number of blows from standard penetration tests or “by hand” stiffness), color and texture. These classification descriptions are included on our "Boring Logs” or “Test Pit Logs”

The classification system discussed above is primarily qualitative and for detailed soil classification two laboratory tests are necessary: grain size tests and plasticity tests. Using these test results the soil can be classified according to the AASHTO or Unified Classification Systems (ASTM D2487). Each of these classification systems and the in-place physical soil properties provides an index for estimating the soil's behavior. The soil classification and physical properties obtained are presented in this report.

Atterberg Limits: Portions of the samples are taken for Atterberg Limits testing to determine the plasticity characteristics of the soil. The plasticity index (PI) is the range of moisture content over which the soil deforms as a plastic material. It is bracketed by the liquid limit (LL) and the plastic limit (PL). The liquid limit is the moisture content at which the soil becomes sufficiently "wet" to flow as a heavy viscous fluid. The plastic limit is the lowest moisture content at which the soil is sufficiently plastic to be manually rolled into tiny threads. The liquid limit and plastic limit are determined in accordance with ASTM D4318.

Moisture Content: The Moisture Content is determined according to ASTM D2216.

Percent Finer Than 200 Sieve: Selected samples of soils are washed through a number 200 sieve to determine the percentage of material less than 0.074 mm in diameter.

“Proctor” (Moisture-Density Test): Often called by it’s original author’s name, the “Proctor” test is a moisture-density relationship test to determine “maximum dry density” and “optimum moisture content” curves using a set amount of force of “compaction” at variable moisture contents in a pre-determined mold size. The test is typically ASTM D698, method A, for standard effort. For a “modified” effort (higher amount of force), ASTM D 1557, again method A, is usually used. Due to high amounts of clay as well as typical compaction construction equipment used, the standard Proctor (ASTM D698) is the most common method used. For materials with larger grain sizes, methods B, C and D of each ASTM method can be used.

CBR: California Bearing Ratio (CBR) testing is often performed on soils to assist in pavement design. The test involves compacting soil into an approximate “0.075 cubic foot” volume at specified density and moisture content and then soaking the compacted sample with a surcharge weight (for a time period of usually at least 96 hours). Then, the sample is “loaded” using a fixed strain penetration piston and the penetration resistance and stress is recorded (as stress in pounds per square inch-psi) at 0.1 inches and 0.2 inches penetration. The resistant stress is then compared (as a “ratio”) to the standard resistant stress, hence the value is reported as unit-less. The test is typically conducted in general accordance with ASTM D1883.

Rock Strength Tests: To obtain strength data for rock materials encountered, unconfined compression tests are performed on selected samples. In the unconfined compression test, a cylindrical portion of the rock core is subjected to increasing axial load until it fails. The pressure required to produce failure is recorded, corrected for the length to diameter ratio of the core and reported.

FIELD SERVICES STANDARDS AND PROCEDURES

Field Operations: The general field procedures employed by CETCO are summarized in ASTM D420 which is entitled "Investigating and Sampling Soils and Rocks for Engineering Purposes." This recommended practice lists recognized methods for determining soil and rock distribution and ground water conditions. These methods include geophysical, in situ methods and test pits as well as borings.

Borings are drilled to obtain subsurface samples using one of several alternate techniques depending upon the subsurface conditions. These techniques typically include:

a. Continuous 2-1/2 or 3-1/4 inch I.D. hollow stem augers;
b. Wash borings using roller cone or drag bits (mud or water);
c. Continuous flight augers (ASTM D 1425).

These drilling methods are not capable of penetrating through material designated as "refusal materials." Refusal, thus indicated, may result from hard cemented soil, soft weathered rock, coarse gravel or boulders, thin rock seams, or the upper surface of sound continuous rock. Core drilling procedures are required to determine the character and continuity of refusal materials.

The subsurface conditions encountered during drilling are reported on a field test boring record by our field personnel (typically engineers). The record contains information concerning the boring method, samples attempted and recovered, indications of the presence of various materials such as coarse gravel, cobbles, etc., and observations between samples. Therefore, these boring records contain both factual and interpretive information. The field boring records are on file in our office.

The soil and rock samples plus the field boring records are reviewed by a geotechnical engineer. The engineer classifies the soils in general accordance with the procedures outlined in ASTM D2488 and prepares the final boring records which are the basis for all evaluations and recommendations.

The final boring records represent our interpretation of the contents of the field records based on the results of the engineering examinations and tests of the field samples. These records depict subsurface conditions at the specific locations and at the particular time when drilled. Soil conditions at other locations may differ from conditions occurring at these boring locations. Also, the passage of time may result in a change in the subsurface soil and ground water conditions at these boring locations. The lines designating the interface between soil or refusal materials on the records and on profiles represent approximate boundaries. The transition between materials may be gradual. The final boring records are included with this report.

The detailed data collection methods using during this study are discussed on the following pages.

Soil Test Borings: Soil test borings were made at the site at locations shown on the attached Boring Plan. Soil sampling and penetration testing were performed in accordance with ASTM D1586.

The borings were made by mechanically twisting a hollow stem steel auger into the soil. At regular intervals, the drilling tools were removed and soil samples obtained with a standard 1.4 inch I.D., 2 inch O.D., split tube sampler. The sampler was first seated 6 inches to penetrate any loose cuttings, then driven an additional foot with blows of a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot was recorded and is designated the "penetration resistance". The penetration resistance, when properly evaluated, is an index to the soil strength and foundation supporting capability.

Representative portions of the soil samples, thus obtained, were placed in glass jars and transported to the laboratory. In the laboratory, the samples were examined to verify the driller's field classifications. Test Boring Records are attached which graphically show the soil descriptions and penetration resistances.

Core Drilling: Refusal materials are materials that cannot be penetrated with the soil drilling methods employed. Refusal, thus indicated, may result from hard cemented soil, soft weathered rock, coarse gravel or boulders, thin rock seams or the upper surface of sound continuous rock. Core drilling procedures are required to determine the character and continuity of refusal materials.

Prior to coring, casing is set in the drilled hole through the overburden soils, if necessary, to keep the hole from caving. Refusal materials are then cored according to ASTM D2113 using a diamond-studded bit fastened to the end of a hollow

double tube core barrel. This device is rotated at high speeds, and the cuttings are brought to the surface by circulating water. Core samples of the material penetrated are protected and retained in the swivel-mounted inner tube. Upon completion of each drill run, the core barrel is brought to the surface, the core recovered is measured, the samples are removed and the core is placed in boxes for storage.

The core samples are returned to our laboratory where the refusal material is identified and the percent core recovery and rock quality designation is determined by a soils engineer or geologist. the percent core recovery is the ratio of the sample length obtained to the depth drilled, expressed as a percent. The rock quality designation (RQD) is obtained by summing up the length of core recovered, including only the pieces of core which are four inches or longer, and dividing by the total length drilled. The percent core recovery and RQD are related to soundness and continuity of the refusal material. Refusal material descriptions, recoveries, and RQDs are shown on the "Test Boring Records".

Water Level Readings: Water table readings are normally taken in conjunction with borings and are recorded on the "Boring Logs". These readings indicate the approximate location of the hydrostatic water table at the time of our field investigation. Where impervious soils are encountered (clayey soils) the amount of water seepage into the boring is small, and it is generally not possible to establish the location of the hydrostatic water table through water level readings. The ground water table may also be dependent upon the amount of precipitation at the site during a particular period of time. Fluctuations in the water table should be expected with variations in precipitation, surface run-off, evaporation and other factors.

The time of boring water level reported on the boring records is determined by field crews as the drilling tools are advanced. The time of boring water level is detected by changes in the drilling rate, soil samples obtained, etc. Additional water table readings are generally obtained at least 24 hours after the borings are completed. The time lag of at least 24 hours is used to permit stabilization of the ground water table which has been disrupted by the drilling operations. The readings are taken by dropping a weighted line down the boring or using an electrical probe to detect the water level surface.

Occasionally the borings will cave-in, preventing water level readings from being obtained or trapping drilling water above the caved-in zone. The cave-in depth is also measured and recorded on the boring records.

Rock Classification: Rock classifications (if any) provide a general guide to the engineering properties of various rock types and enable the engineer to apply past experience to current situations. In our explorations, rock core samples obtained during drilling operations are examined in our laboratory and visually classified by an engineer. The rock cores are classified according to relative hardness and RQD (see Guide to Rock Classification Terminology), color, and texture. These classification descriptions are included on our Boring Records.

Test Pits: Occasionally, our field sampling includes the use of “test pits”. Similarly to soil test borings, our classifications on the materials observed and sampled are performed in general accordance with ASTM standards. These excavations are performed by excavators of various sizes and the width/length/depth of the excavations vary as well. Typically, only the soil or “loose” rock areas can be sampled or excavated. The samples taken are usually taken at highly variable depths and the engineer or field personnel have extreme discretion on the sample sizes and locations. These are typically sealed in “zip lock” type baggies and transported back to our office for lab testing and further classification. Visual descriptions of rock materials (sand, gravel, cobbles, boulders, etc.) are provided on both samples taken and observations of spoils removed and sides of excavations. Typically, photos of both the mass excavation and spoil pile are provide on the test pit logs in our reports. Groundwater levels are noted and can include water flow at the excavation bottom or at points of depth in the excavation sides. “Refusal” usually means that the excavator cannot remove additional materials at the excavation bottom. Some excavations may also have very large boulders than cannot be removed by the excavator used. Depths indicated on the logs are usually measured with steel tape or cloth tape. Final complete details of the test pit findings and opinions are provided in the “Test Pit Logs” in our reports. Lastly, test pit excavations have no set standards and are performed at our engineers discretion.

Field and Lab Procedures

SECTION 02100 - EROSION CONTROL

PART 1 - GENERAL

1.01 Work Included

A. Prepare storm water Best Management Practice Plan. Submit Notice of Intent (Form KPDES NOI-SW) to Division of Water.

B. Furnish all labor and equipment required and install all applicable erosion control measures in accordance with Best Management Practices Plan and as specified herein.

C. Maintain erosion control measures as needed.

1.02 Related Work

A. Section 02110 - Clearing and Grubbing.
B. Section 02200 - Earth and Rock Work.
C. Section 02936 - Seeding

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

3.01 Minimize Disturbance

Only disturb, clear, or grade areas necessary for construction. Flag or otherwise delineate areas not to be disturbed. Exclude vehicles and construction equipment from these areas to preserve natural vegetation. All graded or disturbed areas including slopes shall be protected during clearing and construction in accordance with the approved erosion and sediment control plan until they are permanently stabilized.

If topsoil is required for the establishment of vegetation, it shall be stockpiled in the amount necessary to complete finished grading of all exposed areas. Areas to be filled shall be cleared, grubbed to remove trees, vegetation, roots and other objectionable material, and stripped of topsoil.

3.02 Erosion Control Measures

Install and maintain erosion control measures in accordance with Best Management Practices Plan. Remove temporary erosion control measures when they are no longer needed.

End of Section

SECTION 02110 - SITE CLEARING

PART 1 - GENERAL

1.01 Work Included

A. Furnish all labor and equipment required and perform all clearing, grubbing and stripping of topsoil complete as shown on the Drawings and as specified herein.

B. Protect existing improvements and vegetation indicated to remain.

1.02 Related Work

A. Section 02200 - Earth and Rock Work.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 Protection

A. Protect existing improvements, bench marks, monuments and other reference points.

B. Protect existing trees and other vegetation indicated to remain in place, against unnecessary cutting, breaking or skinning of roots, skinning of bark, piling construction materials or excavated materials within drip line, excess traffic or parking of vehicles within drip line. Provide temporary guards to protect trees and vegetation to remain.

3.02 Site Clearing

A. Remove trees, shrubs, grass and other vegetation, improvements, or obstructions, interfering with installation of new construction. All stumps, roots, and root clusters shall be grubbed out to a depth of at least two feet below subgrade elevation.

B. Strip topsoil to whatever depths encountered in a manner to prevent mixing with subsoil or other material. Stockpile topsoil for reuse as a final cover where seeding is required.

3.03 Removal

A. All trees and vegetation shall be burned, if possible, or removed from the site. The contractor shall obtain any necessary local or state permits for burning and shall comply with all applicable laws or restrictions for burning. Unsuitable excavated soil or topsoil, or other unsuitable materials shall be removed from the site by the Contractor unless specific arrangements are made with the Owner for disposal on site. Contractor shall make arrangements for off-site disposal of unsuitable materials.

End of Section

SECTION 02200 - EARTH AND ROCK WORK

PART 1. GENERAL

1.1 Work Included

A. This section includes all labor, materials, equipment, and related items to complete all earth and rock work. A geotechnical investigation has been conducted and a geotechnical report issued regarding earth and rock work for this project. In the event of conflict, and unless stated otherwise in the contract documents, the requirements and recommendations of the geotechnical report shall take precedence over these specifications.

B. The extent of earth and rock work is shown on drawings. The following work is included:

1. Strip top soil and vegetation from the work area.
2. Perform earthwork to achieve the required grades.
3. Establish and maintain horizontal and vertical ground control throughout the work, including staking out building corners or offsets.
4. Locate and clearly mark all utilities on or adjacent to the site.

1.2 Related Work Specified Elsewhere

A. Section 02100 - Erosion Control
B. Section 02110 - Site Clearing
C. Section 02936 - Seeding

1.3 Excavation Classification

A. All mass, structural, and trench excavation shall be considered unclassified. No adjustments will be allowed to the contract price for rock encountered during mass or structural excavation.

1.4 Quality Assurance

A. Codes and Standards: Perform earth and rock work in compliance with applicable requirements of governing authorities having jurisdiction, including the Kentucky Department of Highways. Applicable references include the following:

- ASTM D422 Particle Size Analysis of Soils.
- ASTM D423 Test for Liquid Limit of Soils.
- ASTM D424 Test for Plastic Limit and Plasticity Index of Soils.
- ASTM D698 Laboratory Compaction Characteristics of Soil Using Standard Effort
- ASTM D3017 Moisture content of Soil Aggregates in Place by Nuclear Methods (Shallow Depth).

B. Testing and Inspection Service: A independent testing laboratory will be employed to perform soil testing and inspection services for quality control testing during earth and rock work operations. Testing laboratory employed is to observe, test and report to the Engineer that the compaction requirements specified herein have been obtained.

1.5 Submittals

A. Test Reports-Excavating: Coordinate and schedule in a timely manner the following quality related items. The following reports shall be submitted directly to the Engineer from the testing services, with copy to the Contractor:

- Test reports on borrow material.
- Field density test reports of sufficient number to verify compaction of structural fill.
- One optimum moisture-density curve for each type of soil encountered. Determine particle size, liquid limit, plastic limit, plasticity index and maximum density of each type of soil.
- Observe proof-rolling.

1.6 Job Conditions

A. Site Information. Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil borings. It is expressly understood that the Owner will not be responsible for interpretations or conclusions drawn by the Contractor. The data is made available for the convenience of the Contractor and is not guaranteed to represent all condition that may be encountered. No claim for extra compensation, or for extension of time, will be allowed on account of subsurface conditions inconsistent with the data shown. Additional test borings and other site examination and exploratory operations may be made by Contractor at no cost to Owner. Notify Owner prior to making any subsurface exploration.

B. Groundwater. Groundwater may be encountered during the excavation. Control the ground water to a level at least three feet below the top of the subgrade.

C. Explosives. Blasting shall only be conducted by licensed blasters and shall be in accordance with state and local requirements, and after conducting a thorough pre-blast survey.

D. Protection of Persons and Property. Barricade open excavations occurring as part of this work and post with warning lights.

E. Bench Marks and Monuments. Maintain carefully all bench marks, monuments and other reference points. If disturbed or destroyed, replace as directed at no cost to the owner.

F. Notify the Engineer 48 hours prior to the beginning of any excavation work.

PART 2. PRODUCTS

2.1 Materials

A. Satisfactory soil. Satisfactory soils are materials complying with Unified Soil Classification System (USCS), ASTM D 2487-93, soil classification group SP, SM, SC, ML, MH and CL.

PART 3. EXECUTION

3.1 Excavation

A. Excavation consists of removal and disposal of material encountered when establishing required finish grade elevations. For the purpose of this contract, mass, structural and trench excavation of all materials shall be considered unclassified. Adjustments for rock or similar materials will not be considered.

B. Unauthorized excavation. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Engineer.

- Unauthorized excavation, as well as remedial work directed by Engineer, shall be at Contractor's expense.

- Backfill and compact unauthorized excavations, as specified for authorized excavations of same classification, unless otherwise directed by Engineer.

C. Additional Excavation. When excavation has reached required subgrade elevations, notify Engineer who will make an inspection of conditions.

- If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed by Engineer.

- Removal of unsuitable bearing material and its replacement as directed will be paid on basis of contract conditions relative to changes in work.

D. Stability of Excavations. Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restriction or stability of material excavated. Maintain sides and slopes of excavations in safe condition until completion of backfilling.

E. Shoring and Bracing. Provide materials for shoring and bracing, such as sheet piling, uprights, stringers, and cross-braces, in good serviceable condition.

- Establish requirements for trench shoring and bracing to comply with local codes and authorities having jurisdiction.

- Maintain shoring and bracing in excavations, regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.

F. Dewatering. Prevent surface water and subsurface or ground water from flowing into excavations and flooding project site and surrounding area.

- Do not allow water to accumulate in excavations. Remove water to prevent softening of excavation bottoms and soil changes detrimental to stability of subgrades. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.

- Convey water removed from excavations and rain water to collecting or run-off areas. Establish and maintain temporary drainage ditches and other diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches. Site grading should be maintained during construction so that positive drainage of the site is promoted at all times.

G. Material Storage. Stockpile satisfactory excavated materials, where directed by Engineer, until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.

- Locate and retain soil materials away from edge of excavations. Do not store within drip line of trees indicated to remain.

- Dispose of excess soil material and waste materials as herein specified.

H. Cold Weather Protection. Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F (1 degree C).

I. Proofrolling. After excavation and before any fill placement, entire subgrade shall be proof-rolled with a loaded pneumatic tired vehicle, such as a dual axle dump truck with a gross weight of 16 to 20 tons, or similar equipment. Remove any soft, organic, or highly plastic soil encountered during proof-rolling and replace it with properly compacted fill.

3.2 Compaction

A. General. Control soil compaction during construction, providing minimum percentage of density specified for each area classification.

B. Lift Thickness. Soil used for structural fill construction should be placed in layers no greater than 10 inches in loose placement for heavy equipment placement, or 5 inches for hand operated whacker or vibratory plate placement or as noted in the Geotechnical Report.

C. Percentage of Maximum Density Requirements. Compact soil as required by the Geotechnical Report to the required percentage of the maximum dry density.

D. Moisture Control. Maintain soil moisture to required range of optimum moisture content. Where soil must be moisture conditioned before compaction, uniformly apply water to prevent free water from appearing on surface during or subsequent to compaction operations. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by disking, harrowing or pulverizing until moisture content is reduced to a satisfactory value.

3.3 Backfill and Fill

A. General. Place acceptable soil material in layers to required subgrade elevations.

B. Backfill excavations as promptly as work permits, but not until acceptance of construction below finish grade and removal of trash and debris.

C. Ground Surface Preparation. Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface.

D. Placement and Compaction. Place backfill and fill materials in layers to provide lift thickness.

3.4 Grading

Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.

3.5 Field Quality Control

A. Quality Control Testing During Construction. Allow testing service to inspect and approve subgrades and fill layers before further construction work is performed. It shall be the Contractor's responsibility to notify the testing agency at least 24 hours prior to beginning any work which requires testing.

B. If in opinion of Engineer, based on testing service reports and inspection, subgrade or fills which have been placed are below specified density, provide additional compaction and testing at no additional expense to the Owner.

3.6 Maintenance

A. Protection of Graded Areas. Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Repair and reestablish grades in settled, eroded and rutted areas to specified tolerances.

B. Reconditioning Compacted Areas. Where completed compacted areas are disturbed by subsequent construction operations or weather, scarify surface, reshape and compact to required density prior to further construction.

C. Settling. Where settling is measurable or observable at excavated areas during general project warranty period, add backfill material, compact, and replace surface treatment. Restore appearance, quality and condition of surface or finish to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

D. Desiccation. Where desiccation cracks are observable, remove and replace soil to restore appearance, quality and condition of surface.

3.7 Disposal of Excess and Waste Materials

Remove excess and waste materials from site.

End of Section

SECTION 02250 - SOIL TREATMENT

PART 1 - GENERAL

1.01 Work Included

A. Soil treatment below slabs-on-grade for subterranean insects.

B. Soil treatment at interior and exterior foundation perimeter, for subterranean insects.

1.02 References

A. EPA - Federal Insecticide, Fungicide and Rodenticide Act.

1.03 Quality Assurance

A. Applicator: Company specializing in soil treatment for termite control with five years documented experience.

B. Materials: Provide certification that toxicants conform to requirements of authority having jurisdiction.

C. Material Packaging: Manufacturer's labels and seals identifying content.

1.04 Regulatory Requirements

A. Conform to Federal, State and Local requirements for application licensing and authority to use toxicant chemicals.

B. Treatment for termites to be provided by using a registered product, mixed and applied by a licensed professional in accordance with the manufacturer's instruction located on the label.

1.05 Product Data

A. Submit product data.

B. Indicate toxicants to be used, composition by percentage, dilution schedule, and intended application rate.

C. Submit manufacturer's installation instructions.

1.06 Project Record Documents

A. Accurately record moisture content of soil before treatment, date and rate of application, areas of application, diary of meter readings and corresponding soil coverage.

1.07 Warranty

A. Provide five year warranty for material and installation.

B. Warranty: Cover against invasion or propagation of subterranean termites, damage to building or building contents caused by termites, repairs to building or building contents so caused.

C. Inspect work annually and report in writing to Owner.

D. Owner reserves right to renew warranty for an additional five years.

PART 2 - PRODUCTS

2.01 Acceptable Manufacturers

A. Terminix
B. Orkin
C. All-Rite Pest Control
D. Approved equal

2.02 Materials

A. Toxicant chemicals: As recommended by the manufacturer for the intended use.

PART 3 - EXECUTION

3.01 Inspection

A. Verify the soil surfaces as unfrozen, sufficiently dry to absorb toxicant, and ready to receive treatment.

B. Beginning of application assumes acceptance of soil conditions as suitable.

3.02 Application

A. Apply toxicant in accordance with manufacturer's instructions.

B. Apply extra treatment to structure penetrations, pipe, ducts, and other soil penetrations.

C. Coordinate soil treatment at foundation perimeter with finish grading and landscaping work to avoid disturbance of treated soil. Re-treat disturbed treated soil.

3.03 Re-treatment

A. If inspection identifies the presence of termites, re-treat soil and re-test.

B. Use same toxicant as for original treatment.

END OF SECTION

SECTION 02936 - SEEDING

PART 1 - GENERAL

1.01 Work Included

The work described herein shall consist of application of seed, fertilizer and agricultural limestone to establish turf.

PART 2 - PRODUCTS

2.01 Seed

Seed shall be of the following mixture:

Seed Type	Percentage
Fine Lawn Fescue	60%
Bluegrass	25%
Perennial Rye	15%

Seed shall be applied uniformly at the rate of three pounds per 1,000 square feet.

2.02 Agricultural Limestone

Agricultural limestone shall have a minimum calcium carbonate equivalent of 90 percent and shall be ground to such a fineness that at least 90 percent will pass a 10-mesh sieve and at least 50 percent will pass a 60-mesh sieve. Agricultural ground limestone shall be from quarries approved by the Kentucky Department of Agriculture.

Agricultural limestone shall be applied uniformly at the rate of I 00 pounds per 1,000 square feet.

2.03 Fertilizer

Fertilizer shall be commercial grade, free flowing, uniform in composition.

Fertilizer shall be I 0-20-20 applied uniformly at the rate of 25 pounds per 1,000 square feet.

2.04 Mulch

Mulch shall be clean straw and shall be applied at a rate of I 00 pounds per 1,000 square feet.

PART 3 - EXECUTION

3.01 Delivery, Storage and Handling

Fertilizer and limestone shall be delivered to the site in the original, unopened containers bearing the manufacturer's guaranteed chemical analysis, name, trade name, trademark, and conformance to State and Federal laws. In lieu of containers, fertilizer and limestone may be furnished in bulk and a certificate indicating the above information shall accompany each delivery.

Seed, limestone and fertilizer shall be kept in dry storage away from contaminants, insects and rodents.

3.02 Seeding

Seed shall be broadcast uniformly. The seed shall be covered to an average depth of 1/4 inch by means of spike-tooth harrow, cultipacker, no till drill or other approved device. Seed shall not be broadcast when winds are above 10 mph. Immediately after seeding, the entire area shall be firmed with a roller not exceeding 90 pounds for each foot of roller width and the soil moistened to a depth of 6-8 inches. If seeding is performed with a cultipacker-type seeder or if seed is applied in combination with hydromulching, rolling will not be required.

3.03 Maintenance

Seeded areas shall be protected and maintained by watering and replanting as may be necessary to produce a uniform stand of grass. Maintenance shall continue until a dense, uniform turf is established composed of the grasses specified and until acceptance, and shall include repair of damage caused by erosion.

End of Section

SECTION 03210 - CONCRETE REINFORCEMENT

PART l - GENERAL

A. The general provisions of the Contract, including General Conditions and Requirements, apply to the work specified in this section.

B. Codes and Standards: Comply with requirements of the following codes and standards, except as herein modified:

C. Also, the work includes reinforcement for independent foundations and retaining walls.

PART 2 - QUALITY ASSURANCE

A. The Installer must examine the substrate and the conditions under which concrete reinforcement is to be placed, and notify the Contractor in writing of unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

B. Codes and Standards: Comply with requirements of the following codes and standards, except as herein modified:

l. Concrete Reinforcing Steel Institute, "Manual of Standard Practice."

2. American Concrete Institute, ACI 318 "Building Code Requirements for Reinforced Concrete".

C. For information only, submit 2 copies of steel producer's certificates of mill analysis, tensile and bend tests for reinforcing steel.

D. Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with the ACI 315, "Manual of Standard Practice for Detailing Reinforced concrete Structures". Show Bar schedules, stirrup spacing, diagrams of bent bars, arrangements and assemblies, as required for the fabrication and placement of concrete reinforcement.

E. Deliver reinforcement to the project site bundled, tagged and marked. Use metal tags indicating bar size, lengths, and other information corresponding to markings shown on placement diagrams.

PART 3 - MATERIALS

A. Reinforcing Bars (ReBar): ASTM A 615, ASTM A 616 or ASTM 617, as follows:

1. Provide Grade 60 for Bars No. 2 to 11

B. Steel Wire: ASTM A 82

C. Welded Wire Fabric (WWF): ASTM A 185

D. Supports for Reinforcements: Bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcement in place.

   l. Use wire bar type supports complying with CRSI recommendations, unless otherwise indicated. Do not use wood, brick, and other unacceptable materials.

E. Over waterproof membranes, use precast concrete chairs to prevent penetration of the membrane.

PART 4 - FABRICATION

A. General: Fabricate reinforcing bars to conform to required shapes and dimensions, with fabrication tolerances complying with CRSI "Manual of Standard Practice". In case of fabricating errors, do not re-bend or straighten reinforcement in a manner that will injure or weaken the material.

B. Unacceptable Materials: Reinforcement with any of the following defects will not be permitted in the work:

   l. Bar lengths, depths and bends exceeding specified fabrication tolerances.

   2. Bend or kinks not indicated on drawings or final shop drawings.

   3. Bars with reduced cross-section due to excessive rusting or other cause.

PART 5 - INSTALLATION

A. Comply with the specified codes and standards, and Concrete Reinforcing Steel Institute recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports, and as herein specified.

B. Clean reinforcement to remove loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.

C. Position, support, and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers and hangers, as required.

D. Place reinforcement to obtain the minimum coverages for concrete protection. Arrange, space, and securely tie bars and bar supports together with 16 gage wire to hold reinforcement accurately in position during concrete placement operations. Set wire ties so that twisted ends are directed away from exposed concrete surfaces.

E. Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with 16 gage wire. Do not make end laps midway between supporting beams, or directly over beams of continuous structures. Offset end laps in adjacent widths to prevent continuous laps.

F. Provide sufficient numbers of supports and of strength to carry reinforcement. Do not place reinforcing bars more than 2" beyond the last leg of any continuous bar support. Do not use supports as bases for runways for concrete conveying equipment and similar construction loads.

G. Splices: Provide standard reinforcement splices by lapping ends, placing bars on contact, and tightly wire tying. Comply with requirements of ACI 318 for minimum lap of spliced bars.

H. Welded wire fabric must have end laps of one full mesh plus two (2) inches between cross wires and edge laps. Welded wire fabric should extend into supporting beams and walls for anchorage unless an expansion joint is called for on the drawings.

I. Provide dowels in walls at all construction joints and in wall footings, equivalent in size and number to vertical steel extending 30 bar diameters into footing and 30 bar diameters into wall. Lap vertical wall and column rebars 30 bar diameters unless otherwise shown.

J. Reinforcing steel bends to be made as per diagram, and/or in accordance with the ACI Code.

End of Section

SECTION 03310 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

A. The general provisions of the Contract, including General Conditions and Requirements, apply to the work of this section.

PART 2 - DESCRIPTION OF WORK

A. Work includes furnishing, forming and placing of all concrete work as shown on the drawings, and specified herein, including the following:

1. All anchor bolts required for anchoring steel columns to concrete installed only.
2. All inserts, anchors, etc., that must be placed in forms for later attachment of work of other trades, except Mechanical-Electrical.
3. Building-in of inserts, anchors, sleeves, etc., as furnished by the Mechanical-Electrical Contractors and Structural Steel Supplier.
4. Expansion Joint Filler.
5. Joint Filler and sealer at edge of slabs.
6. Waterstops.
7. Crushed stone fill under slabs on grade.
8. Vapor barrier under slabs on grade.
   a. 15 mil. polyethylene
   b. Vapor Seal l/8" Heavy Duty per Vapor barrier Manuf.
9. Curing Compound, Sealer and Hardener.

B. The extent of cast-in-place concrete (CIP-Conc) work is shown on the drawings.

C. The work includes providing cast-in-place concrete (CIP-Conc) consisting of portland cement, fine and coarse aggregate, water, and selected admixtures; combined, mixed, transported, placed, finished and cured as herein specified.

PART 3 - RELATED WORK SPECIFIED ELSEWHERE

A. Concrete Formwork: Section 03110.

B. Concrete Reinforcement: Section 03210.

PART 4 - CODES AND STANDARD

A. Comply with the provisions of the following codes, specifications and standards, except as otherwise shown or specified.
   1. ACI 30l "Specifications for Structural Concrete for Buildings".
   2. ACI 3l8 "Building Code Requirements for Reinforced Concrete".
   3. ACI 304 "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete".
   4. ACI 311 "Recommended Practice for Concrete Inspection".

B. Where provisions of the above codes and standards are in conflict with building code in force for this project, the building code shall govern.

C. The Contractor shall employ, at his own expense, a testing laboratory experienced in design and testing of concrete materials and mixes to perform material evaluation tests and to design concrete mixes.

1. Testing agency shall meet the requirements of ASTM E329.

D. Selection of a testing laboratory is subject to the Architect's acceptance.

E. The testing laboratory shall perform field quality control testing. The Contractor shall provide free access and facilities at any time during the progress of the work.

F. Materials and installed work may require testing and retesting, as directed by the Architect, at any time during the progress of the work. Allow free access to material stockpiles and facilities at all times. Tests, including the retesting of rejected materials and installed work, shall be done at the Contractor's expense.

PART 5 - TESTS FOR CONCRETE MATERIALS

A. For normal weight concrete, test aggregates by the methods of sampling and testing of ASTM C33.

B. For portland cement, sample the cement and determine the properties by the methods of test of ASTM C150.

C. Submit written reports to the Architect for each material sampled and tested, prior to the start of work. Provide the project identification name and number, date of report, name of contractor, name of concrete testing service, source of concrete aggregates, material manufacturer and brand name for manufactured materials, values specified in the referenced specification for each material, and test results. Indicate whether or not material is acceptable for intended use.

PART 6 - SUBMITTALS

A. For information only, submit 2 copies of manufacturer's specifications with application and installation instructions for proprietary materials and items, including admixtures, bonding agents, waterstops, joint systems, chemical floor hardeners, and dry shake finish materials.

B. Submit samples of materials as specified and as otherwise may be requested by the Architect, including names, sources and descriptions as required.

C. Submit 2 copies of laboratory test reports for concrete materials and mix design tests. The Architect's review will be for general information only. Production of concrete to comply with specified requirements is the Contractor's responsibility.

D. Provide materials certificates in lieu of materials laboratory test reports only when permitted by the Architect. Material certificates shall be signed by the material manufacturer and the Contractor, certifying that each material item complies with, or exceeds, the specified requirements.

E. Delivery Tickets: Furnish copies of delivery tickets for each load of concrete delivered to the site. Provide items of information as specified.

PART 7 - CONCRETE

A. All concrete shall conform and be designed, mixed, placed, tested and cured in accordance with the ultimate strength provisions of the American Concrete Institute Building Code. All concrete shall develop the following compressive strength in 28 days.

Compressive Strength Concrete Schedule

	Minimum 28-Day Compr. Str.	Minimum Cement (per cu.yd.)	Max-Min Slump (inch)	Air Content (%)
All concrete not otherwise indicated	3,500	5-1/2 sacks	4-1	2%-4%
Exterior plaza slabs	4,000	6 sacks	3-1	4%-7%

PART 8 - CONCRETE MATERIALS

A. Portland Cement: ASTM C l50, as follows:
   l. Provide Type l cement, except as otherwise indicated. Type 3 cement may be used in lieu of Type l at Contractor's option, when acceptable to the Architect.
   2. Provide Type 3 cement for High-Early Strength concrete for exterior concrete when acceptable to the Architect.

B. Use only one brand of cement for each required type throughout the project, unless otherwise accepted by the Architect.

C. Aggregates: ASTM C 33, and as herein specified.

   l. Local aggregates not complying with ASTM C 33 but which have shown by special test or actual service to produce concrete of adequate strength and durability may be used when acceptable to the Architect.

   2. Do not use aggregates containing soluble salts or other substances such as iron sulfides, pyrite, marcasite or ochre which can cause stains on exposed concrete surfaces.

   3. Fine Aggregate: Clean, sharp, natural sand free from loam, clay, lumps or other deleterious substances.

   4. Dune sand, bank run sand and manufactures sand are not acceptable.

   5. Coarse Aggregate: Clean, uncoated, processed aggregate containing no clay, mud, loam, or foreign matter.

   6. Crushed stone, processed from natural rock or stone.

   7. Washed gravel, either natural or crushed. Use of pit or bank run gravel is not permitted.

8. Maximum Aggregate Size: Not larger than one-fifth of the narrowest dimension between sides of forms, one-third of the depth of slabs, nor three-fourths of the minimum clear spacing between individual reinforcing bars or bundles of bars.

D. Supply of Aggregates: Provide aggregates from one source of supply to ensure uniformity in color, size and shape.

E. Water: Clean, fresh, drinkable.

F. Provide admixtures produced by established reputable manufacturers and use in compliance with the manufacturer's printed directions. Do not use admixtures which have not been incorporated and tested in the accepted mixes, unless otherwise authorized in writing by the Architect.

1. Air-Entraining Admixtures: ASTM C 260.
2. Water-Reducing Admixture: ASTM C 494, Type A.

G. Calcium Chloride: Do not use calcium chloride in concrete, unless otherwise authorized in writing by the Architect. Do not use admixtures containing calcium chloride where concrete is placed against galvanized steel, or in mix using high-early strength cement.

PART 9 - PROPORTIONING AND DESIGN OF MIXES

A. Prepare design mixes for each type of concrete. Use an independent testing facility acceptable to the Architect for preparing and reporting proposed mix designs.

B. Proportion mixes by either laboratory trial batch or field experience methods, using materials to be employed on the project for each class of concrete required, complying with ACI 211.1 and report to the Architect the following data:

1. Complete identification of aggregate source of supply.
2. Tests of aggregates for compliance with specified requirements.
3. Scale weight of each aggregate.
4. Absorbed water in each aggregate.
5. Brand, type and composition of cement.
6. Brand, type and amount of each admixture.
7. Amounts of water used in trial mixes.
8. Proportions of each material per cu. yd.
9. Gross weight and yield per cu. yd of trial mixtures.
10. Measured slump.
11. Measured air content.
12. Compressive strength developed at least 7 days and 28 days, from not less than 3 test cylinders cast for each 7 and 28-day test, and for each design mix.

C. Submit written reports to the Architect of each proposed mix for each type of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed by the Architect.

D. Laboratory Trial Batches: When laboratory trial batches are used to select concrete proportions, prepare test specimens in accordance with ASTM C 192 and conduct strength tests in accordance with ASTM C 39, as specified in ACI 30l.

E. Establish a curve showing relationship between water-cement ratio (or cement content) and compressive strength, with at least 3 points representing batches which produce strengths above and below that required. Use not less than 3 specimens tested at 28-days, or an earlier age when acceptable to the Architect, to establish each point on the curve.

F. Field Experience Method: When field experience methods are used to select concrete proportions, establish proportions as specified in ACI 30l.

G. Strength data for establishing standard deviation will be considered suitable if the concrete production facility has certified records consisting of at least 30 consecutive tests in one group or the statistical average for 2 groups totaling 30 or more tests, representing similar materials and project conditions.

   l. Standard Deviation: If standard deviation exceeds 600 psi or if no suitable records available, select proportions to produce an average strength of at least 1200 psi greater than the required compressive strength concrete.

   2. After sufficient experience and test data become available from the job, using ACI 214 methods of evaluation, the standard deviation may be reduced when the probable frequency of tests more than 500 psi below required compressive strength will not exceed l in 100, and that the probable frequency of an average of 3 consecutive tests below required compressive strength will not exceed l in 100.

H. Adjustment to Concrete Mixes: Mix design adjustments may be requested by the Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to the Owner and as accepted by the Architect. Laboratory test data for revised mix designs and strength results must be submitted to and accepted by the Architect before using in the work.

I. Use air-entraining admixture in exterior exposed concrete, unless otherwise shown or specified. Add air-entraining admixture at the manufacturer's prescribed rate to result in concrete at the point of placement having air content within the following limits:

   l. Concrete structures and slabs exposed to freezing and thawing or subjected to hydraulic pressure:
      a. 4% for maximum 2" aggregate.
      b. 6% for maximum 3/4" aggregate.
      c. 7% for maximum l/2" aggregate.

   2. Other Exterior Concrete: 2% to 4% air.

J. Use amounts of admixtures as recommended by the manufacturer for climatic conditions prevailing at the time of placing. Adjust quantities and types of admixtures as required to maintain quality control

K. Proportion and design mixes to result in concrete slump at the point of placement as follows:

   l. Ramps and Sloping Surfaces: Not more than 3".

   2. Reinforced Foundation Systems: Not less than l" and not more than 3".

   3. All Other Concrete: Not less than l" and not more than 3".

PART 10 - CONCRETE MIXING

A. Concrete may be mixed at batch plants or it may be transit-mixes as specified herein. Batch plants must comply with the requirements of ACI 304, with sufficient capacity to produce concrete of the qualities specified in quantities required to meet the construction schedule. All plant facilities are subject to testing laboratory inspection and acceptance of the Architect.

B. Comply with the requirements of ASTM C 94, and as herein specified, provided the quantity and rate of delivery will permit unrestricted progress of the work in accordance with the placement schedule. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C 94 may be required, as specified below. Proposed changes in mixing procedures, other than herein specified, must be accepted by the Architect before implementation.

   l. Plant equipment and facilities: Conform to National Ready-Mix Concrete Association "Check List for Certification of Ready-Mixed Concrete Production Facilities.

C. Modifications to ASTM C 94 are as follows:

   l. Quality of Concrete: Provide concrete materials, proportions, and properties as herein specified, in lieu of ASTM Section 4.

   2. Tolerances in Slump: Provide slump of not more than the values as herein specified, in lieu of ASTM Section 5.l. Comply with other criteria of ASTM Section 5.

   3. Mixing and Delivery: Delete the references for allowing additional water to be added to the batch for material with insufficient slump. Addition of water to the batch will not be permitted as specified in ASTM Section 9.7, when the air temperature is between 85 degrees F. and 90 degrees F., reduce the mixing and delivery time to 60 minutes. When a truck mixer is used for the complete mixing of the concrete, begin the mixing operation within 30 minutes after the cement has been intermingled with the aggregates.

   4. Certification: Furnish duplicate delivery tickets with each load of concrete delivered to the site, one for the Architect and one for the Contractor. In addition to the requirements of ASTM Section 14.l, provide the following information on delivery tickets:
      a. Type and brand of cement.
      b. Cement content per cu. yd. of concrete.
      c. Maximum size of aggregate.
      d. Amount and brand name of each admixture.
      e. Total water content expressed as water/cement ratio.

   5. Strength: Delete ASTM Section 15; comply with concrete testing requirements as herein specified.

D. Maintain equipment in proper operating condition, with drums cleaned before charging each batch. Schedule rates of delivery in order to prevent delay of placing the concrete after mixing, or holding dry-mixed materials too long in the mixer before the addition of water and admixtures.

PART 11 - FIELD QUALITY CONTROL

A. Perform sampling and testing for field quality control during the placement of concrete, as follows:

1. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.

2. Slump: ASTM C 143; one test for each concrete load at point of discharge; and one for each set of compressive strength test specimens.

3. Air Content: ASTM C 231, pressure method; one for every other concrete load at point of discharge, or when the indicating of change requires.

4. Compression Test Specimens: ASTM C 31; one set of 4 standard cylinders for each compressive strength test, unless otherwise directed.
   a. Cast and store cylinders for laboratory cured test specimens and field-cured test specimens as specified in ASTM C 31.

5. Concrete Temperature: Test hourly when air temperature is 40 degrees F. and below, and when 80 degrees F. and above and each time a set of compression test specimens made.

6. Compressive Strength Tests: ASTM C 39; one set for each 25 cu. yds. or fraction thereof, of each mix design placed in any one day ; l specimen tested at 7 days, 2 specimens tested at 28 days, and one specimen retained in reserve for later testing if required.

   a. When the frequency of testing will provide less than 5 strength tests for a given mix design, conduct testing from at least 5 randomly selected batches or from each batch if fewer than 5 are used.

   b. When the strength of field-cured cylinders is less than 85% of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.

B. Report test results in writing to the Architect, Contractor, and Ready-Mix supplier on the same day that tests are made. Reports of compressive strength tests shall contain the project identifications name and number, date of concrete placement, name of contractor, name of concrete supplier and truck number, name of concrete testing service, concrete type and class, location of concrete batch in the structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day tests.

C. The testing service will make additional tests of in-place concrete when test results indicate the specified concrete strengths and other characteristics have not been attained in the structure, as directed by the Architect. The testing service shall conduct tests to determine the strength and other characteristics of the in-place concrete by compression tests on cored cylinders complying with ASTM C 42, or by load testing specified in ACI 381, or other acceptable non-destructive testing methods, as directed. The Contractor shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable

concrete is verified.

D. Do not use concrete delivered to the final point of placement which has slump or total air content outside the specified values.

E. Compressive strength tests for laboratory-cured cylinders will be considered satisfactory is the averages of all sets of three consecutive compressive strength tests results equal or exceed the 28-day design compressive strength of the type or class of concrete; an, no individual strength test falls below the required compressive strength by more than 500 psi.

F. Strength tests of specimens cured under field conditions may be required by the Architect to check the adequacy of curing and protection of the concrete places. Specimens shall be molded by the filed quality control laboratory at the same time and from the same samples as the laboratory cured specimens.

G. Provide improved means and procedures for protecting concrete when the 28-day compressive strength of field-cured cylinders is less than 85% of companion laboratory-cured cylinders.

H. When laboratory-cured cylinder strengths are appreciably higher than the minimum compressive strength, field-cured cylinder strengths need not exceed the minimum required compressive strength by more than 500 psi even though the 85% criterion is not met.

I. If individual tests of laboratory-cured specimens produce strengths more than 500 psi below the required minimum compressive strength, or if tests of field-cured cylinders indicate deficiencies in protection curing, provide additional measures to assure that the load-bearing capacity of the structure is not jeopardized. If the likelihood of low-strength concrete is confirmed and computations indicate the load-bearing capacity may have been significantly reduced, tests of cores drilled from the area in question may be required.

J. If the compressive strength tests fail to meet the minimum requirements specified, the concrete represented by such tests will be considered deficient in strength and subject to additional testing as herein specified.

PART 12 - FORMED CONCRETE DIMENSIONAL TOLERANCES

A. Formed concrete having any dimension smaller or greater than required, and outside the specified tolerance limits, will be considered deficient in strength and subject to additional testing as herein specified.

B. Formed concrete having any dimension greater than required will be rejected if the appearance or function of the structure is adversely affected, or if the larger dimensions interfere with other construction. Repair, or remove and replace rejected concrete as required to meet the construction conditions. When permitted, accomplish the removal of excessive material in a manner to maintain the strength of the section without affecting function and appearance.

PART 13 - STRENGTH OF CONCRETE STRUCTURES

A. The strength of the concrete structure in-place will be considered potentially deficient if it fails to comply with any of the requirements which control the strength of structure, including the following conditions.

1. Failure to meet compressive strength tests requirements.

2. Concrete which differs from the required dimensions or location in such a manner to reduce strength.

3. Concrete subjected to damaging mechanical disturbances; particularly load stresses, heavy shock, and excessive vibration.

4. Poor workmanship and quality control likely to result in deficient strength.

B. When there is evidence that the strength of the concrete structure in-place does not meet specification requirements, the concrete testing service shall take cores drilled from hardened concrete for compressive strength determination, complying with ASTM C 42 and as follows:

1. Take at least 3 representatives cores from each member or area or suspect strength, from locations directed by the Architect.

2. Test cores in a saturated-surface-dry condition per ACI 318 if the concrete will be wet during the use of the completed structure.

3. Test cores in an air-dry condition per ACI 318 if the concrete will be dry at all times during use of the completed structure.

4. Strength of concrete for each series of cores will be considered satisfactory if their average compressive strength is at least 85% and no single core is less than 75% of the 28-day required compressive strength.

5. Report test results in writing to the Architect on the same day that tests are made. Include in test reports the project identification name and number, date, name of contractor, name of concrete testing service, location of test core sample, nominal maximum size aggregate, design compressive strength, compression breaking strength and type of break (corrected for length-diameter ratio) direction of applied load to core with respect to horizontal plane of the concrete as placed, and the moisture condition of the core at time of testing.

6. Fill core holes solid with patching mortar, and finish to match adjacent concrete surfaces.

7. Conduct static load test and evaluations complying with ACI 318 if the results of the core tests are unsatisfactory, or if core tests are impracticable to obtain, as directed by the Architect.

C. Concrete work which does not conform to the specified requirements, including strength, tolerances, and finishes, shall be corrected at the Contractor's expense, without extension of time therefore. The Contractor shall also be responsible for the cost of corrections to any other work affected by or resulting from corrections to the concrete work.

PART 14 - JOINT MATERIALS

A. Preformed Expansion Joint Fillers: Type l - Standard - highly resilient.

B. Joint Sealing Compound: Polysulfide sealants, elastomeric caulk; Hornflex by Construction Products Division, W.R. Grace & Company or an approved equal.

PART 15 - MOISTURE BARRIER

A. Provide moisture barrier cover over prepared base material where shown on drawings. Use only materials which are resistant to decay when tested in accordance with ASTM E 154, as follows:

   l. Polyethylene sheet not less than 10 mils thick.
   2. Water resistance barrier paper consisting of heavy Kraft paper laminated together with glass fiber reinforcement and overcoated with black polyethylene on each side.

PART 16 - BONDING AGENT

A. Chemical Bonding Agent: Film-forming, freeze-thaw resistant compound suitable for brush or spray application complying with Mil B-19235.

B. Provide concrete bonding agent as manufactured by one of the following or approved equal.

   l. Polyweld; Chem-Master Corp.
   2. Daraweld-PBA; W,R, Grace

PART 17 - FLOOR FINISH MATERIALS

A. Chemical Floor Hardener (ChHd-Fn): Colorless, transparent, oil free moisture, sodium silicate or polyurethane seals, dust proofs, hardens interior concrete floors. Place on floor slab concrete and slab on grades, interior concrete floors only.

   l. Apply to exposed concrete slabs not indicated or scheduled to receive subsequent finishes.

   2. Products offered by manufacturers to comply with the requirements for colorless liquid chemical floor hardener include the following:
      a. Sonsothane - Sonneborn-Contech
      b. Horn One-Kote - A.C. Horn/W. R. Grace & Co.
      c. Lithoplate; Protex Industries

B. Under no circumstances shall dry cement or mixture of cement and sand be used to absorb surface moisture or to stiffen surface to be finished. See manufacturer's recommendation for curing and sealant.

C. Hard Steel Trowel Finish - After slab concrete has been placed, surface shall be brought to established grade, with straight-edge and bull floated to "smooth out" surface. When water sheen has disappeared, surface shall be floated with power and/or wood floats. After floating with power and no water appears when trowel is operated, surface shall be troweled until smooth hard surface is obtained free of pin holes and other imperfections. All hard trowel finishes shall be treated with a one component, oil free, polyurethane sealer and hardener applied in strict accordance with the manufacturer's recommendations, and specifications for structural concrete for buildings ACI 30l-72, Chapter 11 - Slabs, Exposed.

D. This Contractor shall take care to protect concrete work and finished concrete during construction. If work is damaged or finished surfaces marred by subsequent construction, this Contractor shall restore to rebuild concrete work to satisfaction of the Architect and remove damaged materials from site at this Contractor's expense.

E. Work on slabs on grade shall begin only after earth subgrade has been thoroughly compacted as described under another Section of the Specifications, after pipes and drains to be located under slabs are placed, tested and approved.

F. Work under this Section includes furnishing, placing and compacting of clean porous fill of washed gravel or crushed stone under slabs on grade. Porous fill shall be 6" thick and shall be compacted by rollers and by machine driven tampers or by mechanical vibration. Fill shall be free from protrusions which would puncture vapor barrier.

G. At edge of interior slabs adjoining foundation walls and at all other places where floor slab is pierced, provide joint filler and sealer as specified herein.

PART 18 - CONTROL JOINTS

A. Form control joints in concrete wall where shown and as detailed on the Drawings.

PART 19 - CONCRETE CURING MATERIALS

A. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per sq. yd. and complying with AASHO M 182, Class 3.

B. Moisture-Retaining Cover: One of the following, complying with ASTM C 171:
Waterproof Paper
Polyethylene Film
White Burlap-Polyethylene Sheet

C. Liquid Membrane-Forming Curing Compound: Liquid type membrane-forming curing compound complying with ASTM C 309, Type l, unless other type acceptable to the Architect.
   l. Products offered by manufacturers to comply with the requirements for membrane-forming curing compounds include the following:
   Masterseal; Master Builder's Co.
   Clear Seal; A.C. Horn/W.R. Grace
   Kure-N-Seal; Sonneborn-Contech
   Polyclear; Upco Chemical/USM Corp.
   Clear Cure; L&M Construction Chemicals

Klearseal; Castle Chemical Corp.
LR-151; Protect Industries

PART 20 - PREPARATION

A. Before placing concrete, inspect and complete the form work installation, reinforcing steel, and items to be embedded or cast-in. Notify other crafts involved in ample time to permit the installation of their work; cooperate with other trades in setting such work, as required.

B. Forms shall be constructed of materials as indicated for use and purpose intended. See Architect's Drawings also.

C. Coordinate the installation of joint materials and moisture barriers with placement of forms and reinforcing steel.

PART 21 - CONCRETE PLACEMENT

A. Place concrete in compliance with the practices and recommendations of ACI 304, and as herein specified.

B. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness within the section. If a section cannot be placed continuously, provide construction joints as herein specified. Perform concrete placing at such a rate that concrete which is being integrated with fresh concrete is still plastic. Deposit concrete as nearly as practicable to its final location to avoid segregation due to handling or flowing. Do not subject concrete to any procedure which will cause segregation.

C. Screed concrete which it is to receive other construction to the proper level to avoid excessive skimming or grouting.

D. Do not use concrete which becomes non-plastic and unworkable, or does not meet the required quality control limits, or which has been contaminated by foreign materials. Do not use re-tempered concrete. Remove rejected concrete from the project site and dispose of in an acceptable location.

E. Handle concrete from the point of delivery and transfer to the concrete conveying equipment and to the locations of final deposit as rapidly as practicable by methods which will prevent segregation and loss of concrete mix materials.

F. Provide mechanical equipment for conveying concrete to ensure a continuous flow of concrete at the delivery end. Provide runways for wheeled concrete conveying equipment from the concrete delivery point to the locations of final deposit. Keep interior surfaces of conveying equipment, including chutes, free of hardened concrete, debris, water, snow, ice, and other deleterious materials.

G. Deposit concrete in forms in horizontal layers not deeper than 24" and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.

H. Remove temporary spreaders in forms when concrete placing has reached the elevation of such spreaders.

I. Consolidate concrete placed in forms by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with the recommended practices of ACI 309, to suit the type of concrete and project conditions. Vibration of forms and reinforcing will not be permitted, unless otherwise accepted by the Architect.

J. Do not use vibrators to transport concrete inside of forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate the layer of concrete that have begun to set. At each insertion, limit the duration of vibration to the time necessary to consolidate the concrete and complete embedment of reinforcement and other embedded items without causing segregation of the mix.

K. Consolidate concrete during placing operations using mechanical vibrating equipment, so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.

L. Bring slab surfaces to the correct level with a straight edge and strike off. Use bull flats or darbies to smooth the surface. Do not disturb the slab surfaces prior to beginning finishing operations.

M. Maintain reinforcing steel in the proper position continuously during concrete placement operations.

PART 22 - BONDING

A. Roughen surfaces of set concrete at all joints, except where bonding is obtained by use of a concrete bonding agent, and clean surfaces of laitance, coatings, loose particles, and foreign matter. Roughen surfaces in manner to expose bonded aggregate uniformly and not to levee laitance, loose particles of aggregate, or damaged concrete at the surface.

PART 23 - EXTERIOR AND INTERIOR WALLS

A. Grout air holes with mortar. Remove excess grout. Patches shall be ground to produce uniform surfaces, free of blemished and fins to the satisfaction of the Architect. Patches shall be kept continuously moist for a period minimum of six days.

B. Fill tie holes after form oil have evaporated sufficiently for good bond as specified for patching operation above. Exposed walls shall receive a rubbed finish.

C. At completion, concrete shall be of uniform texture and finish.

PART 24 - COLD WEATHER PLACING

A. Protect all concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with the requirements of ACI 306 and as herein specified.

B. When the air temperature has fallen to or is expected to fall below 40 degrees F., provide adequate means to maintain the temperature in the area where concrete is being placed at either 70 degrees F for 3 days or 50 degrees F for 5 days after placing. Provide temporary housings or coverings including tarpaulins or plastic film. Keep protections in place and intact at least 24 hours after artificial heat is discontinued. Avoid rapid dry-out of concrete due to overheating, and avoid thermal shock due to sudden cooling or heating.

C. When air temperature has fallen to or is expected to fall below 40 degrees F. uniformly heat all water and aggregates before mixing as required to obtain a concrete mixture temperature of not less than 50 degrees F. and not more than 80 degree F. at point of placement.

D. Do not use frozen materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials. Ascertain that forms, reinforcing steel, and adjacent concrete surfaces are entirely free of frost, snow and ice before placing concrete.

E. Do not use calcium chloride, salt, and other materials containing antifreeze agents or chemical accelerators.

PART 25 - HOT WEATHER PLACING

A. When hot weather conditions exist that would seriously impair the quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.

B. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 degrees F. Mixing water may be chilled, or chopped ice may be used to control the concrete temperature provided the water equivalent of the ice is calculated to the total amount of mixing water.

C. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that the steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.

D. Wet forms thoroughly before placing concrete.

E. Use set-control admixtures when required and accepted in mix designs.

PART 26 - CONSTRUCTION JOINTS

A. Locate and install construction joints, which are not shown on the drawings, so as not to impair strength and appearance of the structure, as acceptable to the Architect. Locate construction joints, if required but not shown as follows:
   1. In slabs on ground, so as to divide the slab into areas not in excess of 1200 sq.ft., unless otherwise accepted by the Architect. Conform to slab placement diagrams or pattern layout for placement, where shown.

B. Provide keyways at least 1½" deep in all construction joints in walls, slabs, and between walls and footings.
C. Place construction joints perpendicular to the main reinforcement. Continue all reinforcement across construction joints.

PART 27 - ISOLATION JOINTS IN SLABS ON GROUND

A. Provide isolation joints in slabs on ground at all points of contact between slabs on ground and vertical surfaces, such as foundation walls, grade beams, and elsewhere as indicted.

B. Provide control joints in slabs on ground to form panels or patterns as shown. Use inserts ⅛" wide x 1¼" deep below the slab surface, after the concrete has cured for at least 7 days.

PART 28 - FINISH OR FORMED SURFACES

A. Provide as-cast rough form finish to formed concrete surfaces that are to be concealed in the finish work or by other construction, unless otherwise indicated.

B. Standard form finish shall be the concrete surface having the texture imparted by the form facing material used, with tie holes and defective areas repaired and patched and all fins and other projections exceeding l/4" in height rubbed down or chipped off.

C. Provide smooth rubbed (SmRbd-Fn) to front exterior exposed concrete surfaces, which have received smooth form finish treatment, not later than the day after form removal.

D. At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike off smooth and finish with a texture matching the adjacent formed surfaces. Continue the final surface treatment of formed surfaces uniformly across the adjacent unformed surfaces, unless otherwise shown.

E. After placing concrete slabs, do not work the surface further until ready for floating. Begin floating when the surface water has disappeared or when the concrete has stiffened sufficiently to permit the operation of a power-driven float, or both. Consolidate the surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Check and level the surface plane to a tolerance not exceeding l/4" in l0' when tested with a l0' straightedge placed on the surface at not less than 2 different angles. Cut down high spots and fill all low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat the surface to a uniform smooth, granular texture.

PART 29 - CHEMICAL-HARDENER FINISH: INTERIOR FLOOR TOPPING CONCRETE

A. Apply chemical-hardener finish to dry interior concrete floors where shown on the drawings or in schedules. Apply liquid chemical-hardener after complete curing and drying of the concrete surface. Dilute the liquid hardener with water, and apply in 3 coats; 2/3 strength. Evenly apply each coat, and allow 24 hours for drying between coats.

B. Apply proprietary chemical hardeners in accordance with the manufacturer's printed directions.

C. After the final coat of chemical-hardener solution is applied and dried, remove surplus hardener by scrubbing and mopping with water.

PART 30 - CONCRETE CURING AND PROTECTION

A. Protect freshly placed concrete from premature drying and excessive cold or hot temperature, and maintain without drying at a relatively constant temperature for the period of time necessary for hydration of the cement and proper period of time necessary for hydration of the cement and proper handling of the concrete.

B. Start initial curing as soon as free moisture has disappeared from the concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 72 hours.

C. Begin final curing procedures immediately following initial curing and before the concrete has dried. Continue final curing for at least 7 days and in accordance with ACI 30l procedures. Avoid rapid drying at the end of the final curing period.

PART 31 - CURING METHODS

A. Perform curing of concrete by moist curing, by moisture-retaining cover curing, by membrane curing, or by combinations thereof, as herein specified, optional to the Contractor with approval from the Architect.

1. For curing, use only water that is free of impurities which could etch or discolor exposed, natural concrete surfaces.

2. Keeping the surface of the concrete continuously wet by covering with water.

3. Continuous water-fog spray.

4. Covering the concrete surface with the specified absorptive cover, thoroughly saturating the cover with water, and keeping the absorptive continuously wet. Place absorptive cover so as to provide coverage of the concrete surfaces and edges, with a 4" lap over adjacent absorptive covers.

5. Cover the concrete surfaces with the specified moisture-retaining cover for curing concrete, placed in the widest practicable width with sides and ends lapped at least 3" and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during the curing period using cover material and waterproof tape.

6. Apply the specified membrane-forming curing compound to damp concrete surfaces as soon as the water film has disappeared. Apply uniformly in a 2-coat continuous operation by power spray equipment in accordance with the manufacturer's directions. Recoat areas which are subjected to heavy rainfall within 3 hours after initial application. Maintain the continuity of the coating and repair damage to the coat

during the entire curing period.

7. Do not use membrane curing compounds on surfaces which are to be covered with a coating material applied directly to the concrete or with a covering material bonded to the concrete, such as other concrete, liquid floor hardener, waterproofing, damp proofing, membrane roofing, flooring, painting and other coatings and finish materials, unless otherwise acceptable to the Architect.

PART 32 - CURING FORMED SURFACES

A. Cure formed concrete surfaces, including the undersides of girders, joist, beams, supported slabs and other similar surfaces by moist curing with the forms in place for the full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.

PART 33 - CURING UNFORMED SURFACES

A. Initially cure unformed surfaces, such as slabs and other flat surfaces by moist curing, whenever possible.

B. Final cure unformed surfaces, unless otherwise specified, by any of the methods specified above, as applicable.

C. Final cure concrete surfaces to receive liquid floor hardener or finish flooring by use of moisture-retaining cover, unless otherwise acceptable to the Architect.

PART 34 - FINAL CURING OF CONCRETE

A. During the curing period, protect concrete from damaging mechanical disturbances including load stresses, heavy shock, excessive vibration, and from damage caused by rain or flowing water. Protect all finished surfaces from damage by subsequent construction operations.

PART 35 - MISCELLANEOUS CONCRETE ITEMS

A. Provide concrete grout for reinforced masonry lintels door jambs and bond beams where indicated on drawings and as scheduled. Maintain accurate location of reinforcing steel during concrete placement.

B. Fill-in holes and opening left in concrete structures for the passage of work by other trades, unless otherwise shown or directed, after the work of other trades is in place. Mix, place and cure concrete as herein specified, to blend with in-place construction. Provide all other miscellaneous concrete filling shown or required to complete the work.

C. Place dove tail slots in all concrete surfaces where concrete and masonry walls connect.

D. The concrete in each integral unit of the structure shall be placed continuously, and the Contractor shall not begin work without sufficient approved material on hand nor without

sufficient forces and equipment to complete that unit without interruption in placing the concrete.

E. Reinforce all walls, unless otherwise specified or shown on the drawings, with number five (5) bars at l2 inches on centers horizontal and vertical.

F. Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

G. Equipment Bases and Foundations: Provide machine and equipment bases and foundations, as shown on the drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with certified diagrams or templates of the manufacturer furnishing the machines and equipment.

PART 36 - CONCRETE SURFACE REPAIRS

A. Repair and patch defective areas with cement mortar immediately after removal of forms, but only when directed by the Architect.

B. Cut out honeycomb, rock pockets, voids over l/2" diameter, and holes left by tie rods and bolts, down to solid concrete but, in no case, to a depth of less than l". Make edges of cuts perpendicular to the concrete surface. Before placing the cement mortar, thoroughly clean, dampen with water, and brush-coat the area to be patched with neat cement grout. Proprietary patching compounds may be used when acceptable to the Architect.

C. For exposed-to-view-surfaces, blend white portland cement and standard portland cement so that, when dry, the patching mortar will match the color of the surrounding concrete. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with the patching. Compact mortar in place and strike off slightly higher than the surrounding surface.

D. Fill holes extending through concrete by means of a plunger-type gun or other suitable device from the least exposed face, using a flush stop held at the exposed face to ensure complete filling.

E. Repair of Unformed Surfaces: Test unformed surfaces, such as slabs, for smoothness and to verify surface plane to the tolerances specified for each surface and finish. Correct low and high areas as herein specified.

F. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness, using a template having the required slope. Correct high and low areas as herein specified.

G. Repair finished unformed surfaces that contain defects which adversely affect the durability of the concrete. Surface defects, as such, include crazing, cracks in excess of 0.01" wide or which penetrate to the reinforcement or completely through non-reinforced sections regardless of width, spalling, popouts, honeycomb, rock pockets, and other objectional conditions.

H. Correct high areas in unformed surfaces by grinding, after the concrete has cured sufficiently so that repairs can be made without damage to adjacent areas.

I. Correct low areas in unformed surfaces during, or immediately after completion of surface finishing operations by cutting out the low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary patching compounds may be used when acceptable to the Architect.

J. Repair defective areas, except random cracks and single holes not exceeding l" diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts, and expose reinforcing steel with at least 3/4" clearance all around. Dampen all concrete surfaces in contact with patching concrete and brush with a neat cement grout coating, or use concrete bonding agent. Place patching concrete before grout takes its initial set. Mix patching concrete of the same type or class as the original adjacent concrete. Place, compact and finish as required to blend with adjacent finished concrete. Cure in the same manner as adjacent concrete.

K. Repair isolated random cracks and single holes not over l" in diameter by the dry-pack method. Groove the top of cracks, and cut out holes to sound concrete and clean out dust, dirt and loose particles. Dampen all cleaned concrete surfaces and brush with a neat cement grout coating. Place dry-pack before the cement grout takes its initial set. Mix dry-pack, consisting of one part portland cement to 2½ parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched areas continuously moist for not less than 72 hours.

L. Repair methods not specified above may be used, subject to the acceptance of the Architect.

End of Section

SECTION 04100 - MORTAR

PART l - SCOPE

A. This Section includes all labor, materials, equipment, and related items required for the work of mortar as shown on the Drawings and specified herein. The work includes but is not necessarily limited to the following:

1. Furnishing of all mortars required for the work of unit masonry.

B. This Section does not include the following related items:

1. Concrete or grout required for the filling of hollow masonry units, grouting door frames, etc.

2. Unit masonry work.

PART 2 - PRODUCT HANDLING

A. All materials shall be delivered, stored, and handled in a manner to prevent damage by breakage, water, or moisture, or the inclusion of foreign particles. Packaged materials shall be delivered in unbroken packages with the manufacturer's name, brand, and applicable data plainly marked thereon. No materials shall be dumped or stored on the ground. Bulk materials shall be stored on a clean surface or platform as required and shall be protected from deterioration and foreign matter.

B. All tools and equipment shall be delivered, protected, and handled in a manner to prevent any damage which may make them defective for the purpose for which they are intended.

PART 3 - MATERIALS

A. General. One manufacturer's brand and/or source of supply shall be utilized for each material specified hereinafter in order to maintain uniformity of mortars prepared under work of this section.

B. Portland cement shall conform to ASTM Cl50, Type I or III.

C. Masonry cement shall conform to ASTM C9l.

D. Hydrated lime shall conform to ASTM C207.

E. Aggregate shall be natural river sand conforming to ASTM Cl44, shall be clean, sharp, well graded, and free from injurious amounts of dust, lumps, shale, alkalis, surface coating, and organic matter.

F. Water shall be clean and free from deleterious quantities of acid, alkali, oils, salts, and organic matter.

G. Admixtures. The use of admixtures in mortar shall not be permitted unless approved in writing by the Architect. If an admixture is approved, it shall be used throughout whatever

segment of the work for which it is proposed.

H. Antifreeze Compounds. Antifreeze liquids, salts, and other substances shall not be used in order to lower the freezing point of mortar.

PART 4 - MIXES

A. Mortar shall be freshly prepared and uniformly mixed in proportions by volume conforming to ASTM C270, Type N, 750 p.s.i. or Type S, l,800 p.s.i. at 28 days as specified.

B. Mortar for use in all applications shall be mixed as follows. Proportions of mortar by volume shall conform to the following table, with the aggregate measured in a damp, loose, condition. Provide a custom color mortar as selected by the Architect.

Mortar Type	Portland Cement	Masonry Cement	Hydrated Lime or Lime Putty	Aggregate
N	None	1 (Type II)	None	(Not less than 2¼ and more than 3 times the sum of the cements and lime used)
N	1	None	Over ½ to 1¼	
S	½	1 (Type II)	None	

C. The weights per cubic foot of materials in mortar are considered to be as follows:

Material	Weight/Cubic Foot
Portland Cement	94 lbs.
Masonry Cement	Weight printed on bag
Hydrated Lime	40 lbs.
Sand, damp and loose	80 lbs.

PART 5 - MIXING

A. Measurement by volume shall be manufacturer's packages or other containers of known capacity or by approved batching device so that specified proportions shall be consistently maintained. Material that has partially set shall not be retempered or used; frozen, caked, or lumpy material shall not be used. Mix mortar with proper amount of water, for a minimum of 5 minutes to desired consistency, and uniform color is obtained in electric batch mixer.

B. Mortar Flow. Mortar of the materials and proportions used in the construction shall have a flow after section for one (l) minute of not less than 70 percent of that immediately before suction. The flow shall be determined by the method of the Water Retention Test of the Standard Specifications for Masonry Cement, ASTM C9l.

C. Mortar Consistency. The mortar shall be of as wet a consistency as can be conveniently handled, and it shall be retempered frequently if necessary. Mortar which has greatly stiffened or in which the cement material has started to set shall not be used.

End of Section

SECTION 04200 - UNIT MASONRY

PART l - GENERAL

A. This Section includes all labor, materials, equipment, and related items required for the work of unit masonry as shown on the Drawings and as specified.

PART 2 - PRODUCT HANDLING

A. Store all masonry units on screeds and under cover to properly protect from the elements until ready for use. Dirty, cracked, chipped, or otherwise damaged masonry units shall not be used.

PART 3 - ENVIRONMENTAL CONDITIONS

A. Masonry shall not be laid in freezing weather unless suitable means are used to heat the materials and protect the work from cold and frost, and to insure that the mortar will properly harden without freezing.

PART 4 - PROTECTION

A. The Contractor shall protect exposed masonry materials of every kind against staining, and the tops of all walls shall be kept covered with non-staining waterproof covering at the end of each work day and at any time the work thereon is not in progress. When starting or resuming work at a new level, the top surface of the work in place shall be cleaned of all loose mortar and foreign materials and in drying weather thoroughly wetted with clean water. Then resume laying.

PART 5 - MATERIALS

A. Masonry Units:

1. Face brick shall conform to ASTM C216, Grade SE, type FBS, (7 5/6" x 2-1/4" x 3-5/8" bed depth), solid or cored. See elevation for type.

    a. Provide all special matching face brick units for applications where indicated by the details or required, including sill units. Units shall conform to details and dimensions shown on the Drawings and finished surfaces shall be indistinguishable from those of face brick specified above.

2. Concrete block for general use throughout the project shall be hollow, load-bearing concrete masonry units complying with ASTM C90, Grade N-1, shall have nominal 8" x 16 face, or as shown, shall have a compressive strength of not less than 800 p.s.i. for individual units and an average of 1,000 for five units.

    a. Exterior CMU shall be waterproof with waterproof mortar.

    b. All aggregates for concrete masonry units shall conform to ASTM C33l, and shall

be expanded shale produced by the rotary kiln process.

c. All units shall be made with Portland cement complying with ASTM Cl50, and weighing not more than l00 lbs. per cubic foot.

d. All units shall be square, true, and have sharp arriser. They shall be of consistent texture, and shall be dimensionally stable with regard to height, width, and lengths. All units shall be free of organic impurities that will cause rusting, staining, or pop-outs, and shall contain no combustible matter.

e. Steam Curing. All concrete blocks shall be steamed in an atmosphere of l00 degrees F. for a period of 4 to 6 hours. Steam curing shall commence after masonry units have been allowed to "set" for a period of l-l/2 to 2 hours. After steam curing, allow kiln temperature to drop slowly before removing blocks from kiln. Blocks shall be stored for a period of 30 days and protected from the weather during this period before delivery to site.

3. Fire rated concrete block for use in interior shafts shall conform to general specifications for other concrete block set forth above, and shall conform to Underwriter's Laboratories D-2 classification for two-fire rating.

a. Manufacturer of concrete block units shall provide U.L. standard certificate certifying that materials furnished meet classification specified to the Architect for approval prior to delivery of units to the site.,

B. Masonry Wall Reinforcement:

1. Provide all prefabricated internal or external corners required by installation.

C. Anchors and ties shall be of corrosion resistant metal equal in strength, size and numbers to conform with requirements of American standard A4l.l titled American Standard Building Code Requirements for Masonry.

1. Brick wall ties. crimped wall ties for anchorage of face brick to backing in metal stud frame shall be crimped galvanized metal 22 gauge, 7/8" wide x 7" long.

2. Truss type reinforcement for horizontal reinforcing at concrete masonry partitions. Reinforcement shall be Dur-O-Wall Truss No. 9 gauge cross rod or approved equal. All components of anchor to ave a hot dipped galvanized finish. Place joint reinforcement directly on masonry and place mortar over wire to form bed joint.

D. Damproofing material for treatment of exterior brick surfaces shall be colorless 5 percent solution of silicone resins especially formulated to render masonry surfaces water repellent, and shall be Sonneborn “Hydrocide S-X Hycon”, or as manufactured by Sika, Toch Bros.

PART 6 - SAMPLE WALL

A. Before laying any wall construction, the Contractor shall build sample composite of concrete block, 5 feet wide x 4 feet high, for approval of the Owner and Architect. Approved wall shall be standard for wall construction and for brick and block. Sample wall shall demonstrate acceptable workmanship for bond specified.

PART 7 - LAYING BRICK

A. Lay all face brick in exterior wall construction using Type N mortar furnished under work of Section 04100.

1. All brick shall be thoroughly wet before laying, except in freezing weather. All bed and head joints shall be completely filled with mortar. Fill all head joints with a heavy buttering or mortar on one side of the brick, press the brick down into the bed joint and push the brick into place so that the mortar squeezes out from the top and sides of the head joint. Mortar should correspondingly cover the entire side of a brick before placing with next brick. Attempting to fill joints by slushing or dashing will not be permitted. Partial filling of joints by buttering or spotting the vertical edges of the brick with mortar cut from the extruded bed joint will not be permitted. Where closures are required, the opening should be filled with mortar so that insertion of the closure will extrude mortar, both laterally and vertically. All brick work shall be plumb, true to line, courses level and properly anchored to back-up, abutting masonry and concrete as follows:

   a. Where composite wall construction is indicated, face brick shall be bonded to backup by installation of continuous masonry wall reinforcement, spaced 16" o.c. vertically, extending through both brick and backup as shown in the Drawings.

2. Face Brick Bond. The bond for brick laid in walls shall be running bond with tooled joints throughout. Coursing shall be accurately spaced and laid out in such manner that the bond is kept plumb throughout variations in the width of vertical joints shall be inconspicuous and made only as necessary to maintain the bond. Improper layout of bond will be rejected. Intersecting and abutting walls and corners shall be bonded together by interlocking alternate courses of brick. No brick smaller than 3-3/4" long shall be used as a jamb closure, and all cuts required shall be made with a masonry saw.

3. Face Joints. All face joints in brick shall be for horizontal joints as shown on the drawings, and for vertical or head joints may be from 5/l6" to 7/l6" to adjust bond and minimize cutting at openings. In exposed wall faces, joints shall be cut flush, and as the mortar takes its initial set, shall be tooled with l/2 inch diameter round tool 6" longer than the length of the masonry unit. Tooling shall compact the mortar tightly against the masonry units on both sides of the joints. Head joints shall be tooled first. Joints must be tooled smooth, even and uniform. At completion of work, all holes in joints of exposed masonry must be filled. Rake joints 3/8" deep at jambs of brick abutting other materials and at other joints shown to be caulked by others under work of Section 07900; except that caulked control joints shall be treated as specified below.

4. Control Joints. Provide continuous 3/8" wide vertical control joints in exterior face brick where indicated by cutting half-brick closures in alternate courses, omitting mortar continuously in the joint. Control joints shall fall at normal head joint locations and shall be absolutely plumb so as to be inconspicuous in the finish work. Caulking of control joints is specified under Section 07900.

5. Weeps. Provide weep holes in exterior brick wall surfaces in all joints containing through wall membrane flashing at spacing shown on the Drawings. Weeps shall be made by laying 3/8" cotton cords at required locations. Cords shall be treated for withdrawal from joints cleanly after mortar has set.

B. Water Repellent Treatment. All exterior surfaces of brick work shall be given a clear water repellent coating applied in strict conformance with the printed recommendations of the manufacturer of the material used. Surfaces shall be dry, clean and free from loose mortar prior to application. Coatings shall be applied after all cleaning is done, and surfaces have been inspected and approved by the Architect.

C. Workmanship. The Contractor is cautioned that the Architect will demand first class workmanship. All brick masonry shall be performed by experienced masons. Any chipped, cracked, or otherwise damaged or defective work will be rejected.

PART 8 - LAYING CONCRETE BLOCK

A. Lay all concrete block in exterior and interior wall construction where indicated, using Type N mortar furnished under work of Section 04100, except that Type S mortar shall be used in laying concrete block below grade.

B. All bed and head joints shall be completely filled with mortar. Bed joints shall be filled by spreading a thick bed of mortar. Fill head joints with a heavy buttering of mortar on one side (each flange) of block, press the block down into the bed joint, and push the block into place so that the mortar squeezes out from the top and sides of the head joint. Mortar should correspondingly cover the end flange of the block before placing the next block. Attempting to fill joints by slushing or dashing will not be permitted. Partial filling of joints with mortar cut from the extruded bed joint will not be permitted. Where closures are required, fill with mortar so that the intersection of the closure will extrude mortar, both laterally and vertically. Extend walls and partitions to heights indicated, building in around joist bearings, etc. as shown or required. Cut units as required to properly course in plan and vertical section as shown on the Drawings or as directed by the Architect. All cuts shall be accurately made with masonry saw.

1. Anchorages of concrete block to various backup material shall be as specified under Article 8 above for brick.

C. Joints and Bond. All concrete masonry units shall be laid in running bond. Joints in concrete block work shall be 3/8" wide for both head and bed joints. Joints in masonry scheduled to receive separate finish or where concealed in the work shall be cut flush. Rake joints 3/8" deep at control joints, where masonry abuts concrete surfaces, etc., and otherwise where shown on the Drawings, for caulking by others under work of Section

07900.

D. Reinforcement. Concrete masonry walls and partitions shall be reinforced continuously in every other course, (l6" o.c. vertically) using masonry wall reinforcement of types as hereinbefore specified. Reinforcement shall be seated in the mortar bed by lifting cross ties as work progresses. Lay internal and external corners and intersections as required for the completed job.

E. Chases for pipes, conduits, etc. shall be plumb and smooth on the inside, with offsets formed where required, kept free of obstructions and cleaned out on completion. There shall be at least 8" of masonry between chases and the jambs of openings.

F. Build units accurately to metal door frames, building in anchors furnished with frames. Slush solid with mortar at jambs and head.

G. Coordinate work with other trades, building in all items shown to be installed in concrete block work such as lintels, anchors, sleeves, etc. Prepare openings as shown or required for proper installation of mechanical, electrical, and other items.

H. Cleaning. Extreme care shall be exercised during laying to protect units from mortar droppings, etc. Upon completion of work, all exposed concrete block shall be properly cleaned with a stiff bristle brush to remove all excess mortar, dirt and stains. Do not use acid.

I. Workmanship. The contractor is cautioned that the Architect will demand first class workmanship. All concrete masonry work shall be performed by experienced masons. Any chipped, cracked or otherwise damaged or defective work will be rejected.

PART 10 - THROUGH-WALL MEMBRANE FLASHING

A. Install plastic through-wall membrane flashing continuously in horizontal joints of exterior walls, at window openings, etc. where shown on the Drawings. Installation shall be in strict accordance with manufacturer's printed instruction. Flashings shall extend generally from within l/2" of exterior wall face through the wall as detailed.

1. Where laps occur, lap sheets at least 6" and seal with cold setting cement. Roll to insure full adhesion.

2. At obstructions, carry flashing up 6" and secure with cold setting cement.

3. Where ties or anchors, conduit, etc. penetrate through sheet, punctures shall be made minimum size possible and mastic troweled around place to thoroughly seal the puncture.

4. At lintels and shelf angles, flashings shall extend minimum of 6" beyond ends of lintels.

End of Section

SECTION 05500 - MISCELLANEOUS METALS

PART l - SCOPE

A. This Section includes the furnishing and installation of all miscellaneous metal items required for the project as shown on the Drawings and specified herein.

PART 2 - COORDINATION

A. Coordinate furnishing of items specified hereunder with work of other trades so that progress of related work is not delayed.

B. Take field measurements at the job as necessary to insure fit.

PART 3 - MATERIALS

A. Stock or manufacturer's standard items shall be as described under individual item specifications hereunder.

B. Fabricated items, made especially for this project, shall meet general materials specifications as listed hereunder. Materials shall be of the type, class, temper, etc., which best suit intended uses.

1. Steel shall conform to ASTM Specification A-7 or A-36 for structural steel. Architectural and miscellaneous steel not otherwise indicated or specified shall be mild steel.

   Shop Drawings and Data: Show complete details and instructions for fabrication, assembly, and installation. Locate anchor bolts required for installation in other work.

   Inserts and Anchorages: Furnish inserts and anchoring devices to be built into other work for installation of miscellaneous metal items.

   Steel Plates, Shapes, Bars: ASTM A 36

   Tubular Steel Items: Square and rectangular, ASTM A 501; pipe, ASTM A 120.

   Cold-Rolled Steel Sheets: ASTM A 366.

   Galvanized Steel Sheets: ASTM A 526, with ASTM A 525 G90 zinc coating.

   Concrete Inserts: Malleable iron (ASTM A 47) or cast steel (ASTM A 27) inserts, with steel bolts, washers and shims; hot dip galvanized.

Shop Paint: FS TT-P-86, Type 2; or, SSPC-Paint 14. Apply to prepared steel surfaces at rate to provide a 2.0-mil dry film thickness.

Galvanizing: ASTM A 386 for assembled products; A 153 for iron and steel hardware.

Fabrication, General: Use materials of size and thickness shown. Shop-paint all items not specified to be galvanized after fabrication.

Curb Edge Bars: Fabricate of shapes as shown; miter corners and weld joints. Provide anchors 6" from ends of corners and 24" o.c.

Loose Bearing Plates: Provide for steel items bearing on masonry or concrete, as shown. Drill plates to receive anchor bolts.

Miscellaneous Framing and Supports: Provide as required to complete work and not included with structural steel framework.

Steel Pipe Railings: Fabricate to dimensions shown, with smooth bends and welded joints. Use 1-1/2" steel pipe unless otherwise shown.

Installation: Perform cutting, drilling, and fitting required for installation; set work accurately in location, alignment and elevation, measured from established lines and levels. Provide anchorage devices and fasteners where necessary for installation to other work.

PART 4 - SHOP PAINTING AND PROTECTIVE COATING

A. All ferrous metal shall be properly cleaned and given one shop coat of red lead, zinc chromate, or other approved rust resisting paint. Anchors that are built into masonry or concrete shall be coated with asphalt paint unless specified to be galvanized. Where galvanized or zinc coated metal is required, it shall not be shop primed unless specifically called for, but all abraded places and welding shall be touched up with aluminum paint. No prime coat is required for non-ferrous metal.

B. Where hot-dip galvanized or hot zinc coating is specified, it shall be done in accordance with the Standard Specifications of the American Hot Dip Galvanizers Association.

PART 5 - FASTENINGS

A. Welding. Perform all welding in accordance with American Welding Society publication AWS D1.0, latest edition with current supplements and addenda.

1. Welds shall be made only by operators experienced in performing the type work indicated.

2. Welds normally exposed to view in the finished work shall be uniformly made and ground smooth.

3. Where welding is done in proximity to glass or finished surfaces, such surfaces shall be protected from damage due to weld sparks or spatter.

B. Bolted Screwed, and Riveted Connections. In general, use bolts fro field connections only as directed. Provide washers under all heads and nuts bearing on wood. Draw all nuts tight and nick threads of permanent connections to prevent loosening. Use beveled washers where bearing is on sloped surfaces.

1. Where screws must be used for permanent connection in ferrous metal, use flat head type, countersunk.

2. Where rivets are used, they shall be machine driven, tight, heads centered, countersunk and finished flush and smooth.

PART 6 - MISCELLANEOUS ITEMS

A. Anchoring Devices. Furnish all miscellaneous metal anchoring devices required to be built into concrete or masonry or welded to steel framing members for anchorage of collateral work which are not specified to be furnished under other sections of the Specifications. Items include, but are not necessarily limited to the following:

1. Anchor bolts for miscellaneous anchorage built into concrete or masonry not furnished under work of structural steel shall be hex-head steel machine bolts of sizes shown in the details, shall conform to ASTM A354, and shall be furnished with nuts and plate washers of size to suit the particular application.

B. Loose Lintels. Furnish all loose steel angle and/or plate lintels not furnished as part of structural steel under work of Section 05120 as required for support of masonry over openings. Members shall be of sizes shown, and, unless otherwise indicated, shall have minimum bearing at each end of 8".

End of Section

SECTION 06112 - FRAMING AND SHEATHING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Structural wall, and roof framing.
B. Wall and roof sheathing.

1.02 REFERENCES

A. ALSC - American Lumber Standards Committee: Softwood Lumber Standards.
B. ANSI A135.4 - Basic Hardwood.
C. ANSI A208.1 - Mat Formed Wood Particleboard.
D. APA - American Plywood Association.
E. AWPA - American Wood Preservers' Association: Book of Standards.
F. FS-TT-W-571 - Wood Preservation: Treating Practices.
G. NFPA - National Forest Products Association.
H. SFPA - Southern Forest Products Association.
I. WCLIB - West Coast Lumber Inspection Bureau: Standard Grading Rules for West Coast Lumber.
J. WWPA - Western Wood Products Association.

1.03 QUALITY ASSURANCE

A. Lumber Grading Agency: Certified by ALSC.
B. Plywood Grading Agency: Certified by APA.

1.04 REGULATORY REQUIREMENTS

A. Conform to UL requirements to achieve rating indicated.

1.05 SUBMITTALS

A. Submit product data under provisions of Section 013400.
B. Provide technical data on wood preservative materials and application instructions.
C. In lieu of grade stamping exposed-to-view lumber and plywood, submit manufacturer's certificate under provisions that products meet or exceed specified requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store and protect products under provisions of Section 01600.

PART 2 - PRODUCTS

2.01 LUMBER MATERIALS

A. Lumber Grading Rules: NFPA, RIS, SFPA, WCLIB, WWPA.
B. Beam Framing: species: Pine, Southern Yellow, grade - #2, 19 percent maximum moisture content.
C. Joist Framing: species: Pine, Southern Yellow; grade #2, 19 percent maximum moisture content.
D. Rafter Framing: species: Pine, Southern Yellow; #2 grade, 19 percent maximum moisture content.
E. Non-structural Light Framing: species: Pine, Southern Yellow; #2 grade, 19 percent maximum moisture content.
F. Studding: species: Pine, Southern Yellow, #2 grade, size: 2x4, 2x6 or as noted; 19 percent maximum moisture content @ 16" o.c. maximum.
G. Boards, Pine, Southern Yellow #2 grade at 16" on center maximum.

2.02 PLYWOOD MATERIALS

A. Roof Sheathing: APA Structural I, 19/32" x 4' x 8 SYP, CDX sanded.

B. Provide 4' x 4' fire-treated plywood in the Mechanical Room for attaching Data and Communication Equipment.

2.03 OSB MATERIALS

A. Wall Sheathing: ANSI A208.1 wood 7/16" x 4' x 8' OSB.

2.04 ACCESSORIES

A. Fasteners: galvanized steel for exterior, high humidity, and treated wood locations; plain finish elsewhere; size and type to suit condition.

B. Joist Hangers: Galvanized steel, sized to suit joists and framing conditions.

C. Sill Gasket: 1/4" thick, closed cell, polyethylene foam from continuous rolls, glass fiber strip.

2.05 WOOD TREATMENT

A. Wood Preservative (Pressure Treatment): FS TT-W-571, AWPA Treatment C2 using water borne preservative with 0.30 percent retainage on all wood in contact with concrete.

PART 3 - EXECUTION

3.01 FRAMING

A. Erect wood framing members level and plumb.
B. Place horizontal members laid flat, crown side up.
C. Construct framing members full length without splices.
D. Double members at openings over one sq. ft. (0.1 sq.m.). Space short studs over and under opening to stud spacing.
E. Construct double joist headers at floor and ceiling openings. Frame rigidly into joists.
F. Construct double joists under wall studding.
G. Bridge joists in excess of 8 feet span. Fit solid blocking at ends of members.
H. Place full width continuous sill flashings under framed walls on cementitious foundations. Lap flashing joint 4 inches.
I. Place sill gasket directly on sill flashing, cementitious foundation. Puncture gasket clean and fit tight to protruding foundation anchor bolts.

3.02 SHEATHING

A. Secure roof sheathing perpendicular to framing members with ends staggered. Secure sheet edges over firm bearing. Use sheathing clips between sheets between roof framing members.

B. Secure wall sheathing horizontally perpendicular to wall studs, with ends staggered over firm bearing.

3.03 TOLERANCES

A. Framing Members: 1/4 inch maximum from true position.
B. Surface Flatness of Floor: 1/4 inch in 10 feet maximum

END OF SECTION

SECTION 06192 - WOOD TRUSSES

PART 1 - GENERAL

SUMMARY

Provide prefabricated and pre-engineered wood trusses:

1. Gable-shaped trusses.
2. Hip and girder trusses at hip ends of roof.
3. Monopitch trusses.

1.01 SUBMITTALS

A. Submit for approval shop drawings, product data.

QUALITY ASSURANCE

Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

A. Standards: TPI, Design Specification for Metal Plate Connected Wood Trusses; TPI, Design Specification for Metal Plate Connected Parallel Chord Wood Trusses.

B. Design Engineering: Registered Engineer.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Wood Trusses:

1. Lumber Standard: PS 20 American Softwood Lumber Standard.
2. Dressing: Dressed four sides.
3. Moisture Content: Seasoned, 19 percent maximum.

B. Connectors, Fasteners, and Metal Framing Anchors:

1. Connectors: Hot-dip galvanized steel sheet, ASTM A 446, Grade A; ASTM A 525, G60.

2. Connectors: Electrolytic zinc-coated steel sheet, ASTM A 446, Grade A; ASTM A 591, Coating Class C.

3. Connectors: Aluminum-zinc, alloy-coated steel sheet, ASTM A 446, Grade A; ASTM A 792, Coating Designation AZ 50.

4. Connectors: Stainless steel sheet, ASTM A 446, Grade A; ASTM A 167, Type 304.

5. Nails, Wire, Brads, and Staples: FS FF-N-105.

6. Power Driven Fasteners: National Evaluation Report NER-272.

7. Wood Screws: ANSI B18.6.1.

8. Lag Bolts: ANSI B18.2.1.

9. Bolts: ASTM A 307, Grade A; ASTM A 563.

10. Metal Framing Anchors: Hot-dip galvanized steel sheet, ASTM A 446, Grade A; ASTM A 525, G60.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Comply with recommendations of TPI Design Specifications for Metal Plate Connected Wood Trusses.

B. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with work of other sections.

C. Restore damaged components. Clean and protect work from damage.

D. Attach all Wood Roof Trusses at all top plates with Simpson H5 connection.

END OF SECTION

SECTION 06200 - FINISH CARPENTRY AND MILLWORK

PART 1 - SCOPE

A. This Section includes all labor, materials, equipment and related items required to complete the work of finish carpentry and millwork as shown on the Drawings and specified herein.

PART 2 - MATERIALS

A. Lumber Standards and Grade-Marking. Each piece of lumber and each board, exclusive of mouldings and trim, shall comply with Product Standard PS-20, latest edition, and with specific grading requirements of the association recognized as covering the species used and under whose grading rule it is produced. Each piece of lumber and each board shall be identified by the grademark of a recognized association or independent inspection agency. Such association or independent inspection agency shall be certified by the Board of Review, American Lumber Standards Committee, Washington, D.C., to grade the species.

B. Mouldings and trim shall conform to details on the Drawings. However, stock mouldings and trim of same sizes and with approximately the same profiles as those detailed may be used if all other requirements are met, subject to approval by the Architect.

C. Plywood shall be softwood plywood, unless otherwise specified under individual item specifications, and shall conform to requirements of "Product Standard PS-1, latest edition, for American Plywood Association." Plywoods for particular applications in this project shall be as specified under Art.3, below.

1. Each standard size panel shall be stamped or branded to show group, type and grade.

D. Moisture content of various materials shall meet the following requirements at time of installation:

1. Boards:

a. 8" or less in width — Not more than 19%

b. Wider than 8" — Not more than 15%

2. Finish Lumber and Millwork — Not more than 12%

E. Dressed lumber shall be surfaced four sides (S4S) to conform to Product Standard PS-20 unless, in addition to being dressed, it has been notched, shiplapped or patterned.

F. Dimensions of lumber specified or called for by the Drawings are nominal, except that trim dimensions shown are actual.

PART 3 - GRADES AND SPECIES

A. Exterior wood trim 2" or greater nominal thickness and 2" or greater nominal width shall be of sizes and profiles shown on the Drawings, shall be S4S, and shall be one of the following species, provided the grade for each is not lower than the minimum shown.

Fir, Douglas, WCLB Rules	"A" - Appearance Framing
Pine, Southern Yellow, SPIB Rules	"A" - Appearance Framing

At the Contractor's option, other specie of comparable appearance grade may be used in lieu of the above, if approved by the Architect. Running lengths of 10' or less in all applications shall be in single pieces.

B. Exterior wood trim 2" or less nominal thickness shall be of sizes and profiles shown on the Drawings, shall be S4S, shall be same specie specified above for 2" or greater exterior trim, and shall be one of the following, provided the grade for each is not lower than the minimum shown:

Fir, Douglas, WCLB Rules	Select Merchantable Boards
Pine, Southern Yellow, SPIB Rules	No. 1 Boards

At the Contractor's option, other specie of comparable appearance grade may be used in lieu of the above, if approved by the Architect. Running lengths of 10' or less in all applications shall be in single pieces.

C. Exterior and interior miscellaneous trim, door and fixed window frames, etc., may be one of the following species, provided the grade for each is not lower than the minimum shown:

Fir, Douglas, WCLB Rules	"D" Finish
Pine, Southern Yellow, SPIB Rules	"C" Finish

At the Contractor's option, other specie of comparable appearance grade maybe used in lieu of the above, if approved by the Architect. Running lengths of 10' or less in all applications shall be in single pieces and may be finger-jointed.

D. Plywoods shall be of the types and minimum grades specified hereunder for specific applications listed. All plywoods shall be from Group 1 Species as listed by the American Plywood Association.

E. Rough hardware needed for the proper installation of all finish carpentry and millwork shall be provided. Nails, screws, bolts and similar items shall be of proper types and ample sizes to fasten and hold the various members and items securely in place.

F. Other materials shall be as specified hereunder.

PART 4 - STORAGE AND PROTECTION

A. All lumber shall be piled in a manner which ensures proper ventilation and drainage, and shall be covered to protect it from the elements.

B. Millwork and wood trim shall be protected against dampness during and after delivery. It shall be stored in well-ventilated buildings and where not exposed to extreme changes in temperature or humidity. Wood doors shall be stored in flat positions, one above another on solid, level supports, with air circulation excluded from top and bottom surfaces.

C. Improper storage resulting in damage to millwork or trim, or warping of doors, shall be cause for their rejection.

PART 5 - GENERAL

A. Finish Carpentry. Work of finish carpentry shall be laid out as shown on the Drawings, and shall be cut and fitted as necessitated by conditions encountered. All work shall be plumbed, leveled, and properly jointed and secured with sufficient nails, screws, bolts, etc. to ensure proper alignment and rigidity.

B. Any piece of wood or other material with a defect or defects that prevent it from serving its intended purpose satisfactorily, including warped, split, or otherwise defective material, will be rejected and shall be replace with an acceptable piece.

PART 6 - EXTERIOR AND INTERIOR TRIM

A. Miscellaneous exterior and interior softwood trim, including fascias, mouldings, casings, etc., shall be of species and grades hereinbefore specified, as approved by the Architect and shall be furnished in longest practicable lengths.

B. Joints in all work shall be tight and formed to conceal shrinkage. Door and window trim shall be in long lengths and jointed only where solid fastenings can be made. End joints in all built-up members shall be well distributed so that no joint occurs over another. External and internal corners shall be mitered. Where necessary, woodwork shall be scribed to adjacent work.

1. Joints in running trim, including continuous wood fascia members, shall be scarfed at 45 degrees, except where butt joints may be specifically permitted by the Architect, and shall be drawn up tightly for inconspicuous joints. External exposed corners of trim shall be mitered.

End of Section

SECTION 06400 - PLASTIC LAMINATE CASEWORK AND COUNTERTOPS

PART 1 - DESCRIPTION

A. Furnish and install plastic laminate casework and countertops as shown on the drawings and specified herein.

B. Work included:

1. Casework - plastic laminate faced.
2. Plastic laminate covered countertops for wood and laminate casework.
3. Plastic laminate covered shelves.
4. Standard hardware and accessories.
5. Plastic laminate window stools throughout building at exterior windows as detailed.

C. Related work specified elsewhere:

1. Rough carpentry: Section 6100
2. Finish carpentry: Section 6200
3. Gypsum Drywall: Section 9250
4. Resilient base: Section 9650
5. Mechanical work: Division 15
6. Electrical work: Division 16
7. Metal casework: Section 11600

PART 2 - QUALITY ASSURANCE

A. Custom plastic laminate faced casework shall match in design, material, finish and detail the stock plastic laminated casework. The materials, workmanship and installation of all casework provided under this section shall be the responsibility of this contractor.

1. The contractor providing the work described herein, may be a custom casework contractor with a casework manufacturer as a subcontractor/supplier; or a stock casework with a custom casework manufacturer as a subcontractor/supplier.

B. Any casework manufacturers requesting approval shall provide to architect, all information and specifications of the products they wish to use in bidding, ten days prior to bid date. Approval will be contingent upon whether the products meet the required specifications.

C. The architect reserves the right to disapprove any subcontracting fabricator proposed for this project. The casework contractor shall submit to the architect, prior to fabrication, a letter signed by a responsible officer of the fabricator indicating satisfactory evidence of having completed comparable work for the past five years on similar projects utilizing equipment, methods and workmanship meeting the standards specified in this section.

D. If requested by the architect, manufacturers requesting approval shall submit full size production line samples of the following units at least ten days prior to bid opening.

1. One cabinet base unit, 36" wide with door and drawer, complete with laminate top to fit.

E. Reference standards:

1. Architectural Woodworking Institute (AWI) "Quality Standards".
2. National Electrical Manufacturers Association (NEMA) "LD 1 thru LD3" High Pressure Decorative Laminates.
3. Federal Specifications (FS) "LLL-H-00810: Building Board (Hardboard), Hard Pressed, Vegetable Fiber".
4. American National Standard (ANSI) A208.1-79 "Mat-Formed Wood Particleboard".
5. Commercial Standards (CS) "C.S. 35: Adhesives".

PART 3 - SUBMITTALS

A. Certifications: Letter of Subcontractors qualifications and experience within the past five years and references of work completed.

B. Color Selection: Complete range of color, textures and patterns of the proposed plastic laminate manufacturer, based upon the preliminary color selections listed hereinafter, with architect's approval. Final approval shall be contingent upon providing colors, textures and patterns matching preliminary selections.

C. Shop Drawings: Submit shop drawings of items specified herein. Indicate: plan views, elevations, sections and details of each item; location in the building of each item; conditions in relation to adjacent materials and construction; methods of assembling sections; location and installation requirement size(s); shape and thickness of materials, joints and notations of special features; sink locations; and drawings required to illustrate deviations from the contract requirements.

D. Rough in drawings: submit separate utility rough in drawings which indicate points of connection to each utility involved. Reference dimensions from building components.

PART 4 - PRODUCTS DELIVERY, HANDLING AND STORAGE

A. Schedule casework for fabrication and delivery to avoid delay in work progress. Delivery to job site shall not be earlier than one month before casework can be installed. Verify delivery date with general trades contractor.

B. Receive, unload, check, store, protect and distribute materials specified in this section.

C. Store materials to maintain the moisture content of the wood members between 6% and 15%. Store in areas or rooms with temperatures at 70 ˚F.

D. Store under cover in a ventilated building not exposed to extreme temperature and humidity changes. Do not store or install casework until concrete, masonry and plaster work is dry.

PART 5 - JOB CONDITIONS

A. Prior to fabrications of items of casework which are dependent upon building dimensions, take accurate field measurements of location of walls, drop soffits, columns, piers and other applicable building elements. Major discrepancies between dimensions given on the drawings and field dimensions shall be brought to the attention of the general trades contractor. Compensate for minor dimensional changes so that fabricated items can be delivered to the job, and can be scribed to fit properly.

B. In no instance shall any casework be stored or installed in any area unless the area is broom clean, closed in and possessing a relative humidity below 50% at 70˚F.

PART 6 - WARRANTY

A. Warranty in writing that defects due to use of improper materials or workmanship in casework provided under this contract for the period of one year from the date of substantial completion of the work, shall be rectified promptly by the casework contractor at his own expense upon notification of condition.

PART 7 - GENERAL

A. Casework, both stock and custom shall be plastic laminate construction consisting of high pressure decorative laminate bonded to 3/4" thick particle board.

1. Fabrication shall comply with applicable requirements for "Custom grade" as indicated in Section 400 of the AWI architectural woodwork quality standards and guide specifications.

B. Cabinet units shall be assembled at the mill, insofar as access openings to installation location will permit. Where items must be built into sections, design the units so they can be assembled at the site into one integral item, with exposed joints flush, tight and uniform. Similar adjoining doors and drawers shall be in alignment and each door and drawer shall operate smoothly, without bind or excessive play.

C. Casework units shall be complete with bases, shelves, counter and work tops, finish and operating hardware, drawer accessories and miscellaneous accessories as indicated on the drawings and specified herein.

D. Coordination work:

1. Division 9: Provide physical openings for recessed casework.

2. Section 6100: Provide grounds and blocking necessary for attachment and support of wallmounted casework.

3. Plumbing Prime Contractor: provide lay-in sinks, faucets and fittings; templates for cutouts for installation; provide supply and waste lines including traps to rough in points based on information supplied by the casework contractor; and provide final connections.

    a. Division 15: Provide stainless steel sinks with integral with tops and backsplashes, include tailpieces, drains and strainers.

4. Electrical prime contractor: provide electrical fixtures and equipment noted on drawings including related boxes, conduit and conductors. Provide electrical components complete, terminating through the back of the casework unit either with a junction box or a 2" conduit stub. Allow conductors to protrude 8" to permit final connection by Division 16.

5. Division 16: Locate rough-ins based on information given on casework rough-in drawings and be responsible for work necessary to make final connections.

6. Division 9650: Apply resilient base to casework after casework has been installed.

7. Division 5500: Provide steel support braces.

E. Definitions shall conform to the following:

1. Exposed portions are those visible from a normal point of view when doors and drawers are closed. Interiors of open cabinets, and open shelving are considered exposed.

2. Semi-exposed portions are those areas not considered exposed, but which are visible from a normal point of view when solid doors and drawers are open. Backs of hinged doors, drawer parts except the exposed exterior front, and shelving in the storage areas are considered semiexposed.

3. Concealed portions include sleepers, web frames, dust panels and other surfaces not visible after installation.

PART 8 - MATERIALS

A. Particle board: 45 lbs. Minimum density and of balance construction, with moisture content less than 8%. Particle board shall conform to ANSI A208.1 and meet or exceed CS-236-66, FS LLL-B-800A and ASTM D1037-78.

1. Surfaces shall be smooth with all chips, shavings or flakes well scoured so that there shall be no visible telegraphing of the core face through the plastic laminate.

2. Square and rectangular cutouts shall have radiused corners not less than ½".

3. At cut edges, exposed or not and where cutouts occur, the edges shall be completely sealed to prevent moisture absorption. Cutouts for pipes shall be round.

4. Meet the following performance requirements: Submit compliance date from the manufacturer prior to fabrication.

a. Screw holding face: 371 lbs.
b. Modulus of rupture: 2400 psi
c. Modulus of elasticity: 450,000 psi
d. Internal bond: 90 psi
e. Surface hardware: 90 psi

B. Edging: Flat edge design for cabinet body in color matched laminate or PVC. Color as selected by architect.

C. Plastic Laminate: High pressure decorative laminate surfacing material meeting the minimum NEMA Standards for abrasion resistance, heat resistance, stain resistance, moisture resistance, dimensional stability and general rules for fabrication and installation.

1. Plastic laminate materials shall be as selected by the Architect from full product line of national manufacturers such as Formica, Wilsonart, Pionite, Nevamar and Arborite.

2. Exposed horizontal work surfaces: NEMA GP50, PF (Post-forming) satin surface.

3. Exposed vertical work surfaces: NEMA GP 28 laminate.

4. Semiexposed surfaces: 10 mil polyester laminate in conformance to ASTM D1300, factory bonded at 200 psi at 300˚F, minimum. Color shall be manufacturers white.

5. Backing sheet: NEMA BK20 and shall be used where laminate covered work is not restrained from warping or twisting by the method of attachment or by supports. Minimum standard of AWI Custom work shall apply.

6. Bonding adhesive: Water resistant type and as recommended by the approved plastic laminate manufacturer. Plastic laminate shall be applied to the core in the shop, using commercial methods, application and presses.

7. Sealant used for sealing particle board or plywood edges shall be HYBOND 80 by Pierce Stevens Corporation.

D. Assembly adhesives used in assembly, installation and other applications, shall be one of the following:

1. HYBOND 80
2. HYBOND WHITE
3. CANPLAST 100

E. Provide hardware as follows: This is not intended to be a complete listing, but as a guide to establish quality:

1. Hinges shall be cast steel cup and hinge concealed hinges #75M5550 by BLUM

   a. Hinges shall have independent three way adjustment of doors.

   b. One pair of hinges per door of 30" or less, one and one half pair of hinges per door of 48" and one hinge for every 12" of door over 48".

c. Each hinge shall be removable by means of a clip mechanism lever attached to the hinge.

d. Hinges shall be mounted into corresponding hinge plates.

e. Hinges shall have 125 ˚ free movement of swing and be self closing within two inches of close.

f. Hinges shall have a lifetime warranty against defects from workmanship and materials.

g. Hinges shall be installed into door panels by means of a pre-drilled hole and press fitted into panel substrate.

2. Pulls for all doors and drawer fronts shall be manufacturers standard bent wire pull, brushed chrome finish, three inch centers. Nomenclature for this ABP865-26D by AMEROCK.

3. Drawer slides shall be side mounted, bottom supported, 4 point suspension slides with nylon roller bearing and epoxy coating.

4. All file drawers shall have either Pendaflex or file followers.

5. All shelf clips shall be BLUM nylon covered steel pin (5mm) that will mount into pre-drilled end panels for a support of at least 250 lbs.

6. Locks, noted on drawings, shall be cam tumbler by NATIONAL LOCK.

7. Clothes rods and mounting flanges shall be Knape-Voght #770 and #734.

8. Optional sliding doors are mounted on steel tracks and use ball bearing sheaves mounted in the doors.

9. Grommets shall be spring loaded closure type in assorted sizes.

PART 9 - CONSTRUCTION

A. All cabinets shall be of 3/4" thick MCP by Domtar, finished ends and dowel pinned to tops, bottoms or backs, shall be laminated with plastic laminate and edged with matching PVC.

1. End panels shall consist of a single panel of MCP drilled and dowel pinned to tops, bottoms or braces by way of fluted hardwood dowel pins nested in white glue.

2. All cabinet boxes shall be case clamped for a minimum of seven minutes in a Holzer case clamp to insure squareness.

3. End panels shall be drilled for shelves, bottoms, tops and braces using the 32mm drilling system. All components will be drilled in corresponding patterns.

4. End panels shall be rabbited at the rear for acceptance of 3/8" thick MCP back. The back will be mounted using mechanical fasteners. The back shall be removable.

5. End panels shall have integral toe kicks and shall have a front of 3/4" MCP mechanically fastened to the end panels.

B. Doors shall be of 11/16" thick laminated panel products with the front face laminated in the architects color selection. The semi-exposed side shall be covered by white HPL plastic laminate. The edges shall be covered by PVC or self-edged.

C. Drawers shall be constructed of 1/2" thick MCP, rabbited, glued and mechanically fastened for a strong bond. Bottoms shall be of 3/8" thick MCP mechanically fastened to the drawer box frame. Top edges shall be covered in white PVC edging. Drawer fronts are same construction as doors. Drawer fronts shall be removable from drawer box for easy alignment. Drawers shall have epoxy coated, nylon roller bearing, side mounted, bottom supported slides by BLUM.

D. Shelves shall be of 3/4" thick MCP and edged with matching PVC edging. Shelves shall not be constructed over 42" in length.

E. Braces shall be of 3/4" thick MCP and shall span the width of the cabinet box. Braces shall be edged on visible sides with PVC edging. On sink or range base cabinets the front brace shall be mounted vertically and shall be laminated to match the cabinet exterior.

F. Backs shall be of 3/8" thick MCP and be rabbited in and mechanically fastened to the end panels.

G. Wall cabinets shall be of 3/4" thick MCP and shall be dowel pinned in the same manner as the bases. Wall backs are 3/8" thick rabbited and mechanically fastened to end panels.

H. Finished backs shall be of 3/4" MCP laminated with plastic laminate on face and edged with PVC.

I. Top supports shall be of 3/4" MCP laminated on both sides and edged with PVC or plastic laminate.

PART 10 - COUNTERTOPS

A. Countertops and backsplash shall be custom made with square, self-edge and shall be constructed of 3/4" thick medium density fiberboard (MDF) or 45# density particleboard (CS 236-66: Type 1, Grade B, Class 2) covered on all exposed surfaces with horizontal grade 10/HGS, .050" thickness, high pressure laminate as manufactured by a nationally known laminate company.

1. Colors and patterns of plastic laminate shall be as selected by the Architect from full product line of national manufacturers such as Formica, Wilsonart, Pionite, Nevamar and Arborite.
2. Provide cutouts properly sized and located in tops for sinks and rims by others.
3. Provide end splash, flush with all edges of countertop, where countertop abuts wall surfaces.

PART 11 - BRACING

Where countertops have no casework below for support, bracing or "cleats" shall be constructed 1½" x 1½" x length and covered by GP 28 plastic laminate on all exposed sides. These cleats shall be mounted at walls with mechanical fasteners to support the weight of the countertop.

PART 12 - WINDOW STOOLS

Plastic laminated window stools shall be 22mm moisture-resistant chipboard, Class E1, according to DIN EN 312/5, finished on top, bottom and sides with horizontal grade (HP) high pressure laminate as manufactured by a nationally known laminate company, using moisture-resistant adhesives. Provide sealant to back exposed edge of window stools, and caulk continuously between window and the laminate stool.

Colors and patterns of plastic laminate shall be as selected by the Architect from full product line of national manufacturers such as Formica, Wilsonart, Pionite, Nevamar and Arborite.

PART 13 - COORDINATION

B. Coordinate work of this section with related work of other sections as necessary to obtain proper installation of all items.

C. Verify site dimensions of cabinet location in buildings prior to fabrication.

D. Do not install casework until all concrete, masonry and plaster work is dry.

PART 14 - INSTALLATION

A. Installation shall consist of assembling to form complete units, placing, leveling, scribing, trimming and anchoring.
   1. Filler between wall and casework shall not exceed 1" unless noted otherwise and shall be recessed 1/16" + from the face of casework.
   2. Plastic-laminate covered ceiling enclosures shall be flush with the face of the doors and 1/8" proud on the sides of exposed ends or backs.

B. Fasten items to building construction as detailed or as otherwise required to provide a secure, permanent installation.

C. Where fastening spacings or sizes are not shown, use spacings and sizes of bolts, screws, etc., which will develop the full strength of the members being fastened. Thus failure due to over stress must occur in the members before occurring in the fastenings.

   1. Fastening to concrete shall be by anchor bolts embedded in masonry or by self drilling masonry anchor.
   2. Fastening to masonry shall be of similar manner.
   3. Fastening to plaster or drywall construction shall be into wood studs or blocking placed there early in the construction. Toggle bolts may be used only in such cases where no blocking can be found, but fasteners must still penetrate solid wall supports for a secure installation.

PART 15 - PROTECTION

Upon installation of casework and countertops, all installed materials shall be covered with appropriate protection from further construction. The General Contractor will be responsible for repairing or replacing any product damaged by subsequent construction and finish work, with no additional cost to the Owner.

End of Section

SECTION 07200 - BUILDING INSULATION

PART 1 - SCOPE

A. This Section includes all labor, materials, equipment and related items required to complete the work of building insulation as shown on the drawings and as specified.

PART 2 - SUBMITTALS

A. Certificates of Compliance with applicable Federal Specifications shall be submitted to the architect for approval prior to delivery of any building insulation to the project. "R" values of insulation proposed to be furnished shall be included in certifications.

B. Samples in duplicate of each type of building insulation shall be submitted to the architect for approval if requested.

PART 3 - MATERIALS

A. Batt insulation shall be semi-rigid, spun glass fiber blankets enclosed on one side with strong asphalted paper vapor barrier which also forms nailing flanges. Blankets shall be nominal 16" or 24" wide as required to fit into stud, joist, and rafter spaces by longest available lengths.

1. Blankets for installation in wall space shall be nominal 6" thick, having minimum material thermal resistance (R) of 19 and shall conform to Federal Specification HH-I-521E, Type II.

2. Blankets for installation in attic spaces shall be nominal 16" thick, having minimum material thermal resistance (R) of 30 and shall conform to Federal Specification HH-I-521E, Type II.

B. Sound attenuation blankets for party walls shall comply with requirements of ASTM C665-84, Type I. Same shall be 3" “Thermofiber”, as manufactured by United States Gypsum; 3" “Thermal-Acoustical Batts”, as manufactured by Johns-Manville; 3½” “Noise Barrier Batt Insulation”, as manufactured by Owens/Corning; or an approved equal.

C. Sheet vapor retarders. Wrap the building with Tyvek® HomeWrap™ by DuPont or similar product by other manufacturers.

PART 4 - INSTALLATION

A. Batt insulation shall be installed in stud, joist and rafter spaced in strict accordance with manufacturer's installation instructions, securely fastened to framing members by nailing or stapling, with paper vapor barriers to inside face of stud. Insulation shall have full coverage in spaces involved, with tightly fitted butt joints where necessary and free from voids.

1. Install insulation to the outside of any water piping occurring in exterior walls. In these cases, no insulation shall occur between water piping and wall finish.

B. Install Vapor Retarder (DuPont Tyvek® Weatherization System/HomeWrap or approved equal) in accordance with manufacturer's recommendation.

PART 5 - OPTION FOR BLOWN INSULATION

A. At the Contractor's option, attic spaces may be insulated above ceilings by use of blown insulation in lieu of batt insulation specified above.

B. Insulation material shall be a manufacturer's standard fiberglass blowing pellets for installation by pneumatic machine, and shall conform to Federal Spec. HH-I-1030A.

C. Contractor shall have option to use plastic vapor barrier in lieu of paper backed vapor barrier. Plastic shall be stapled to and overlapped at studs, and stapled to top and bottom plates.

D. Installation:

1. Install insulation over ceilings in attic spaces to a minimum depth, certified by the insulation manufacturer, to meet minimum thermal resistance (R) of 30.

2. Provide baffles or such means as are necessary to keep chord spaces at building eaves open so as to not restrict air circulation in attic from soffit vents.

PART 6 - CONTRACTOR'S OPTION

A. At the Contractor's option, attic spaces may be insulated above the ceiling with Cellulosic Fiber loose-fill, blown dry to meet a minimum thermal resistance (R) of 30.

END OF SECTION

SECTION 07212 - BOARD INSULATION

PART 1 - GENERAL

1.01 Work Included

A. Board insulation and cavity wall construction.

1.02 Related Work

A. Section 04330 - Reinforcement Unit Masonry System

1.03 References

A. FS HH-I-524 - Insulation Board, Thermal (Polystyrene).

1.04 System Description

A. Materials of this Section shall provide a continuous thermal barrier at building exterior wall.

PART 2 - PRODUCTS

2.01 Acceptable Insulation Manufacturers

A. Styrofoam Brand

B. AMOCO

C. Foamular - R

D. Substitutions: Under provisions of Section 01600, 01630.

2.02 Insulation Materials

A. Insulation Extruded Cellular Polystyrene; thermal resistance "R" per inch of 5.0; minimum compressive strength of 30 psi water absorption by volume in accordance with ANSI/ASTM D2842 0.3 percent square.

2.03 Acceptable Adhesive Manufacturers

A. Max Bond, by H.B. Fuller Company
B. Liquid Nails, LN 601, Macco Adhesives
C. Foam Adhesive by Franklin Int.

2.04 Adhesive Materials

A. Adhesive Type recommended by insulation manufacturer for application.

PART 3 - EXECUTION

3.01 Preparation

A. Verify substrate and adjacent materials and insulation boards are dry and ready to receive insulation and adhesive.

B. Verify substrate surface is flat, free of honeycomb, fins, irregularities, materials that will impede adhesive bond.

C. Verify insulation boards are unbroken, free of damage.

3.02 Installation - Perimeter Insulation

End of Section

SECTION 07311 - RESIDENTIAL ASPHALT SHINGLE ROOFING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Granular surfaced asphalt shingle roofing
B. Moisture shedding underlayment, eave, valley and ridge protection.
C. Associated metal flashing.

1.02 REFERENCES

A. ASTM D226 - Asphalt Saturated Organic Felt Used in Roofing and Waterproofing

B. ASTM D228 - Method of Testing Asphalt Roll Roofing, Cap Sheets and Shingles.

C. ASTM D3018 - Class A Asphalt Shingles Surfaced with Mineral Granules.

D. ASTM D3462 - Asphalt Shingles made from Glass Felt and Surfaced with Mineral Granules.

E. ASTM D4586 - Asphalt Roof Cement, Asbestos-Free.

F. UL 580 - Tests for Wind Uplift Resistance of Roof Assemblies.

G. UL 780 - Tests for Fire Resistance of Roof Covering Materials.

H. Good Housekeeping Seal of approval.

1.03 SUBMITTALS

A. Shop Drawings: Indicate metal flashing, joining methods and locations, fastening methods and locations, and installation details.

B. Product Data: Provide data indicating material characteristics, and performance criteria.

C. Manufacturer's Installation Instructions: Indicate preparation required and installation procedures.

D. Manufacturer's Certificate: Certify that products meets specified requirements.

1.04 QUALITY ASSURANCE

A. Perform work in accordance with manufacturer's instructions.

B. Maintain one copy of each document on site.

1.05 REGULATORY REQUIREMENTS

A. Conform to applicable local building codes for shingle types specified.
B. UL: Class A: Fiberglass Asphalt Shingles.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle products to site.

B. Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Do not install shingles when ambient, or wind chill temperatures are below 50 degrees F.

PART 2 - PRODUCTS

2.01 MANUFACTURER - ASPHALT SHINGLES

A. The Elk Prestique, Product: 30 year shingles or equal.

2.02 ASPHALT SHINGLES

A. Asphalt Shingles: ASTM D3018, ASTM D3462, Class A with Type I - Self Sealing, UL Rating of A and Wind Resistance Label, glass fiber mat base, mineral granule surface type, self sealing type, color: Weatheredwood.

2.03 SHEET MATERIALS

A. Eave Ice Dam Protection: Celo-Guard; rubberized, self-stick asphalt sheet, 45 mil total thickness, with strippable treated quick-release paper.

B. Underlayment: ASTM D226, No. 15 unperforated asphalt saturated felts as recommended for use in roofing and waterproofing.

2.04 ACCESSORIES

A. Nails: Standard round wire shingle type, galvanized 3/8 inch to 7/16 inch diameterhead, 11 to 12 gauge barbed shank roofing nails, of sufficient length to penetrate through roof sheathing 3/4 inch into deck lumber or penetrate through the APA approved plywood roof or OSB deck by 1/8 inch minimum, 1-1/2" minimum nail length.

B. Plastic Cement: ASTM D4586: Elastigum Roof Cement; plastic asphalt type with mineral 1-1/2" fiber components, free of toxic solvents, manufactured by The Celotex Corporation.

2.05 FLASHING MATERIALS

A. Drip Edge: Corrosion resistant material, 3 inch wide roof coverage.

B. Nails: Standard round wire roofing type, galvanized or non-rusting; minimum 19/64 inch head diameter and 0.104 inch shank diameter, of sufficient length to penetrate through roof sheathing ½ inch into wood substrate.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing site conditions.

B. Verify that roof penetrations and plumbing stacks are in place and flashed to deck surface.

C. Verify roof openings are correctly framed prior to installing work of this Section.

D. Verify deck surfaces are dry, free of ridges, warps, or voids.

3.02 PREPARATION

A. Broom clean deck surfaces under eave protection and underlayment.

3.03 INSTALLATION-EAVE ICE DAM PROTECTION

A. Apply Ice Dam underlayment at eave and valley areas in accordance with manufacturer's instructions.

B. Extend Ice Dam from roof perimeters to 2 feet inside interior wall line, including rake areas. Provide 6 inch side and end laps at eave and valley locations. Stagger end laps of consecutive layers 12 inches.

3.04 INSTALLATION - PROTECTIVE UNDERLAYMENT

A. Place one layer of underlayment over deck surface, lapping ends sheet 19 inches. Lap ends minimum 4 inches. Stagger end laps of each consecutive layer. Nail in place. Lap underlayment 12 inches onto valley.

B. Weather lap and seal watertight with plastic cement, items projecting through or mounted on roof.

C. When using eave ice dam protection, start underlayment above protection, lapping underlayment 12 inches over eave ice dam protection.

3.05 INSTALLATION - VALLEY PROTECTION - CLOSED CUT VALLEY

A. Place one ply of roll roofing, minimum 36 inches wide, centered over valleys. Weather lap joints minimum 2 inches. Nail in place minimum 18 inches o.c., one inch from edges.

B. Extend shingles on one slope across valley and fasten. Trim shingles from other slope 2 inches from valley center line to achieve closed cut valley, concealing the valley protection.

3.06 INSTALLATION - ASPHALT SHINGLES

A. Install shingles in accordance with manufacturer's instructions.

B. Project first course of shingles 3/8 inches beyond facia boards.

C. Cap hips and/or ridges with individual ridge shingles, maintaining 5¼" inch weather exposure. Place to avoid exposed nails.

D. Coordinate installation of roof mounted components or work projecting through roof with weather tight placement of counter flashing.

E. complete installation to provide weather tight service.

3.07 FIELD QUALITY CONTROL

A. Field inspection will be performed by Owner and Architect.

3.08 PROTECTION OF FINISHED WORK

A. Protect finished Work.

B. Do not permit traffic over finished roof surface.

End of Section

SECTION 07400 - VINYL SIDING, SOFFITS AND TRIM

PART 1 - SCOPE

A. This Section includes all labor, materials, equipment, and related items required for vinyl soffits, and trim as shown on the Drawings and as specified.

PART 2 - SUBMITTALS

A. Manufacturer's Literature. The Contractor shall submit to the Architect, in five (5) copies, for approval prior to furnishing any materials at the job site, product literature, materials specifications, and installation instructions as required to properly evaluate each item proposed to be furnished.

B. Color Samples. The Contractor shall submit to the Architect, in duplicate, for approval and color selection prior to furnishing any materials at the job site, color samples of available colors for each item proposed to be furnished.

PART 3 - MATERIALS

A. Manufacturers. Vinyl siding, soffits and trim as manufactured by Alside.

B. Vinyl siding shall be double 4", horizontal, wood grain texture siding, made of polyvinyl chloride compound as defined in the NBS Voluntary Product Standard PS 55-72 for "Rigid poly (vinyl chloride) (PVC) plastic siding. Siding and accessories shall be as manufactured by Certainteed, Alcoa, Owens-Corning, or approved equal. Siding panels shall have a nominal thickness of .042"

1. Product Design - Vinyl double-four inch horizontal siding panels shall be 12'-6" in length and have a full eight-inch (8") exposure, two four-inch (4") panels, with interlocking horizontal edges, a one-half-inch (½") butt or shadow leg, a drip bead in the butt to direct the flow of water from the surface of the panel and triangular weep holes in the shadow leg of the bottom panel, thus allowing the wall to "breathe" and also permit condensation and water vapor to escape from the wall.

2. Elongated nailing slots 1" long shall be provided in the nail hem of the panels to permit proper expansion and contraction on the wall. The nail hem and the bottom lock of all panels shall be notched on both ends to provide for the proper overlapping of adjacent panels. A notch shall also be provided at the center butt of the double four panel for positive engagement, thus providing a quality appearance in overlap.

3. Vinyl siding shall be produced from PVC compound containing quality color pigments to provide color throughout thickness of siding.

C. Vinyl soffit panels shall be by same manufacturer as vinyl siding material, shall be standard 12" wide double V-groove or 6" wide single V-groove style, and shall be furnished in both ventilated and non-ventilated types as required for the completed installations. Color shall be white to match the existing soffits.

1. Furnish ventilating sections in sufficient quantities to provide minimum free ventilating area at overhangs equal to or exceeding 1/300 of building roof area. Provide manufacturer's technical product data confirming ventilating area and consult with the Architect as to spacing of ventilating sections prior to proceeding with the installations.

D. Trim and Accessories

1. Vinyl trim, including starter stripe, inside and outside corner posts, general purpose trim, etc. shall be by same manufacturer as vinyl siding and soffit materials, shall be minimum of .040" thick, and shall be as shown or required for the completed installations. Furnish trim in longest available lengths for single-piece applications where not exceeding manufacturer's standards.

2. Coil stock for covering exterior wood trim shall be vinyl (PVC) coated aluminum .019 gauge with a wood grain texture. Field break coil stock as necessary for smooth application.

3. Nails, fasteners, etc., shall be those specifically recommended by the siding and soffit manufacturer for applications shown.

PART 4 - INSTALLATIONS

A. General. Inspect all supporting construction, openings, etc., in connection with vinyl siding, soffits, trim, etc., and report in writing to the Architect any defects or improper conditions affecting the installations. Proceeding with installations shall be construed as acceptance of the supporting construction, and the Contractor shall be held responsible for any defects in the work of this Section resulting therefrom.

B. Install all vinyl siding and soffits, and trim, etc., furnished in connection therewith in strict accordance with manufacturer's specific installation instructions and as shown or detailed on the Drawings. Items shall be neatly cut and fitted, and securely attached. Joints where necessary shall be neatly made. Take care in the installations not to damage adjacent collateral work. Contractor shall provide under work of this Section each and every component, device, accessory, sealant, etc., necessary for the satisfactory completion of the vinyl siding and soffit work, whether or not such items are specifically mentioned hereinbefore.

C. At completion, vinyl siding, soffits, trim, etc., shall be properly installed, securely fastened, water and weather tight, and free from damage of any kind. Contractor shall replace any damaged or defective materials at no additional cost to the Owner.

End of Section

SECTION 07600 - SHEET METAL

PART 1 - SCOPE

A. This Section includes all labor, materials, equipment and related items required to complete the work of sheet metal as shown on the Drawings and as specified.

PART 2 - MATERIALS

A. Aluminum sheet for field formed flashings, edge strips, etc., shall conform to ASTM B209 alloy 5005-H14, and shall be 0.025" thick.

B. Nails, screws, bolts, rivets, and other fasteners shall be of the same material as the sheet metal to be secured, or shall be of durable, compatible materials regularly recommended for the intended use by the manufacturer of the sheet metal. Nails shall be No. 10 gauge or larger, needle point, and long enough to penetrate wood 1".

C. Bituminous plastic cement shall conform to Federal Spec. SS-C-153, Type I. It shall be delivered in manufacturer's original sealed containers.

D. Asphalt coating for sheet metal items where specified shall conform to Federal Spec. SS-R-451.

PART 3 - GENERAL REQUIREMENTS

A. Surfaces to be covered with sheet metal shall be smooth and free from holes. Surfaces shall be cleaned of dirt, rubbish, and other foreign materials before sheet metal work is started. Projecting nails shall be driven flush with the roof sheathing.

B. Joints and seams shall be avoided as much as possible. Overlap seams in direction of flow of water. Make ample provisions for expansion.

C. Sheet metal work shall be water and weather tight with lines, arises, and angles sharp and true and plane surfaces free from waves and buckles.

D. Protection of Aluminum. Aluminum that will be in contact with wet or pressure-treated wood, mortar, concrete, or masonry shall be protected against corrosive action as follows: Contact surface of aluminum shall be solvent cleaned, given one coat of zinc-chromate primer and one coat of paint as specified under Section 09900 for painting of aluminum items.

E. Joints and Seams. In general, sheet metal items shall be furnished in minimum 10' lengths, except that single pieces less than 10' long may be used at ends of runs. Joints and seams in sheet metal shall be as described under individual item specifications below. Aluminum will <u>not</u> be soldered.

PART 4 - SHEET METAL ITEMS

A. Miscellaneous Flashings. Provide miscellaneous sheet metal flashings where indicated by the details or as required for proper completion of the work. Form such items from aluminum sheet to profiles and dimensions shown, and install as detailed.

1. Coil stock for covering exterior wood trim shall be vinyl (PVC) coated aluminum with a wood grain texture. Field break coil stock as necessary for smooth application.

2. Colors of vinyl trim shall be white.

3. Nails, fasteners, etc., shall be those specifically recommended by the siding and soffitt manufacturer for application shown.

PART 5 - ROOF VENTS

A. Ridge Vents: When indicated on the Drawings, furnish and install at building roofs manufacturer's standard, continuous, ridge-type with minimum high impact copolymer vent such as shingle vent II Series SHFV203 as manufactured by Air Vent, Inc., Perioa, Illinois or reviewed equal with minimum net free area of 18 sq. inches per linear foot, and shall include end and connector plugs, weather baffles, joint covers, and aluminum screw shank nails as required by the installations or reviewed equal.

B. Slant Vents: Furnish and install where shown on drawings, manufacturer's standard slant vent such as RV-61, net free area, 61 square inches, heavy-duty polypropylene construction with aluminum screen, nominal 19-1/2" x 16-1/4" size by the solar group, Taylorsville, Mississippi or reviewed equal.

End of Section

SECTION 07631 - GUTTERS AND DOWNSPOUTS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Prefabricated aluminum eave gutters and downspouts, with baked enamel finish, complete with required connecting pieces, roof aprons, end caps, anchorages, etc. as required for a complete installation.

B. Precast concrete splash pads.

1.02 REFERENCES

A. ASTM B209 - Aluminum Alloy Sheet and Plate

1.03 SUBMITTALS

A. Submit shop drawings of gutters and downspouts.

B. Clearly indicate general construction, configurations, jointing methods and locations, fastening methods and locations and installation details.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Alcoa

B. Reynolds Metals

C. Kaiser

D. Substitutions: Reviewed equal.

2.02 MATERIALS

A. Gutters shall be made of 3005-H25 Aluminum Sheet.

B. Gutter shall be 6" .032" nominal with 3" x 4" downspouts .027".

C. Expansion joint to be aluminum, lined with neoprene.

D. Downspout Clip .014"

E. Gutter hangers shall be strap hangers.

F. All Accessories used shall be by the same manufacturer.

2.03 FABRICATION

A. Form gutters and downspouts of profiles and sizes indicated on Drawings and as required to properly collect and remove water. Fabricate complete with required connection pieces.

B. Form sections square, true and accurate in size, in maximum possible lengths and free of distortions and defects detrimental to appearance or performance. Hem exposed edges. Allow for expansion at joints.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Before starting work, verify governing dimensions at building; examine, clean and repair, if necessary, any adjoining work on which this work is in any way dependent for its proper installation.

B. Upon completion, the contractor shall clean all aluminum work.

C. Dissimilar materials

1. Care must be exercised in placing aluminum in contact with metals or materials not compatible with aluminum.

2. Dissimilar materials shall be painted or otherwise protected when they are in contact with aluminum or when drainage from them passes over aluminum.

PART 4 - RIDGE VENT

A. When indicated on the Drawings, furnish and install at building roofs manufacturer's standard, continuous, ridge-type with minimum high impact copolymer vent such as shingle vent II Series SHFV203 as manufactured by Air Vent, Inc., Peroia, Illinois or reviewed equal with minimum net free area of 18 sq. inches per linear foot, and shall include end and connector plugs, weather baffles, joint covers, and aluminum screw shank nails as required by the installations or reviewed equal.

B. Installation shall be in accordance with manufacturer's printed instructions.

C. Colors to match roof.

D. Slant Vents

E. Furnish and install where shown on drawings, manufacturer's standard slant vent such as RV-61, net free area, 61 square inches, heavy-duty polypropylene construction with aluminum screen, nominal 19½"x16¼" size by the solar group, Taylorsville, Mississippi or reviewed equal.

F. Color to match roof.

End of Section

SECTION 07900 – JOINT SEALANTS

PART 1 - SCOPE

A. This Section includes all labor, materials, equipment, and related items required for the work of caulking as shown on the Drawings and as specified herein. Work under this Section includes but is not necessarily restricted to the following:

1. Caulking of exterior or interior expansion or control joints in concrete or masonry.

2. Other joints, exterior or interior, in the building construction shown, specified, or required to be caulked.

B. This Section does not include the following related items:

1. Forming of caulking and sealing spaces

2. Caulking shown or specified as part of mechanical installations.

PART 2 - SUBMITTAL

A. Contractor shall submit to the Architect, in duplicate, for approval the following items prior to furnishing any materials at the job site.

1. Sample cards of all exposed caulking and sealant for color approval. Unless otherwise directed, apply samples in minimum 3" runs on cards.

2. One lineal foot of each type of backer material proposed.

PART 3 - PRODUCT HANDLING

A. Deliver caulking, and related accessories to the job site in factory sealed, unopened containers bearing manufacturer's name and product designation.

B. Store materials in unopened containers, following manufacturer's recommendations for storage temperature and shelf life.

C. Follow manufacturer's recommendation for handling products containing toxic substances. Keep flammable materials away from heat, sparks, and open flames. Use recommended solvents and cleaning agents for cleaning tools and equipment.

PART 4 - ENVIRONMENTAL CONDITIONS

A. Schedule caulking operations so that working joints are most likely to be normal size. Apply materials within manufacturer's recommended surface and ambient temperature range.

PART 5 - PROTECTION

A. Use masking tape where practicable to control lap of materials onto adjacent surfaces or to facilitate tooling. Remove tape immediately after caulking operation.

PART 6 - MATERIALS

A. General. All caulking, primers, and accessories shall be non-staining to adjacent exposed materials. Products having similar application and usage shall be of the same manufacturer and type. Unless otherwise specified, colors shall be selected from approved manufacturer's standard color sections. Use gun consistency compounds unless otherwise required by job conditions.

B. Exterior caulking shall be a one or two-component polysulfide base, elastic, synthetic rubber compound, conforming to Federal Spec. TT-S-00230, and shall be "Sonolastic" as manufactured by the Sonneborn Building Products, Inc., "Synthacalk" as manufactured by the Pecora Chemical Corp., or "Rubber Calk 500" as manufactured by the Products Research & Chemical Corp or an approved equal.

1. Colors shall be from manufacturer's standards as selected by the Architect.

C. Interior caulking for general use shall be a one-component acrylic latex compound, and shall be "Sonolac" as manufactured by the Sonneborn Building Products, Inc. "AC-20" as manufactured by the Pecora Chemical Corp., or "Latex Caulk" as manufactured by DAP, Inc.

D. Caulking for joint between tub/shower unit perimeter and abutting drywall shall be manufacturer’s standard, white, silicone rubber, one-part bathtub caulk, and shall conform to Federal Specifications TT-S-001543A, Class A.

E. Primers shall be as manufactured and recommended for each substrate by the manufacturer of each caulking compound used in the work.

F. Backer materials shall be as recommended for and compatible with each caulking used, and shall be as follows unless otherwise required to meet specific job conditions.

1. Backer rod for use in all joints requiring backer for caulking shall be a soft, closed cell polyethylene foam meeting requirements of AASHO Specifications M153-54, Type I and III, and shall be as manufactured by the Dow Corning Corp., Sonneborn Building Products, Inc., or Williams Products, Inc.

G. Release material, where required, shall be polyethylene film.

PART 7 - MIXING

A. Job mix multi-component sealants with suitable power operated equipment, following specific directions of sealant manufacturer.

B. Base and accelerator components of multi-part sealants shall have batch control numbers clearly indicated on containers. Control numbers for mixed components shall be identical.

PART 8 - CONDITION OF SURFACES

A. Inspect all surfaces to receive caulking materials, and report all defects. Starting work implies acceptance of surfaces as satisfactory. Verify that joints and spaces to be caulked are of proper width.

B. Concrete surfaces shall be thoroughly cured.

C. Apply no caulking materials in contact with surfaces contaminated with oil, grease, bituminous materials, form release agents, bond breakers, deleterious curing compounds, water repellents, and other special surface treatments. Aluminum surfaces shall be free of lacquer. Costs incurred by removal of such contaminants shall be borne by the trades responsible for their presence.

PART 9 - PREPARATION

A. Thoroughly clean all joints, removing all foreign matter such as dirt, dust, moisture, frost, rust, paint, lacquer, and protective coatings. Blow all joints free of loose particles.

B. Use no cleaning solvents which leave residue. Wipe joints free of solvent using clean, dry white cloths or white lintless paper. Do not permit solvent to air dry.

C. Follow manufacturer's directions for products and surfaces.

PART 10 - INSTALLATION

A. Unless otherwise required by these specifications, install materials in strict accordance with manufacturer's specifications and recommendations, using approved equipment.

B. Usage of various materials shall be as specified under Article 6 above.

C. Prime surfaces as recommended by the manufacturer's immediately prior to caulking or sealing. Make preliminary tests to ensure that primers will not stain exposed materials or deteriorate backer materials.

D. Unless otherwise required by caulking manufacturer's specifications and recommendations, use backer material to control caulking and sealant depth as follows (depths measured at bond face).

1. Polysulfide and Polyurethane Sealants. For joints up to 1/2" wide and less, make depth equal to width but not less than 1/4". Joints over 1/2" wide shall be 3/8" deep.

2. Acrylic Sealant. For joints 1/2" wide and less, make depth equal to width but not less than 1/4". Joints over 1/2" wide shall be 3/8" deep.

3. Do not twist or stretch preformed backer materials during installation.

E. At joints subject to movement, where required by nature of backer material used or where sealant contacts back of joint, use release material between backer material or back or joint and sealer to confine adhesion to surfaces of materials being joined. Follow manufacturer's recommendation exactly.

F. Neatly tool joints to slightly concave surface using tooling agent recommended by sealant manufacturers. Repair any air pockets exposed by tooling. Tool so as to compress material and improve adhesion to surfaces joined.

PART 11 - PATCHING

A. Patch or replace defective or damaged sealants as directed by the Architect. Be responsible for damage to adjacent surfaces caused by caulking and sealing operations.

PART 12 - CLEANING

A. Clean adjacent surfaces soiled by caulking and sealing operations. Remove wet material before it "sets". Follow manufacturer's recommendations for cleaning procedures. Cleaning agents shall not stain or be injurious to exposed surfaces nor shall they be potentially dangerous to glass and metal surfaces due to wash-off by rain.

END OF SECTION

SECTION 08100 - METAL DOORS AND FRAMES

PART 1 - RELATED DOCUMENTS

A. General provisions of Contract, General and Special Conditions, and General Requirements apply to this Section.

PART 2 - DESCRIPTION OF WORK

A. Provide labor, materials, equipment, and services necessary for proper and complete installation of all hollow metal work.

B. Include all view windows and side lights indicated on Drawings.

C. Work Specified in Other Sections.

1. Finish Hardware is specified in another Division 8 Section.

PART 3 - LABEL CONSTRUCTION

Where Label Construction is indicated in Door and Frame Schedule, materials and construction of doors and frames shall be in accordance with and bear indicated resistive rating label of Underwriters' Laboratories, Inc.

PART 4 - SUBMITTALS

Submit Shop Drawings for all work, indicating materials, uses, gauges, details of construction, connections to other work, fastenings, and anchors, to Architect for his review. Do not start fabrication until these Drawings are approved.

PART 5 - MATERIALS

A. Manufacturers offering products complying with requirements include:

Steelcraft Mfg. Co.
Republic Steel Corporation

B. Materials used shall be of best quality of their respective kinds.

C. Steel in general shall be cold rolled stretcher level, prime quality steel, of U.S. Standard gauge as specified under the various headings.

D. Doors, frames and framed openings exposed to the exterior shall be fabricated of zinc coated steel in the gauges scheduled. The steel shall be hot dipped so as to provide a ductile coating, tightly adherent to the base steel. The zinc coating shall be an A60 coating in accordance with ASTM specification A525 (.6 oz. of zinc per sq. ft. of steel total coverage.)

PART 6 - HOLLOW METAL STEEL DOORS

A. Physical Properties:

Interior Doors
"R" Factor: 2.4
"U" Factor: .41
Compression Strength: 5000 P.S.F.

Exterior Doors
Polyurethane Core Doors
“R” Factor: 11.1
“U” Factor: .09
Compression Strength: 3600 P.S.F.

B. Doors shall be equal to those manufactured by The Steelcraft Manufacturing Company, Cincinnati, Ohio, and designated as:

LF-18 (1-3/4", 18 gage steel)

C. Doors shall be fabricated of:

1. Cold rolled steel, interior.
   Galvanized steel with a zinc coating of .6 ozs. per square foot total, exterior.

D. Door shall be flush with edge seams filled and ground smooth.

E. Doors shall have 1/8" bevel in 2" on hinge and ground smooth.

F. Doors shall have vertical mechanical interlocking seams on hinge and lock edges.

G. Doors shall be provided with top and bottom inverted 14 gage steel channels spot welded within the door.

H. Doors shall be reinforced, stiffened and sound deadened with impregnated Kraft honeycomb core completely filling the inside of the door and laminated to the inside faces of panels.

I. Doors shall be mortised and adequately reinforced for all hardware.

1. Mortised hardware reinforcements shall be drilled and tapped at the factory.

2. Surface applied hardware shall be field drilled by others.

J. Doors shall be reinforced internally with a 14 gage steel reinforcement for surface closers when specified.

K. Out swinging exterior doors shall be provided with top caps for protection against weather and with a polyurethane core.

L. Doors shall be phosphatized and receive one coat of baked on prime paint.

PART 7 - FRAMES

A. Fabricate frames of 16 ga. steel. Manufacturers offering products complying with the requirements include:

Steelcraft Mfg. Co.
Republic Steel Corp.
Fenestra, Inc.

B. All frames shall have welded and mitered corners, equivalent to Steelcraft Type F-14 and F-16. (Issue A).

C. Provide three single resilient rubber silencers on strike side of frame.

D. Provide suitable anchors for jambs as required by wall construction. Provide a minimum of six (6) jamb anchors and two (2) base anchors per frame. Provide anchors as required for labeled frames.

E. Reinforcing channels, where called for, shall be 12 gauge reinforcing channel in head.

PART 8 - PROVISIONS FOR GLAZING

A. Outside of interior openings for secure areas shall be removable screw-on type. Glazing stops shall be steel and secured in place with Phillip oval head countersunk screws at 12" on center. Glazing stops shall be set on inside of exterior openings and security side of interior openings. Glass requirements are specified in other Division 8 sections.

PART 9 - HARDWARE REINFORCEMENTS

A. Accurately mortise, reinforce, drill, and tap at factory all work to receive hardware, except do drilling and tapping for door checks and brackets at building.

B. Reinforcements shall be of ample size and thickness to stiffen work against strain of service required. Reinforcements for locks and escutcheons shall be box type with spring lead contacts for lock cases.

C. Provide cover boxes in back of all hardware cutouts in combination type frames.

PART 10 - FINISH

A. All steel hollow metal work shall be phosphatized and receive one coat baked on prime coat.

B. Each coat shall be baked on and sanded smooth.

PART 11 - INSTALLATION

A. Set frames in their proper locations, plumb and true and securely braced in position.

B. Receive, store and protect and be responsible for all doors to be installed hereunder. Report immediately to Contractor shortages, damage, improper preparation, defective finishes and warped doors. Do not install any material not perfect in every respect.

C. Inspect openings and frames to receive doors. Report damage or discrepancy affecting proper installation of units to Contractor, and have corrective work done in a suitable and satisfactory manner.

D. Install doors in openings as indicated on Drawings in conformance with shop drawings and hardware schedule. Install doors so they hang plumb and true, with proper clearances using items of hardware scheduled for openings.

E. Accurately set all frames and thoroughly and rigidly anchor and fasten in place in building construction. Weld drywall anchors to frames.

F. Check frames before and after walls are constructed to see that they are properly erected.

End of Section

SECTION 08211 - INTERIOR WOOD DOORS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including the General and supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. All interior wood doors are hollow core panel 13/8" pre-hung with trim. See door schedule.

1.03 QUALITY ASSURANCE

A. Quality Standard: Comply with the following standard:

1. AWI Quality Standard: "Architectural Woodwork Quality Standards: of the Architectural Woodwork Institute for grade of door, core, construction, finish, and other requirements.

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 (250 deg C) maximum in 30 minutes of fire exposure.

C. Single-Source Responsibility: Obtain doors from one source and by a single manufacturer.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Protect doors during transit, storage, and handling to prevent damage, soiling, and deterioration. Comply with requirements of referenced standard and manufacturer's instructions.

B. Identify each door with individual opening numbers as designated on shop drawings, using temporary, removable, or concealed markings.

1.05 PROJECT CONDITIONS

A. Conditioning: Do not deliver or install doors until conditions for temperature and relative humidity have been stabilized and will be maintained in storage and installation areas during the remainder of the construction period to comply with the following requirements applicable to Project's geographical location:

1. AWI quality standard Section 100-S-11 "Relative Humidity and Moisture Content."

1.06 WARRANTY

A. General Warranty: Door manufacturer's warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. Door Manufacturer's Warranty: Submit written agreement on door manufacturer's standard form signed by manufacturer, Installer, and Contractor, agreeing to repair or replace defective doors that have warped (bow, cup, or twist) more than 1/4 inch (6.35 mm) in a 42-by-84-inch (1067-by-2134-mm) section or that show telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch (0.25 mm in a 75-mm) span, or do not conform to tolerance limitations of referenced quality standards.

1. Warranty shall be in effect during the following period of time after date of Substantial Completion.
   a. Solid Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide doors by one of the following:

1. Solid Core Doors:
   a. Algoma Hardwoods, Inc.
   b. Eggers Industries, Architectural Door Division
   c. Fenestra Corporation
   d. Graham Manufacturing Corp.
   e. Mohawk Flush Doors, Inc.
   f. V-T Industries, Inc.
   g. Weyerhauser Co.

2.02 INTERIOR FLUSH WOOD DOORS

A. Solid Core Doors for Transparent Finish: Comply with the following requirements:

1. Faces: See Finish Schedule
2. Grade: Premium
3. Construction: 5 or 7 plies
4. Core: Particleboard core
5. Bonding: Stiles and rails bonded to core, then entire unit abrasive planed before veneering.

B. Fire-Rated Solid Core Doors: Comply with the following requirements:

1. Faces and Grade: Provide faces and grade to match non-fire-rated doors in same area of building, unless otherwise indicated.

2. Construction: Manufacturer's standard core construction as required to provide fire-resistance rating indicated.

3. Blocking: Provide composite blocking designed to maintain fire resistance of door but with improved screw-holding capability of same thickness as core and with minimum dimensions as follows:
   a. 5-inch (125-mm) top rail blocking
   b. 5-inch (125-mm) bottom rail blocking
   c. 5-by-18-inch (125-by-450-mm) lock blocks
   d. 5-inch (125-mm) midrail blocking.

4. Edge Construction: Provide manufacturer's standard laminated-edge construction for improved screw-holding capability and split resistance as compared to edges composed of a single layer of treated lumber.

5. Pairs: Provide fire-rated pairs with fire-retardant stiles that are labeled and listed for kinds of applications indicated without formed-steel edges and astragals.

2.03 LIGHT FRAMES

A. Wood-Veneered Beads for Light Openings in Fire Doors.

2.04 FABRICATION

A. Fabricate flush wood doors to comply with following requirements:

1. In sizes indicated for job-site fitting:

a. Comply with clearance requirements of referenced quality standard for fitting. Comply with requirements of NFPA 80 for fire-resistance-rated doors.

b. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before proceeding with factory machining.

c. Metal Astragals: Pre-matching astragals and formed-steel edges for hardware for pairs of fire-rated doors.

B. Openings: Cut and trim openings through doors to comply with applicable requirements of referenced standards for kind(s) of door(s) required.

1. Light Openings: Trim openings with moldings of material and profile indicated.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine installed door frames prior to hanging door:

1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads.
2. Reject doors with defects.

B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Hardware: For installation see Division 8 Section "Finish Hardware."

B. 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.

C. 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.

D. Field-Finished Doors: Refer to Division 9, Section 09900 - Painting, for finishing requirements.

3.03 ADJUSTING AND PROTECTION

A. Operation: Rehang or replace doors damaged during installation.

B. Finished Doors: Refinish or replace doors damaged during installation.

C. Protect doors as recommended by door manufacturer to ensure that wood doors will be without damage or deterioration at the time of Substantial Completion.

End of Section

SECTION 08361 - SECTIONAL INSULATED OVERHEAD DOORS

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 work of this section.

1.02 Description of Work

A. Extent of sectional insulated overhead doors are shown on drawings.

1. Furnish and install motor operated sectional steel insulated overhead doors.

1.03 Quality Assurance

A. Provide each sectional insulated overhead door as a complete unit produced by one manufacturer, sections, brackets, guides, tracks, counterbalance mechanisms, hardware, weatherstripping and installation accessories, to suit openings and head room allowable.

B. Provide setting drawings, templates, and directions for installation of anchorage devices. Coordinate delivery with other work to avoid delay.

C. Wind Loading: Design and reinforce sectional overhead doors to withstand a 30 lb. per sq. ft. wind loading pressure.

1.04 Submittals

A. Product Data: Submit manufacturer's product data, roughing-in diagrams, and installation instructions for each type and size of overhead door. Include manufacturer's operating instructions and maintenance data.

B. Shop Drawings: Submit shop drawings for special components and installations which are not fully dimensioned or detailed in manufacturer's data.

PART 2 - PRODUCTS

2.01 Acceptable Manufacturers

A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:

1. Overhead Door Corporation.
2. Ideal Door Company.
3. Equivalent as approved.

B. Standard of quality for electrically operated sectional steel overhead door shall be 591 Series, commercial thermacore insulated steel sectional door as manufactured by Overhead Door Company, or equal.

2.02 Steel Section Doors

A. Weather Seals: Rubber tube seals shall be fitted inside every joint between sections to prevent air infiltration. Top section of door shall have EPDM rubber sealing strip. Provide standard jamb seals. Provide EPDM double bottom sealing weatherstrip.

B. Insulating Value of Door: R 14.86.

C. Finish: Exterior and interior of door sections shall receive shopbaked on primer ready for job finish paint in color as selected by Architect.

D. Door sizes shall be as indicated on the drawings.

2.03 Tracks. Supports and Accessories

A. Tracks: Provide manufacturer's standard galvanized steel tracks for door indicated. Size tracks for door size and weight, and designed for clearances shown. Provide complete track assembly including brackets, bracing and reinforcing required for rigid support. Slope tracks at proper angle from vertical, or otherwise design to ensure tight closure at jambs when door unit is closed. Bolt to track supports.

B. Provide low clearance track and support assembly.

2.04 Hardware

A. Provide standard, rust-resistant hardware, with galvanized or cadmium-plated or stainless steel fasteners, to suit type of door.

B. Hinges: Provide standard galvanized steel hinges per manufacturer's recommendations for size of door. Attach hinges to door sections.

C. Rollers: Provide standard galvanized rollers, with steel ball bearings in case-hardened steel races, mounted with varying projections to suit slope of track.

D. Provide electric operation Overhead Door Model RSX ½HP 208V Single Phase.
   1. All overhead doors: pushbutton control stations should be located on interior side.

2.05 Counterbalancing Mechanisms

A. Torsion Spring: Hang door assembly for operation by torsion spring counterbalance mechanism, consisting of adjustable tension tempered steel torsion springs mounted on a case-hardened steel solid shaft, and connected to door with galvanized aircraft type lift cable.

PART 3 - EXECUTION

3.01 Installation

A. Door shall be installed by manufacturers authorized dealer. Install door rack, and operating equipment complete with necessary hardware anchors, inserts, hangers, and equipment supports in accordance with final shop drawings, and manufacturer's instructions, and as herein specified.

B. Provide bracing, and reinforcing as required for rigid installation of track and door operating equipment.

C. Upon completion of installation, including work by other trades, lubricate test and adjust door to operate easily, free from warp, twist, or distortion and fitting weathertight for entire perimeter.

END OF SECTION

SECTION 08415 - VINYL WINDOWS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division - 1 specification sections, apply to Work of this Section.

1.02 DESCRIPTION OF WORK

A. All exterior windows are vinyl framed; see Architectural plan sheets.

END OF SECTION

SECTION 08710

PART 1 – GENERAL

1.01 Related Documents

Drawings and general provisions of contract and Division 1 specification sections, apply to work of this section

1.02 SUMMARY

Work under this heading includes furnishing all hardware to respective trades. The hardware supplier shall promptly furnish templates to all manufacturers furnishing materials necessary for completion of this part.

Extent of finish hardware is indicated on drawing and inschedules.

The following specifications are a guide and a description of the quality materials required. No material of quality or weight less than outlined in this specification will be accepted. The contractor will be responsible for supplying the correct quantity of all materials, whether or not specifically mentioned in this specification. Any additional items that may be required shall be furnished and be of type, quality, and utility consistent with other hardware specified.

1.03 SUBMITTALS

ARCHITECT'S HARDWARE SCHEDULE:

Architect's hardware schedule is by hardware set number. Refer to drawings for designation of hardware set number applicable to each opening. Certain additional items of hardware and/or hardware accessories specified herein shall be finished and noted on the hardware schedule.

SUPPLIER'S HARDWARE SCHEDULE

A complete hardware schedule, indicating type, number, location, and finish shall be submitted to architect for approval, together with such samples as may be required for review. Opening numbers shall be same as used in contract documents. Schedule shall be prepared according to Door and Hardware Institute recommendations (schedule and sequence format) and shall include degree of door closer installation.
Supplier's hardware schedule will be reviewed by architect for type, quality, finish, and for function (other than hand). Contractor shall be responsible for checking schedule for correct hand of locksets and for supplying quantity of items required by contract documents.

Provide supplementary or revised hardware schedules if deemed necessary by architect.
Do not ship or deliver hardware to job prior to review of hardware schedules by architect.

Hardware schedule shall be submitted in the following format. Hardware schedules submitted to architect for review not in this format will be rejected:

HARDWARE SET 1

1 Sgl Door #001 Exterior from Corridor RHR 90 deg
Each leaf 3'0 x 7'0 x HMF x NLWD

Item, quantity, manufacturer's #, size, product type, finish, and product information

3 ea	Hinge	BB1191	NRP 4.5 x 4.5			26D	HA
1 ea	Cylinder	951	GGMK			26D	FA
1 ea	Exit Device	25R-L	Dane	3070 RHR	WD	32D	FA

Etc.

1.04 QUALITY ASSURANCE

All hardware shall be furnished by an established Builders Hardware firm who maintains and operates an office, display, and stock in this area, and who is a regular authorized distributor of the lock they propose to furnish. All hardware schedules submitted for approval shall carry the signature and seal of a certified Architectural Hardware Consultant.

1.05 PROJECT CONDITIONS

Delivery storage and handling: Hardware supplier shall receive and check all hardware at his warehouse. Drop shipments to the jobsite from various manufacturers will not be permitted. All hardware shall be in its original packaging and plainly labeled and numbered to agree with the numbers and as listed in the hardware schedule. The contractor shall submit his schedules for approval to the architect before proceeding with any work. When required, hardware supplier shall deliver hardware and/or hardware templates to the various door manufacturers. The general contractor shall provide storage facilities for the finish hardware after delivery to the job site.

1.06 ITEMS NOT INCLUDED

Hardware for metal windows, toilet partitions, cabinets, access panels, etc. is not included in this section. See other sections for hardware to be furnished by others.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

Numbers given in this schedule are of the following manufacturers.

PRODUCTS	MFG. SPECIFIED	APPROVED EQUAL
Ball Bearing Hinge	Ives	Hager, Bommer
Locks	Falcon	Schlage, Best
Exit Devices	Falcon	Von Duprin, Precision
Closers	Falcon	LCN, Sargent
Trim/Auxiliary	Ives	Hager, Rockwood
Weather Strip	NGP	Hager, Pemko

2.02 HARDWARE FINISHES

US 10B	(613)	Hinges, Locks, Trim
US 10B	(613)	Push/Pulls, Exit Devices, Stops
Sprayed Bronze	(695)	Door Closers
Aluminum		Thresholds

2.03 HINGES

Ball Bearing Hinges shall be five-knuckle construction. Hinges for exterior doors shall be stainless steel with non-removable pins, in the finish specified. Oil impregnated bearings are not an acceptable substitute for ball bearings. All hinges shall be 4 ½" x 4 ½", unless otherwise specified.

2.04 LOCKSETS

Furnish locksets and cylinders by same manufacturer. All lever locks shall be mortise or bored type as indicated. Lock bodies and lock trim shall be by the same manufacturer. Backset on all lever locks and deadlocks shall be 2 ¾" or 2 3/8" as required. All deadlocks shall have 1" throw bolts and be equipped with armor fronts. Trim for locksets shall be as indicated in the hardware sets. Locksets shall be ANSI/BHMA A156.1 series 4000 Grade 2 Cylindrical Lock as scheduled.

2.05 CLOSERS

Door closers shall be full rack and pinion type. Closers shall be surface mounted. Equip closers with (2) two key operated regulating valves for individual control of both closing and latching speeds. Regulating valves shall be accessible from top of closer only and shall be completely unobtrusive. Closer shall have minimum of 15% door closing power adjustment and adjustable back check. Enclose closer in a cover of plastic. Closers on all exterior out-swinging doors and others as scheduled shall be parallel arm installation. Closer bodies and/or closer feet to be mounted on surface of door shall be supplied with sex bolts.

2.06 PUSH AND PULL UNITS

Push plates and pulls shall be solid stainless steel with a satin finish. Minimum thickness is .050; size and design are indicated in Hardware Sets.

2.07 PROTECTIVE PLATES

Kick, Armor, and Mop plates shall be height listed in schedule and width of 2” less than door width, or 1” less then door width of each leaf on pairs of doors. Plates shall be .050 stainless steel unless otherwise indicated.

2.08 THRESHOLDS

Provide (aluminum) thresholds where scheduled, with machine screws and lead expansion shields.

2.09 DOOR STOP

Provide door stops wherever necessary to prevent door or hardware from striking and adjacent partition or obstruction. Provide wall type whenever possible. All door stops and holders mounted on concrete floor or masonry walls shall have machine screws and lead expansion shields.

2.10 SILENCERS

Provide GJ-64 silencers for all hollow metal frames. Single doors shall have three (3) silencers. Double doors shall have two (2) silencers.

2.11 KEYING

Key locks to owner's specification. Obtain owners approval and signature on final approved keying. Perform all keying at lock factory, and register key data there. Deliver all master keys to Owner. No master keys shall be delivered to any other person.

PART 3 – EXECUTION

3.01 APPLICATION

INSTALLATION: Work shall be done by a craftsman skilled and experienced in installation of finish hardware. Mortised items shall be neatly set in and made flush with door or frame surface. Manufacturer's instructions and recommendations shall be strictly followed.

FASTENERS: Hinges, pivots, locks, and exit devices shall be installed with proper sex bolts, wood or machine screws as supplied by the manufacturer. Surface closers shall be mounted to door with sex bolts. Door pulls shall be installed on doors with thru-bolts as supplied by manufacturer.

3.02 HARDWARE SETS

Hardware Set 1 Tag # 01, 02, 03

Hinges	5BB1 NRP 4 ½ x 4 ½
Rim Cylinder	C953 G
Mortise Cylinder	C987 G
Rim Exit	25R-NL-OP
Closer	SC61
Saddle Threshold	425E-V
Door Sweep	96-V
Weather Strip	2525B

Hardware Set 1.1 Tag # 04

Hinges	5BB1 NRP 4 ½ x 4 ½	630
Dead Lock	D241 G	
Entry Lockset	T511 GD Dane	
Hold Open Closer	4040XP H Cush	
Closer	SC61	
Saddle Threshold	425E-V	
Door Sweep	96-V	
Weather Strip	2525B	

Hardware Set 2 Tag # 05, 08, 09, 17

Hinge	by Door Supplier	
Office Lock	W511 GD	SRD
Wall Stop	WS407	CVX

Hardware Set 2.1 Tag # 14

Hinge	by Door Supplier	
Office Lock	W511 GD	SRD
Closer	SC61	R w/PA
Wall Stop	WS407	CVX

Hardware Set 3 Tag # 06, 07

Hinge	by Door Supplier	
Storeroom Lock	W581 GD	SRD
Overhead Stop	450S	

Hardware Set 3.1 Tag # 12

Hinge	by Door Supplier	
Storeroom Lock	W581 GD	SRD
Closer	SC61	DS

Hardware Set 3.2 Tag # 13

Hinge	by Door Supplier	
Storeroom Lock	W581 GD	SRD
Closer	SC61	R w/PA
Wall Stop	WS407	CVX

Hardware Set 4 Tag # 15, 16

Hinge	by Door Supplier	
Push Plate	8200	4” x 16”
Pull Plate	8305-0	10” CTC
Closer	SC61	R w/PA
Kick Plate	8400	8” x 2” LTDW
Mop Plate	8400	4” x 1” LTDW
Wall Stop	WS407	CVX

Hardware Set 5 Tag # 10, 11, 19

All hardware by Door Supplier

End of Sets

SECTION 08800 - GLASS AND GLAZING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division - 1 Specification sections, apply to Work of this Section.

1.02 DESCRIPTION OF WORK

A. Definition: "Glass" includes both primary and fabricated glass products as described in FGMA"Glazing Manual". "Glazing" includes glass installation and materials used to install glass.

B. Extent of glass and glazing work is indicated on drawings and schedules.

C. Types of work in this section include glass and glazing for:

1. Aluminum Windows.
2. Hollow metal doors and frames.
3. Storefront framing system including doors.

D. Comply with provisions of Section 01028 - Modification Requirements.

1.03 SYSTEM PERFORMANCES

A. Provide glass and glazing that has been produced, fabricated and installed to withstand normal temperature changes, wind loading, impact loading(where applicable), without failure including loss or breakage of glass, failure of sealants or gaskets to remain water-tight and airtight, deterioration of glass and glazing materials, and other defects in the work.

1.04 QUALITY ASSURANCE

A. Glazing Standards: Comply with recommendations of Flat Glass Marketing Association (FGMA) "Glazing Manual" and "Sealant Manual" except where more stringent requirements are indicated. Refer to those publications for definitions of glass and glazing terms not otherwise defined in this section or other referenced standards.

B. Safety Glazing Standard: Where safety glass is indicated provide type of products indicated which comply with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for category 11 materials.

C. Fire-Resistance-Rated Wire Glass: Provide wire glass products that are identical to those tested per ASTM E 163 (UL 9) and are labeled and listed by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.

D. Single Source Responsibility: Provide materials obtained from one source for each type of glass and glazing product indicated.

1.05 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each glazing material and fabricated glass product required, including installation and maintenance instructions.

B. Samples: Submit, for verification purposes, 12" square sample of insulated glass.

C. Certificate: Submit certificates from respective manufacturers attesting that glass and glazing materials furnished for project comply with requirements.

1.06 DELIVERY. STORAGE AND HANDLING

A. Protect glass and glazing materials during delivery, storage and handling to comply with manufacturer's directions and as required to prevent edge damage to glass, and damage to glass and glazing materials from effects of moisture including condensation, of temperature changes, of direct exposure to sun, and from other causes.

B. Comply with pertinent provisions of Section 01620.

1.07 PROJECT CONDITIONS

A. Environmental Conditions: Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing material manufacturer or when joint substrates are wet due to rain, frost, condensation or other causes. Install glazing only when temperatures are in middle third of manufacturer's recommended installation temperature range.

1. Install liquid sealants at ambient and substrate temperatures above 40˚F.

1.08 SPECIFIED PRODUCT WARRANTY

A. Manufacturer's Warranty on Insulating Glass: Provide written warranty signed by manufacturer of laminated glass agreeing to furnish f.o.b. point of manufacture, freight allowed project site, within specified warranty period indicated below, insulating glass units which develop manufacturing defects. Manufacturing defects are defined as failure of hermetic seal of air space (beyond that due to glass breakage) as evidenced by intrusion of dirt or moisture, internal condensation or fogging at temperature above -20°F (29°C), deterioration of protected internal glass coatings, if any, and other visual indications of seal failure or performance; provided the manufacturer's instructions for handling, installation, protecting and maintaining units have been complied with during the warranty period.

1. Warranty Period: Manufacturer's standard but not less than 10 years after date of substantial completion.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:

1. Manufacturers of Float Glass:
   a. Pilkington.
   b. AFG Industries, Inc.
   c. Ford Motor Co., Glass Div.
   d. Guardian Industries Corp.
   e. Libbey-Owens-Ford Co.
   f. PPG Industries, Inc.

2. Manufacturers of Wire Glass:
   a. AFG Industries, Inc.
   b. Guardian Industries, Inc.
   c. Hordis Brothers, Inc.
   d. Pilkington Sales (North America) Limited.

2.02 GLASS PRODUCTS. GENERAL

A. Primary Glass Standard: Provide primary glass which complies with FSDD-G451 requirements, including.those indicated by reference to type, class, quality, and form.

B. Heat-Treated Glass Standard: Provide heat-treated glass which complies with FS DD-G-1403 requirements, including those indicated by reference to grade, style, type, quality, and class.

C. Insulating Glass Standard: Provide preassembled sealed insulating glass to comply with ASTM E774 requirements for classification designated below:
   1. Class A.

D. Sizes: Fabricate glass to sizes required for glazing openings indicated, with edge clearances and tolerances complying with recommendations of glass manufacturer. Provide thicknesses indicated or, not otherwise indicated, as recommended by glass manufacturer for application indicated.

2.03 PRIMARY GLASS PRODUCTS

A. Clear Float Glass: Type I, class 1 (transparent), quality q3 (glazing select), 1/4" thick unless indicated otherwise.

B. Wire Glass: Type II (rolled), class 1 (translucent), quality q8 (glazing); complying with ANSI Z97.1; 1/4" thick; of form and mesh pattern indicated below:

1. Polished Wire Glass: Form 1 (wired, polished both sides), mesh m2 (square).

2.04 HEAT-TREATED GLASS PRODUCTS -

A. Manufacturing - Process: Manufacture heat-treated glass as follows:

1. By horizontal (roller hearth) process with roll wave distortion parallel with bottom edge of glass as installed, unless otherwise indicated.

B. Clear Tempered Float Glass: Grade B (fully tempered), style (uncoated surfaces), Type I (float), quality q (glazing quality). Class 1 (transparent); 1/4" thick unless otherwise indicated.
1. Reference: Herculite tempered glass by PPG, or equal.

2.05 SEALED INSULATING GLASS UNITS

A. General: Provide preassembled units consisting of organically sealed panes of glass enclosing a hermetically sealed dehydrated air space; comply with requirements indicated for glass characteristics, air space, sealing system, sealant, spacer material, corner design, and desiccant.

B. Insulating Glass Units for exterior in all exterior windows. Provide manufacturer's standard 1" thick unit complying with the following requirements:

1. Outboard lite shall be ¼" thick annealed tinted **solar bronze** and inboard lite shall be ¼" thick annealed clear glass, with .548" hermetic sealed air space.

2. NON-INSULATING GLASS UNITS, EXTERIOR
a. In exterior aluminum doors, ¼" thick tempered (by Code), tinted **solar bronze**, non-insulated, non-reflective.

2.06 GLAZING SEALANTS

A. All glazing gaskets, setting blocks, etc., for aluminum windows, and aluminum doors and storefront frames shall be furnished by the respective manufacturers.

B. Silicone Glazing Sealant: Single component elastomeric silicone sealant complying with FS TT-S-001543, Class A, nonsag: and with ASTM C 920,Type S. Grade NS, Class 25, Use G and, as applicable to use indicated, Uses A and O; and with the following requirements:

1. Low-Modulus Silicone Glazing Sealant: Manufacturer's standard low modulus non-acid curing sealant that can withstand an increase and decrease of 50% of joint width as measured at time of application when tested per ASTM C 719.

C. Preformed Butyl-Polyisobutylene Glazing Tape: Blend of butyl polyisobutylene rubber with a solids content of 100%, in extruded tape form, complying with MAMA 807.1, packaged on rolls with a release paper onside, with or without continuous spacer rod as recommended by manufacturers of tapes and glass for application indicated.

D. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

E. Products: Subject to compliance with requirements, provide one of the following:

1. Low-Modulus Silicone Glazing Sealants:
   g. Dow Corning 790; Dow Corning Corps
   h. Gesil N; General Electric**.**
   i. Silglaze; General Electric.
   j. Silpruf; General Electric.

2. Preformed Butyl-Polyisobutylene Glazing Tape:
   a. Tremco Polyshim Tape; Tremco.
   b. Tremco 440 Tape; Tremco.
   c. SST 800 Tape; Tremco.
   d. Chem-Tape 40; Woodmont Products, Inc.

2.07 MISCELLANEOUS GLAZING MATERIALS

A. Compatibility: Provide materials with proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers and Sealers: Type recommended by sealant or gasket manufacturer.

C. Setting Blocks: Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealants, 80 to 90 Shore A durometer hardness.

D. Spacers: Neoprene, EPDM or silicone blocks, or continuous extrusions, as required for compatibility with glazing sealant, of size, shape and hardness recommended by glass and sealant manufacturers for application indicated.

E. Edge Blocks: Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealant, of size and hardness required to limit lateral movement (side-walking) or glass.

F. Compressible Filler Rods: Closed-cell or waterproof jacketed rod stock of synthetic rubber or plastic foam, flexible and resilient, with 5-10 psi compression strength for 25% deflection.

PART 3 - EXECUTION

3.01 INSPECTION

A. Require Glazier to inspect work of glass framing erector for compliance with manufacturing and installation tolerances, including those for size, squareness, offsets at corners; for presence and functioning of weep system; for existence of minimum required face or edge clearances; and for effective sealing of joinery. Obtain Glazier's written report listing conditions detrimental to performance of glazing work. Do not allow glazing work to proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean glazing channels and other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to substrates. Remove lacquer from metal surfaces where elastomeric sealants are indicated for use.

3.03 GLAZING GENERAL

A. Comply with combined printed recommendations of glass manufacturers, of manufacturers of sealants, gaskets and other glazing materials, except where more stringent requirements are indicated, including those of referenced glazing standards.

B. Glazing channel dimensions as indicated in details are intended to provide for necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by job conditions at time of installation.

C. Protect glass from edge damage during handling and installation, use a rolling block in rotating glass units to prevent damage to glass corners. Do not impact glass with metal framing. Use suction cups to shift glass units within openings; do not raise or drift glass with a pry bar. Rotate glass with flares or bevels along one horizontal edge which would occur in vicinity of setting blocks so that these are located at top of opening. Remove from project and dispose of glass units with edge or other imperfections of kind that, when installed, weakens glass and impairs performance and appearance.

D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.

3.04 GLAZING

A. Install setting blocks of proper size in sill rabbet, located one quarter of glass width from each corner, but no closer than 6", unless otherwise required. Set blocks in thin course of sealant which is acceptable for heel bead use.

B. Provide spacers inside and out, of correct size and spacing to preserve required face clearances, for glass sizes larger than 50 united inches, except where gaskets or glazing tapes with continuous spacer rods are used for glazing. Provide 1/8" minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.

C. Provide edge blocking to comply with requirements of referenced glazing standard, except where otherwise required by glass unit manufacturer.

D. Set units of glass in each series with uniformity of pattern, draw, bow and similar characteristics.

E. Provide compressible filler rods or equivalent back-up material, as recommended by sealant and glass manufacturers, to prevent sealant from extruding into glass channel weep systems and from adhering to joints back surface as well as to control depth of sealant for optimum performance, unless otherwise indicated.

F. Force sealants into glazing channels to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.

G. Tool exposed surfaces of sealants to provide a substantial "wash" way from glass install pressurized tapes and gaskets to protrude slightly out of channel, so as to eliminate dirt and moisture pockets.

H. Hollow metal or interior wood doors and frames may be glazed with silicone sealant or preformed glazing tape.

1. Exterior hollow metal doors and frames shall be glazed with silicone sealant.

3.05 PROTECTION AND CLEANING

A. Protect exterior glass from breakage immediately upon installation by use of crossed streamers attached to framing and held away from glass. Do not apply markers to surfaces of glass. Remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove immediately by method recommended by glass manufacturer.

C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than often than once a month, for build-up of dirt, scum, alkali deposits or staining. When examination reveals presence of these forms of residue, remove by method recommended by glass manufacturer.

D. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.

E. Wash glass on both faces not more than 4 days prior to date scheduled for inspections intended to establish date of substantial completion in each area of project. Wash glass by method recommended by glass manufacturer.

END OF SECTION

SECTION 09250 - GYPSUM DRYWALL

PART 1 - SCOPE

A. This Section includes all work of gypsum drywall in connection with the building construction where shown or as scheduled on the Drawings and specified.

PART 2 - MATERIALS

A. All materials herein specified shall be by the United States Gypsum Company or an approved equal.

1. All Gypsum Wallboard shall be USG Firecode, Type “X”, 5/8".

2. Resilient Channels shall be USG RC-1.

3. Corner Reinforcement shall be USG Dur-A-Bead.

4. Metal Trim shall be USG Metal Trim No. 200-A.

5. Drywall Screws shall be USG Brand S or W Type as applicable.

6. Joint Treatment shall be Perf-A-Tape Joint compounds.

7. Caulking shall be USG Acoustical Sealant.

8. Sound Attenuation Blankets shall be as called for in the specifications.

B. Lengths of materials shall be as long as practical to minimize number of joints or splices.

C. The Installation and Application of all materials shall be in accordance with the latest printed directions or specifications of United States Gypsum Company and conform to ANSI A97-1 "Standard Specification for Application and Finishing Wallboard."

D. All Fixture Attachment Reinforcement shall be installed before drywall is installed.

E. General Requirements

1. Erection of Gypsum Board shall be such that the long dimensions are at right angles to the ceiling joists, studs and resilient channels. All abutting end or edge joints shall be fitted neatly and accurately with end joints staggered. Joints on opposite sides of partitions shall be so arranged as to occur on different studs. Gypsum board shall be properly supported and neatly fitted around all cut-outs and openings. Work done by this Contractor shall be coordinated properly with that done by other trades. Installation shall be in accordance with USG folder SA-927.

2. Soffits shall be installed after Fire-Rated walls and ceilings are in place and may be constructed of 1/2" regular gypsum wallboard.

3. Attic Draft-stopping shall be 5/8 Type "X" gypsum board applied to one side of framing as detailed on the Drawings. Extend the panel the full length of the framing for a complete seal.

4. Perf-A-Type Joint Compound System shall be used to finish all face board joints, screw heads and internal angles formed by the intersection of walls and ceilings or walls and walls.

5. Corner Bead shall be applied to all external angles.

6. Ceiling Finish smooth.

F. Ceiling Panel Erection

1. Ceiling shall be erected prior to wall panel erection.

2. Ceilings on Trusses shall be erected of one (1) layer of 5/8" Type "X" gypsum board.

3. Gypsum Board above all tile ceiling shall be taped and mudded one coat at non-rated assemblies.

G. Miscellaneous Materials:

1. Caulking for concealed applications in assemblies containing sound attenuation blankets shall be an elastic, gun-grade, water-base caulking compound specifically recommended by the gypsum board manufacturer for the purpose of sound sealing joints around partition perimeters, openings, outlets, etc., and shall be approved by the Architect.

PART 3 - GENERAL

A. In cold weather and during the period of wallboard lamination and joint finishing, temperatures within the building shall be maintained uniformly within the range of 55 degrees to 70 degrees Fahrenheit. Adequate ventilation shall also be provided to eliminate moisture within the building during the same period.

B. All materials shall be delivered to the job in their original, unopened containers or bundles, stored in a place providing protection from damage and exposure to the elements.

C. Installation of all material shall be in accordance with latest printed directions or specifications of the materials manufacturer.

PART 4- FINISHING

A. Caulking. Caulk joints of all walls and partitions containing sound attenuation blankets at intersections of gypsum board with floor slabs, ceiling board, at corner framing and other fixed obstructions. In such partitions, caulk also around outlet boxes and any other openings to the stud or joist space. Caulking shall be prior to finishing, in compliance with details, and in strict accordance with manufacturer's instructions.

B. Finishing:

1. Exposed Surfaces. Gypsum board surfaces to be exposed at completion under work of this Section or for painted finish under work of Section 09900 shall be finished in accordance with requirements of the tape joint system used. Tapered edges and corner and casing bead flanges shall be taped and filled to smooth, true planes. Fill nail head depressions and defects in board surfaces smoothly. When dry, re-coat joints, nail heads, etc., one or more times until surfaces are flush. Sand to true, even and smooth surfaces, ready for texturing or painting.

2. Concealed Work. Surfaces to be concealed by cabinets or other equipment shall be left with reasonably tight joints, with all surfaces in true planes, except that joints of concealed surfaces in fire-related assemblies shall be taped and finished as specified above.

3. Temperature and Ventilation. During cold weather, provide thermostatically controlled heat to maintain 55 degrees Fahrenheit minimum temperature until buildings are occupied. Unvented gas or oil heaters shall not be used to provide heat. Adequate ventilation shall be provided at all times for proper drying.

End of Section

SECTION 09650 - RESILIENT FLOORING

PART 1 - GENERAL

1.01 SUMMARY

A. Extent of resilient flooring and accessories as shown on Drawings and Specified herein.

Work includes:
1. Vinyl Cove Base
2. Luxury Vinyl Tile/Plank

1.02 SUBMITTALS

A. Product Data: Submit manufacturer=s technical data and installation instructions for resilient flooring and accessories in accordance with Section 01300.

B. Samples: Submit, for verification purposes, samples of each type, color and pattern of resilient flooring and accessory required, indicating full range of color/pattern variation.

C. Maintenance Instructions: Submit copies of manufacturer=s recommended maintenance practices for each type of resilient flooring required to Owner.

1.03 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of standard quality of manufacturers as specified. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer=s instructions.

B. Provide materials and adhesives which do not contain asbestos.

PART 2 - PRODUCTS

2.01 MATERIALS

Refer to Finish Schedule on Drawings for styles and colors of specified materials.

A. Vinyl Cove Base, 4_ high x _≅ gauge set-on type, as manufactured by Tarkett or approved equal, and furnished in 120' long rolls meeting the requirements of ASTM F1861, Type TV, Group 1 and ASTM E-648/NFPA 253, Class 1.

B. Luxury Vinyl Tile/Plank shall be Heartland Luxury Vinyl, glue-down resilient planks, size 6” x 48”, 2.5mm thickness with 20 mil wear layer, Class III, Type B, meeting ASTM E662, ASTM E648.

C. Adhesive shall be as recommended by flooring manufacturer to suit material and substrate conditions.

PART 3 - EXECUTION

3.01 INSPECTION

A. Make a thorough examination of surfaces to receive resilient flooring. If surfaces are defective and will not permit a proper finished installation, immediately notify the Architect in writing, or assume responsibility for and rectify any resulting unsatisfactory condition.

B. Inspect floor for holes, cracks and smoothness. Test for dryness. Do not proceed with laying until subfloors are dry and smooth, holes and cracks filled.

3.02 PROJECT CONDITIONS

A. Substrate Conditions: The installer shall verify in writing to the Owner, a minimum of 30 days prior to scheduled resilient flooring installation, the following substrate conditions:

1. Moisture: Initial emission rate, as tested with a calcium chloride test kit.

2. Alkalinity: pH range of 6-8. Must not exceed pH of 10.

B. Install resilient flooring and accessories after they have the same temperature as the space and after other finishing operations, including painting, have been completed. Moisture content and alkalinity level of concrete slabs, as well as environmental conditions, must be within limits recommended by manufacturer of products being installed.

3.03 PREPARATION AND INSTALLATION

A. Broom clean or vacuum surfaces to be covered, and inspect subfloor. Start of flooring installation indicates acceptance of subfloor conditions and full responsibility for completed work.

B. Accessories: Apply resilient base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in lengths as long as practicable, with preformed corner units or fabricated from base materials with mitered or coped inside corners. Tightly bond base to backing throughout length of each piece, with continuous contact at horizontal and vertical surfaces.

1. On masonry surfaces or other similar irregular surfaces, fill voids along top edge of resilient wall base with manufacturer=s recommended adhesive filler material.

2. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed.

3.05 CLEANING AND PROTECTION

A. Immediately upon completion of the resilient flooring remove any excess adhesive or other surface blemishes, using neutral type cleaners as recommended by flooring manufacturer.

1. Do not wash or machine scrub linoleum for at least 3-5 days after installation.

2. Do not strip factory finish from linoleum sheet flooring per Manufacturer recommendations.

B. Protect installed flooring with heavy Kraft paper or other covering.

C. Finishing: After completion of project and just prior to final inspection of work, thoroughly clean all floors and accessories.

End of Section

SECTION 09900 - PAINTING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Extent of painting work is shown on drawings and schedules, and as herein specified.

B. The work includes painting and finishing of interior and exterior exposed items and surfaces throughout Project, except as otherwise indicated.

1. Surface preparation, priming, and coats of paint specified are in addition to shop-priming and surface treatment specified under other sections of work.

C. "Paint" as used herein means all coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate, or finish coats.

D. Surfaces to be Painted: Except where natural finish of material is specifically noted as a surface not to be painted, paint exposed surfaces whether or not colors as designated in "schedules". Where items or surfaces are not specifically mentioned, paint the same as similar adjacent materials or areas. If color or finish is not designated, Architect will select these from standard colors or finishes available.

E. Do not paint over any code-required labels such as Underwriters Laboratories and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.

1.2 QUALITY ASSURANCE

A. Single Source Responsibility: Provide primers and other undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer on published product data pages, and use only within recommended limits.

B. Coordination of Work: Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates. Upon request from other trades, furnish information or characteristics of finish materials provided for use, to ensure compatible prime coats are used. Test existing surfaces scheduled to receive new paint or epoxy coating to insure compatibility of new primer and paint system.

C. Employ only experienced and competent mechanics.

D. Field Quality Control: Prepare and finish a sample area or room as directed. Finish in accordance with specification requirements for Architect’s approval of materials, color and workmanship. Approved area or room shall serve as Project Standard.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's technical information including paint label analysis and application instructions for each material proposed for use.

B. Provide Owner at completion of job, one gallon of paint of each color selected. Provide original unopened labeled containers with color sample and list of room numbers where used.

1.4 DELIVERY AND STORAGE

A. Deliver materials to job site in original, new, and unopened packages and containers bearing manufacturer's name and label, and following information:

1. Name or title of material.
2. Federal Specification number, if applicable.
3. Manufacturer's stock number and date of manufacturer.
4. Manufacturer's name.
5. Contents by volume, for major pigment and vehicle constituents.
6. Thinning instructions.
7. Application instructions.
8. Color name and number.

B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage of paint in a clean condition, free of foreign materials and residue.

1. Protect from freezing where necessary. Keep storage area neat and orderly. Remove oily rags and waste daily. Take all precautions to ensure that workmen and work areas are adequately protected from fire hazards and health hazards resulting from handling, mixing, and application of paints.

1.5 JOB CONDITIONS

A. Coordinate with other trades to insure adequate ventilation and dust-free environment during application and drying of paint.

B. Maintain temperature and humidity within Manufacturer’s recommended tolerances.

C. Do not apply paint in snow, rain, fog, or mist; or when humidity exceeds 85%; or to damp or wet surfaces; unless otherwise permitted by paint manufacturer's printed instructions.

1. Painting may be continued during inclement weather if areas and surfaces to be painted are enclosed and heated within temperature limits specified by paint manufacturer during application and drying periods.

D. Painting Contractor shall provide stand mounted, high intensity, portable lighting for their use during painting to provide adequate illumination.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide paint products of one of the following:
   1. The Sherwin-Williams Company
   2. PPG
   3. Benjamin Moore
   4. Porter Paints
   5. Calhoun Farrell

2.2 MATERIALS

A. Material Quality: Provide best quality grade of various types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying manufacturer's identification as a standard, best-grade product will not be acceptable.
   1. Proprietary names used to designate colors or materials are not intended to imply that products of named manufacturers are required to exclusion of equivalent products of other manufacturers.

PART 3 - EXECUTION

3.1 INSPECTION

A. Applicator must examine areas and conditions under which painting work is to be applied and notify Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Applicator.

B. Starting of painting work will be construed as Applicator's acceptance of surfaces and conditions within any particular area.

C. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.

3.2 SURFACE PREPARATION

A. General: Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as herein specified, for each particular substrate condition.

   1. Provide barrier coats over incompatible primers or remove and re-prime as required. Notify Architect in writing of any anticipated problems in using the specified coating systems with substrates primed by others.

   2. Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish-painted, or provide surface-applied protection prior to surface preparation and painting operations. Remove, if necessary, for complete painting of items and adjacent surfaces. Following completion of painting of each space or area, reinstall removed items.

3. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease in accordance with SSPC SP-1, prior to mechanical cleaning. Program cleaning and painting so that contaminants from cleaning process will not fall onto wet, newly-painted surfaces.

B. Cementitious Materials: Prepare cementitious surfaces of concrete, concrete block, to be painted by removing efflorescence, chalk, dust, dirt, grease, oils in accordance with ASTM D 4258/D 4259/D 4261 (CMV).

1. Determine alkalinity and moisture content of surfaces to be painted by performing ASTM D 4262. If surfaces are found to be sufficiently alkaline to cause blistering and burning of finish paint, correct this condition before application of paint. Do not paint over surfaces where moisture content exceeds that permitted in manufacturer's printed directions.

C. Wood: Clean wood surfaces to be painted of dirt, oil, or other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sandpaper smooth those finished surfaces exposed to view, and dust off. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer, before application of priming coat. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood-filler. Sandpaper smooth when dried.

1. Prime, stain, or seal wood required to be job-painted immediately upon delivery to job. Prime edges, ends, faces, undersides, and backsides of such wood, including cabinets, counters, cases, paneling.

2. When transparent finish is required, use spar varnish for back-priming.

3. Seal tops, bottoms, and cut-outs of unprimed wood doors with a heavy coat of varnish or equivalent sealer immediately upon delivery to job.

D. Ferrous Metals: Clean ferrous surfaces which are not galvanized or shop-coated of oil, grease, dirt, loose mill scale, and other foreign substances by solvent or mechanical cleaning in accordance with SSPC SP-1.

1. Touch up shop-applied prime coats wherever damaged or bare, where required by other sections of these specifications.
   a. Clean and touch-up with same type shop primer.

E. Galvanized Surfaces: Clean free of oil and surface contaminants with non-petroleum based solvent such as Great Lakes Laboratories “Clean N’ Etch”.

3.3 MATERIALS PREPARATION

A. Mix and prepare painting materials in accordance with manufacturer's directions.

B. Maintain containers used in mixing and application of paint in a clean condition, free of foreign materials and residue.

C. Stir materials before application to produce a mixture of uniform density, and stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.

3.4 APPLICATION

A. General: Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.

1. Paint colors, surface treatments, and finishes are indicated in "Schedules" of the Contract Documents.

2. Provide finish coats which are compatible with prime paints used.

3. Apply additional coats when undercoats, stains, or other conditions show through final coat of paint, until paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces. Dry film thickness will be measured according to SSPC PA-2.

4. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only before final installation of equipment.

5. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat non-specular black paint such as Sherwin-Williams: PM 400 Black, B30 or B400.

6. Paint back sides of access panels, and removable or hinged covers to match exposed surfaces.

7. Finish exterior doors on tops, bottoms, and side edges same as exterior faces unless otherwise indicated.

8. Sand lightly between each succeeding enamel or varnish coat.

9. Omit first coat (primer) on metal surfaces which have been shop-primed and touch-up painted unless otherwise indicated.

B. Scheduling Painting: Apply first-coat material to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

C. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer. Dry film thickness will be measured according to SSPC PA-2.

D. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to those items exposed in mechanical equipment rooms and in occupied spaces, and exposed exterior work that is not factory finish painted.

E. Prime Coats: Apply prime coat of material which is required to be painted or finished, and which has not been prime coated by others.

1. Re-coat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.

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

G. Transparent (Clear) Finishes: Use multiple coats to produce glass-smooth surface film of even luster. Provide a finish free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes, or other surface imperfections.

1. Provide satin finish for final coats unless otherwise indicated.

H. Completed Work: Match approved samples for color, texture and coverage. Remove, refinish or repaint work not in compliance with specified requirements.

3.5 CLEAN-UP AND PROTECTION

A. Clean-Up: During progress of work, remove from site discarded paint materials, rubbish, cans, and rags at end of each work day.

1. Upon completion of painting work, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

B. Protection: Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.

1. Provide “Wet Paint" signs as required to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.

2. At the completion of work of other trades, touch up and restore all damaged or defaced painted surfaces.

3.6 ADJUST AND CLEAN

A. Clean surfaces of spills, splatters, drips and stains from painting application.

B. Replace and adjust finish hardware, accessories, fixtures and similar items removed from work.

C. Touch-up damaged paint surface prior to acceptance of building by the Owner. Mix or thin touch-up paint as recommended by the Manufacturer and blend into existing paint.

3.7 PAINT SYSTEMS

A. Paints listed are those of Sherwin-Williams unless noted otherwise.
Painting subcontractor wishing to use other products must submit their "or equal" for review during the bidding process. Please note that ***colors have been selected***.

B. Exterior Coating Systems:

1. Ferrous Metals

Primer: Sherwin-Williams Industrial Enamel, B66W310 @ 2-2.5 mils dft
1st Coat: Sherwin-Williams Industrial Enamel, B66W310 @ 2-2.5 mils dft
2nd Coat: Sherwin-Williams Industrial Enamel B54W00101 @ 2.0-2.5 mils dft per coat
3rd Coat: Sherwin-Williams Industrial Enamel B54W00101 @ 2.0-2.5 mils dft per coat

a. Typical Applications: Overhead doors and frames, steel doors and frames, piping, pipe railing, miscellaneous metals.

2. Zinc Coated Metals
Primer: Sherwin-Williams Pro Industrial ProCryl Universal Primer B66W310 @ 2.0-2.5 mils dft
1st Coat: Sherwin-Williams Pro Industrial ProCryl Universal Primer B54W00101 @ 2.0-2.5 mils dft
2nd Coat: Sherwin-Williams Pro Industrial ProCryl Universal Primer B54W00101 @ 2.0-2.5 mils dft

3. Concrete Block
Provide clean and dulled surface for application of new paint as recommended by paint manufacturer.
1st Coat: Sherwin-Williams Heavy Duty Block filler B42W46 @ 7.0-14.5 mils dft
2nd Coat: Sherwin-Williams Pro Industrial Multi-Surface Acrylic EgShel, B66W01561 @ 1.5-2.0 mils dft
3rd Coat: Sherwin-Williams Pro Industrial Multi-Surface Acrylic EgShel, B66W01561 @ 1.5-2.0 mils dft

C. Interior Coating Systems:

1. Interior Ferrous Metal: Door Frames, Miscellaneous Metals: 2 coats of an all purpose industrial enamel, over a fast drying, rust inhibitive alkyd enamel.

   1st Coat: Sherwin-Williams Pro Industrial ProCryl Universal Primer, B66W310 @ 2.0-2.5 mils dft
   2nd Coat: Sherwin-Williams Industrial Enamel B54W00101 @ 2.0-2.5 mils dft per coat
   3rd Coat: Sherwin-Williams Industrial Enamel B54W00101 @ 2.0-2.5 mils dft per coat

2. Interior Gypsum Drywall (semi-gloss): 2 coats of an interior waterborne acrylic semi-gloss, durable and non-yellowing, over an interior vinyl acrylic latex wall primer.

   1st Coat: Sherwin-Williams Quick Dry Interior Exterior Stain Blocking Primer @ 1.2-1.5 mils dft
   2nd Coat: Sherwin-Williams ProMar 200 Zero VOC Semi-Gloss B31W02651 @ 1.5 mils dft
   3rd Coat: Sherwin-Williams ProMar 200 Zero VOC Semi-Gloss B31W02651 @ 1.5 mils dft

3. Interior Gypsum Drywall (flat): 2 coats of an interior latex flat, durable and non-yellowing, over an interior latex wall primer.
   Primer: Sherwin-Williams Quick Dry Interior Exterior Stain Blocking Primer, B51W08670 @ 1.2-1.5 mils dft

   1st Coat: Sherwin-Williams ProMar 200 Zero VOC Flat, B30W02651 @ 1.4-2.0 mils dft
   2nd Coat: Sherwin-Williams ProMar 200 Zero VOC Flat, B30W02651 @ 1.4-2.0 mils dft

4. Interior Gypsum Drywall (eggshell): 2 coats of an interior latex eggshell, durable and non-yellowing, over an interior latex wall primer.

   Primer: Sherwin-Williams Quick Dry Interior Exterior Stain Blocking Primer, B51W08670 @ 1.2-1.5 mils dft
   1st Coat: Sherwin-Williams ProMar 200 Zero VOC EgShel, B20W02651 @ 1.5 mils dft
   2nd Coat: Sherwin-Williams ProMar 200 Zero VOC EgShel, B20W02651 @ 1.5 mils dft

5. Galvanized Metal: 2 coats of an interior waterborne acrylic semi-gloss, durable and non yellowing

   1st Coat: Sherwin-Williams DTM Primer/Finish, B66W0001 @ 2.2-3.5 mils dft
   2nd Coat: Sherwin-Williams Pro Industrial Acrylic, B66W00651 @ 1.5-4.0 mils dft

6. Aluminum: 2 coats of an interior waterborne acrylic semi-gloss, durable and non yellowing.

   1st Coat: Sherwin-Williams Pro Industrial Acrylic, B66W00651 @ 1.5-4.0 mils dft
   2nd Coat: Sherwin-Williams Pro Industrial Acrylic, B66W00651 @ 1.5-4.0 mils dft

7. Wood-Closed Grain: Stained: 2 coats of a satin waterborne polyurethane over an interior oil based stain.

   1st Coat: S-W WoodClassics Interior Oil Stain, A49N00202
   2nd Coat: S-W WoodClassics Waterborne Polyurethane Varnish, A68V0091
   3rd Coat: S-W WoodClassics Waterborne Polyurethane Varnish, A68V0091

8. Wood (Painted): 2 coats of semi-gloss waterbased/alkyd urethane over latex primer.

   1st Coat: S-W Premium Wall & Wood Primer, B28W8111, at 4.0 mils (0.102 mm) wet, 1.8 mils (0.046 mm) dry.
   2nd Coat: S-W Pro Industrial Waterbased Alkyd Urethane Semi-Gloss, B53-1150 Series, at 4.0 mils (0.102 mm) wet, 1.4 mils (0.036 mm) dry, per coat.
   3rd Coat: S-W Pro Industrial Waterbased Alkyd Urethane Semi-Gloss, B53-1150 Series, at 4.0 mils (0.102 mm) wet, 1.4 mils (0.036 mm) dry, per coat.

9. Concrete Floors (Unpolished)
   1 application of Prosoco "Consolideck LS/CS" @ 300 - 800 sq.ft./gallon, using low pressure spray-on method as directed by manufacturer.
   Note: New concrete must cure long enough to walk on before application. Do not use concrete curing compound where product is specified. Blanket-cure ONLY.

10. Exposed Structural Steel: 2 coats of a semi-gloss waterborne dryfall

    1st Coat: S-W Pro Industrial DTM Primer-Finish, B66W0001 @ 2.2-3.5 mils dft
    2nd Coat: S-W Pro Industrial Waterborne Dryfall, B42W00083 @ 2.3-3.5 mils dft
    3rd Coat: S-W Pro Industrial Waterborne Dryfall, B42W00083 @ 2.3-3.5 mils dft

END OF SECTION

SECTION 10426 - IDENTIFYING DEVICES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Furnish and install all signage and identifying devices and handicap parking signs where shown or scheduled on the Drawings and specified herein.

B. This section includes the installation of such devices in locations as indicated on plans, or where not shown, as required to meet requirements of the Americans with Disability Act of 1990 (ADA).

1.02 SUBMITTALS

B. Manufacturer's Data: Submit manufacturer's descriptive literature and specifications, including color samples of material for selection, as applicable for approval.

B. Submit shop drawings listing sign styles, lettering and locations, and overall dimensions of each sign.

1.03 REFERENCES

A. American National Standards Institute (ANSI): A117.1 - 1992 Accessible Signage Standards (4.28 Signage)

B. American Society for Testing and Materials (ASTM).

C. Americans with Disabilities Act Accessibility Guideline (ADAAG): 4.30 Signage

D. California Title 24 Accessible Signage Standards (3105)

1.04 DELIVERY, STORAGE & HANDLING

A. Deliver components correctly packaged to prevent damage.

B. Store in secure areas, out of weather and protected from work of other trades.

1.05 WARRANTY

A. Provide Manufacturer's standard one year limited warranty covering manufacturing defects.

PART 2 - PRODUCTS

2.01 HANDICAP PARKING SIGNS

A. Furnished for installation under work of Section 02700, one (1) manufacturer’s standard aluminum sign plate for identification of handicapped parking spaces. Plates shall be of size and layout shown on the Drawings and shall be similar to Model PHP75 as manufactured by the Supersine Company, Tactile Signage, Inc., or an approved equal.

2.02 TACTILE SIGNAGE

A. Tactile signage stating “EXIT” and complying with ICC/ANSI A117.1, shall be installed adjacent to the latch side of the door, 48" minimum/60" maximum above the finished floor to center of sign.

Sign shall be 4"x4" unless space is restricted, then 2"x8" sign shall be used.

Locate at doors #1, 2, 3, 4, 9, and 11.

2.03 INTERIOR ROOM SIGNAGE

A. Style: Signs shall be single-faced, Lettering Specialists, Inc. - Tactile Signage, Inc., or an approved equal, radiused corners, beveled edge with decorative reveal around the perimeter; Optima semi-bold style, color as selected by Architect. Schedule shall be as furnished by the Architect/Owner. Composition shall be a design similar to manufacturers standards and meeting all requirements of Americans with Disabilities Act (ADA). Signs shall be mounted with double-faced tape as furnished by the manufacturer.

B. Pictograms: Pictograms (where required) shall be accompanied by the equivalent verbal description placed directly below the pictogram. The border dimensions of the pictogram shall be 6 inches minimum in height. Pictograms, like non-permanent text, may be recessed.

C. Mounting Location and Height: Signs shall be installed on the wall adjacent to the latch side of the door. Where there is no wall space to the latch side of the door, including at double leaf doors, signs shall be placed on the nearest adjacent wall. Mounting height shall be 60 inches above the finished floor to the centerline of the sign.

D. SCHEDULE:
Types:

Room No.	Description	Qty.	Sign Type
108	Women (w/ADA Symbol)	1	A
106	Men (w/ADA Symbol)	1	B

A

B

PART 3 - EXECUTION

3.01 EXAMINATION

A. Before installing signs, verify that mounting surfaces are completely finished and ready for installation. Inspect surface to be sure it is clean and free from contaminants that may adversely affect mounting system adhesion.

B. Do not install signs until surfaces are acceptable. Notify Architect if there are any questions as to suitability of installation surfaces or installation locations.

3.02 INSTALLATION

A. Install signs in accordance with manufacturer's instructions and in accordance with ADA guidelines for location and as indicated in schedules.

B. Install after doors are installed and after doors and walls are finished.

C. Assure signs are installed level.

D. Mounting Location and Height: Signs shall be installed on the wall adjacent to the latch side of the door. Where there is no wall space to the latch side of the door, including at double leaf doors, signs shall be placed on the nearest adjacent wall. Mounting height shall be 60 inches above the finished floor to the centerline of the sign.

3.03 CLEANING AND PROTECTION

A. At completion of the installation, clean soiled sign surfaces in accordance with the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

END OF SECTION

SECTION 10522 - FIRE EXTINGUISHERS AND ACCESSORIES

PART 1 - GENERAL

1.01 Work Included

A. Fire extinguishers

B. Cabinets and wall mounting brackets

1.02 References

A. NFPA 10 Portable Fire Extinguishers.

1.03 Quality Assurance

A. Conform to NFPA 10 requirements for extinguishers.

1.04 Submittals

A. Submit product data.

B. Submit manufacturer's installation instruction.

1.05 Operation and Maintenance Data

A. Submit manufacturer's operation and maintenance data.

B. Include test, refill or recharge schedules, procedures, and re-certification requirements.

1.06 Environmental Requirements

A. Do not install extinguishers when ambient temperatures may cause freezing.

PART 2 - PRODUCTS

2.01 Acceptable Manufacturers

A. Larsen
B. J.L. Industries
C. Modern Metal Products.
D. Substitutions: Reviewed equal.

2.02 Extinguishers

A. Fire Extinguishers #1-#2 shall be Larsen Model MP10, 10 lbs., U.L. Rating 4A-60B:C.

B. For location of extinguishers, see Floor Plan.

2.03 Cabinets/Accessories

A. Fire Extinguishers #1 and #2 shall be mounted in a semi-recessed cabinet, Larsen Model 2409-6R, non fire-rated cabinet, clear anodized aluminum with Vertical Duo, partial glass door and 2½" rolled edge.

PART 3 - EXECUTION

3.01 Installation

A. Install fire extinguishers 36" a.f.f. or as required by NFPA 10. Top of cabinet mounted at 60" a.f.f.

B. Secure rigidly in place in accordance with manufacturer's instructions.

End of Section

SECTION 10800 - TOILET ROOM ACCESSORIES

PART 1 - GENERAL

1.01 Work Included

A. Toilet room accessories.

1.02 Related Work

A. Wall blocking required to secure accessories
B. Glazing/caulking
C. Toilet compartments
D. Gypsum wallboard systems
E. Plumbing fixtures
F. Countertops

1.03 References (including but not limited to)

A. ANSI A117 - 1986 Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.

B. UBC - Chapters 5 and 33 Requirements for Handicapped.

C. Title 24, California Code of Regulations, Parts 2, 3, and 5.

D. ADA, Accessibility Guidelines for Buildings and Facilities, Federal Register Volume 56, Number 144, Rules and Regulations.

E. Fair Housing Amendments Act of 1988, Accessibility Guidelines, Federal Register Volume 56, Number 44.

F. Southern Building Code.

1.04 Quality Assurance

A. Manufacturer

1. Model numbers for toilet room accessories manufactured by Bradley Corp. Washroom accessories are listed to establish a standard of quality for design, function, materials, workmanship and appearance. Other manufacturers may be submitted for evaluation by the architect by following the conditions of the substitutions clause. Unless approval is obtained 10 days prior to the bid date, all bids shall be based on the standard of quality. The architect shall be the sole judge as to the acceptability of all products submitted for substitutions.

2. Accessories shall be the products of a single manufacturer. Accessories with tumbler locks shall be keyed alike with the exception of coin boxes in vending equipment.

B. Regulatory requirements

1. Operation of accessories shall comply with guidelines set forth by the American Disabilities Act, Title III. Documentation and samples to be provided to the architect upon request.

1.05 Submittals

A. Comply with requirements of Section regarding submittals.

B. Manufacturer's Data

1. Provide required number copies of:
   a. Product data sheets.
   b. Installation instructions.
   c. Service and parts manual.

C. Samples

1. Upon request, submit one sample of each item specified. If more than one manufacturer is specified, submit one sample of each item for architect's review.

1.06 Product Delivery, Storage, and Handling

A. Deliver items in manufacturer's original unopened protective packaging.

B. Store materials in original protective packaging to prevent physical damage, or wetting.

C. Handle so as to prevent damage to accessories.

1.07 Warranty

A. Furnish one year guarantee against defects in material and workmanship on all accessories. In addition to the above the following shall apply:

1. Welded stainless steel framed mirrors shall have a fifteen year guarantee against silver spoilage.

PART 2 - PRODUCTS

2.01 Toilet Room Accessories Schedule:

A. Grab Bars of sizes as shown on plans, #812-001, heavy-duty stainless steel with sanitary safety grip finish, concealed mounting kits to be included.

B. Mirror 24" x 42", #7802-24 x 42, angle framed mirror, 3≅ tempered glass.

C. Toilet Tissue Dispenser, #5084, surface mounted, single roll, stainless steel with satin finish.

D. Paper Towel Dispenser, #2494-000000, surface mounted, roll towels, automatic/battery-operated, durable high-impact material.

2.02 Materials (if applicable to items in contract)

A. All cabinets shall be constructed of 18-8, type 304 stainless steel.

B. All waste receptacle shall be constructed of 18-8, type 304 stainless steel or rigid molded leak-proof plastic.

C. Waste receptacles or cabinets manufactured of type 400 stainless steel are not acceptable.

D. All tumbler locks to be fastened to accessories with lock nuts. Fastening locks to units with spring clip is not acceptable.

PART 3 - EXECUTION

3.01 Inspection

A. Check wall opening for dimensions, plumbness of blocking or frames that would affect installation of recessed accessories. For surface mounted accessories check condition of wall and confirm installation of backing within wall.

B. Verify spacing of plumbing fixtures and toilet compartments that affect installation of toilet room accessories.

End of Section