



Project Manual and Specifications

SPECULATIVE BUILDING
in the
MMRC REGIONAL BUSINESS PARK
for the
MMRC Industrial Development Authority, Inc.

MSE Project #2059-30

October 26, 2011

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MMRC Regional Business Park
Speculative (Shell) Building

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DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS

SECTION 00020 - ADVERTISEMENT FOR BIDS
MMRC Industrial Development Authority, Inc.
Speculative (Shell) Building Construction
Rowan County, Kentucky

Sealed bids for the construction of a 48,320 s.f. nominal pre-engineered metal building with associated M/E work on a "shovel-ready" site at the MMRC Regional Business Park will be received by the MMRC Industrial Development Authority, Inc., 100 Lake Park Drive, Morehead KY 40351, by Brett Traver, Executive Director, until 11:00 a.m., local time, Thursday, December 1, 2011, and then at said office will be publicly opened and read aloud.

The CONTRACT DOCUMENTS may be reviewed at the following locations:

MMRC, 100 Lake Park Drive, Morehead KY
MSE of Kentucky, Inc., 624 Wellington Way, Lexington KY
ABC, 2020 Liberty Road, Bldg A, Suite 110, Lexington KY
Builders Exchange, 2300 Meadow Drive, Louisville KY
F W Dodge/AGC of Kentucky, 950 Contract St., Suite 100A, Lexington KY

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 \$100.00 (non-refundable) and a check made payable to MSE of Kentucky, Inc. of \$100.00 (refunded when specs and plans are returned to Lynn Imaging within 30 days). All orders must be prepaid. There will be a 24 hour turn-around on all orders. Plans may also be viewed or downloaded at the project web site at www.mselex.com under the "Bid Opportunities" tab on the web page.

A certified check or bank draft, payable to MMRC Industrial Development Authority, Inc., 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) A performance and payment bond for 100% of the contract price.

Each bidder must deposit with his bid, security in the amount, form, and subject to the conditions provided in the Information for Bidders. State wage rates are applicable to this project.

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 "MMRC Speculative Building".

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 MMRC Industrial Development Authority. This is an invitation for offer to bid; not an offer to enter into a contract.

MMRC Industrial Development Authority, Inc. 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 A701/1987, 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, 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 - Notice to Bidders.

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 MMRC Industrial Development Authority, Inc.. 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:
MMRC Regional Business Park Speculative Building
 - 2. Proposals shall be addressed and delivered to:
Brett Traver, Executive Director
Morehead-Rowan County Economic Development Council, Inc.
100 Lake Park Drive
Morehead, KY 40351

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 - 2010
 - 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 from 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 MMRC Industrial Development Authority, Inc. (hereinafter called "OWNER").

In compliance with your Advertisement for Bids, BIDDER hereby proposes to perform all WORK for the construction of Speculative Building in the MMRC Regional Business Park 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 one hundred sixty (160) consecutive calendar days following the Notice to Proceed. BIDDER further agrees to pay as liquidated damages, the sum of \$600.00 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.

State Wage Rates apply to this project.

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

Item	Description	Unit	Cost of Item
1.	Main Building with Office	LS	\$ _____
2.	Mechanical	LS	\$ _____
3.	Electrical	LS	\$ _____
4.	Site Grading	LS	\$ _____
5.	Testing Allowance	LS	\$ 20,000
6.	All Other Miscellaneous Costs	LS	\$ _____
TOTAL COST OF ITEMS 1 - 6			\$ _____

DEDUCTIVE ALTERNATES:

Deductive Alternate No. 1: Delete column bay 1 - 2, reducing the building size by 5,000 sq. ft. Move doors 6 and 7 forward by 25'; move affected exhaust fan forward by 25'.

Alternate No. 1 \$ _____

Deductive Alternate No. 2: Delete column bay 2 - 3 reducing the building size by an additional 5,000 sq.ft. Move doors 6 and 7 again forward by 25'; move affected exhaust fan, louver and damper into bay 3 - 4.

Alternate No. 2 \$ _____

The Owner can select either Alternate No. 1 **or** Alternate No. 1 and Alternate No. 2 and award the contract to the lowest base bid minus the Alternate(s).

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 an 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 - 2010 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 - 2010) have been furnished and contract executed, including 1 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 or is to give to such other bidder or other person or public officer anything of value whatever, or such affiant 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: Speculative Building at the MMRC Regional Business Park

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 _____, 201__.

MMRC Industrial Development Authority, Inc.
Owner

By _____
Name/Title Brett Traver, Executive Director

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged by _____,

this the _____ day of _____, 201__.

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. Payment Bond, 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: Spec Building

MMRC Regional Business Park

You are hereby notified to commence WORK in accordance with the Agreement dated _____, on or before _____, and you are to complete the WORK within 210 consecutive calendar days thereafter. The date of completion of all WORK is therefore _____, 2012.

MMRC Industrial Development Authority, Inc.

Owner

Signature

Brett Traver, Executive Director

Name/Title

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by _____ this the _____ day of _____, 201__.

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, fifteenth edition, 1997, Articles 1 through 14, 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 will be furnished, free of charge, five sets of Drawings and Project Manuals.

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	MAR	APR	MAY	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:

<u>Bodily injury</u>	<u>Property Damage</u>
\$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:

<u>Automobile Bodily Injury</u>	<u>Automobile Property Damage</u>
\$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 of 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

DIVISION I - GENERAL REQUIREMENTS

SECTION 01010 - SUMMARY OF WORK

PART 1 - GENERAL

1.01 SUMMARY OF WORK

A. Work covers construction of the MMRC Speculative Building located in the MMRC Regional Business Park, Rowan County, KY.

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
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.

1.2 RELATED SECTIONS

- A. Section 00700 - Supplementary Conditions: Governing requirements for changes in the Work, in Contract Sum, and Contract Time.
- B. Section 01027 - Applications for Payment: Payment applications.
- C. Section 01310 - Construction Progress Schedules: Work schedule.
- D. Section 01300 - Submittals: Submittal procedures.
- E. Section 01700 - Contract Closeout: Project record documents

1.03 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.

1.04 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.

1.05 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, 1987 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.

1.06 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.

1.07 STIPULATED SUM CHANGE ORDER

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

1.08 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.

1.09 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.

1.10 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 01039 - COORDINATION AND MEETINGS
REQUIREMENTS OF CONTRACTOR**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Coordination and project conditions.
- B. Preconstruction meeting.
- C. Progress meetings.

1.02 RELATED SECTIONS

- A. Section 01041 - Project Coordination: Coordination with Project Manager.
- B. Section 01045 - Cutting and Patching.
- C. Section 01050 - Field Engineering.

1.03 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Coordinate space requirements, supports, and installation of mechanical and electrical Work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- E. Coordinate completion and clean-up of Work of separate sections in preparation for Completion and for portions of Work designated for Owner's beneficial occupancy.
- F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.04 PRECONSTRUCTION MEETING

- A. The Owner will schedule a meeting after Notice of Award.
- B. Attendance Required: Owner, Architect/Engineer, and Contractor.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Re-submission of list of Subcontractors, list of Products, schedule of values, and progress schedule. Designation of personnel representing the parties in Contract, and the Architect/Engineer.
 - 5. Designation of personnel representing the parties in Contract, and the Architect/Engineer.
 - 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 7. Scheduling.
- D. Contractor shall record minutes and distribute copies within three days after meeting to participants, with one copy to all participants and those affected by decisions made.

1.05 PROGRESS MEETINGS

- A. Contractor shall schedule and administer meetings throughout progress of the Work at regular intervals agreed to at pre-construction meeting.
- B. Make arrangements for meetings, prepare agenda with copies for participants. Contractor shall chair all progress meetings.
- C. Attendance Required: Owner, Architect/Engineer or their representative, Job Superintendent, major Subcontractors and suppliers, as appropriate to agenda topics for each meeting.
- D. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of Work progress.

3. Field observations, problems, and decisions.
 4. Identification of problems which impede planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Review of off-site fabrication and delivery schedules.
 7. Maintenance of progress schedule.
 8. Corrective measures to regain projected schedules.
 9. Planned progress during succeeding work period.
 10. Coordination of projected progress.
 11. Maintenance of quality and work standards.
 12. Effect of proposed changes on progress schedule and coordination.
 13. Other business relating to Work.
- E. Contractor shall record minutes and distribute copies within three days after meeting to participants, with one copy to Architect/Engineer, Owner, participants, and those affected by decisions made.

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 01039 - Coordination and Meetings: Progress meetings.
- D. 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 by 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 "MMRC Regional Business Park Spec Building"
 - 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 01410 - TESTING SERVICES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Selection and payment.
- B. Agency responsibilities.
- C. Agency reports.
- D. Limits on testing authority.
- E. Contractor responsibilities.
- F. Schedule of tests.

1.02 RELATED SECTIONS

- A. Section 01300 - Submittals: Manufacturer's certificates.
- B. Section 01400 - Quality Control.
- C. Section 01650 - Starting of Systems: Testing, Adjusting, and Balancing of systems.

1.03 REFERENCES

- A. ASTM C802 - Practice for Conducting an Interlaboratory Test Program to Determine the Precision of Test Methods for Construction.
- B. ASTM C1021 - Practice for Laboratories Engaged in the Testing of Building Sealants.
- C. ASTM C1077 - Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.
- D. ASTM C1093 - Practice for Accreditation of Testing Agencies for Unit Masonry.
- E. ASTM D290 - Recommended Practice for Bituminous Mixing Plant Inspection.
- F. ASTM D3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- G. ASTM D4561 - Practice for Quality Control Systems for an Inspection and Testing Agency for Bituminous Paving Materials.
- H. ASTM E329 - Practice for Use in the Evaluation of Inspection and Testing Agencies as Used in Construction.
- I. ASTM E543 - Practice for Determining the Qualification of Nondestructive Testing Agencies.

- J. ASTM E548 - Practice for Preparation of Criteria for Use in the Evaluation of Testing Laboratories and Inspection Bodies.
- K. ASTM E699 - Practice for Criteria for Evaluation of Agencies Involved in Testing, Quality Assurance, and Evaluating Building Components in Accordance with Test Methods Promulgated by ASTM Committee E6.

1.04 SELECTION AND PAYMENT

- A. Architect will designate a firm or firms to provide construction testing/inspection services for the following listed types of work. Contractor will pay for services of testing/inspection agency or laboratory to perform specified testing from the allowance for testing.
 - 1. Concrete footings, foundations, rebar placement
 - 2. Soil Subgrades
 - 3. Concrete slabs
 - 4. Paving
- B. Observe tests and adjustments for mechanical, electrical, plumbing, piping, welding, conducted by the various trades subcontractors and provide independent verification of results to Architect, Contractor and Owner. Payment for such services shall be made from the Contractor's bid, not the testing allowance.
- C. Employment of testing/inspection agency or laboratory in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
 - 1. Upon initial test results, if defects in the construction are found, further testing of these systems shall be the responsibility of the Contractor in order to ensure these items being tested are in compliance with the specifications.
 - 2. Testing required by defective materials or defective work shall be paid for by the Contractor and is not paid from the allowance.
 - 3. When initial tests requested by the Architect indicate non-compliance with the Contract Documents, costs of initial tests associated with that noncompliance will be deducted by the Owner from the Contract Sum, and subsequent retesting occasioned by the non-compliance shall be performed by the same testing laboratory and the costs thereof shall be paid by the Contractor.
 - 4. The test cost for and adjustments conducted for mechanical, electrical, plumbing and piping systems, including welding and bolt-tightening shall be included in the bid for the associated work.

1.05 AGENCY RESPONSIBILITIES

- A. Test samples of mixes submitted.
- B. Provide qualified personnel at site with prior approval of Architect. Cooperate with Architect/Engineer and Contractor in performance of services.
- C. Perform specified sampling and testing of Products in accordance with specified standards.
- D. Ascertain compliance of materials and mixes with requirements of Contract Documents.
- E. Promptly notify Architect/Engineer and Contractor of observed irregularities or non-conformance of Work or Products.
- F. Perform additional tests as required by Architect/Engineer and approved by the Owner.
- G. Attend progress meetings.

1.06 AGENCY REPORTS

- A. After each test, promptly submit one copy of report to Architect/Engineer and Owner.
- B. Include:
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Name of inspector.
 - 4. Date and time of sampling or inspection.
 - 5. Identification of product and specifications section.
 - 6. Location in the Project.
 - 7. Type of inspection or test.
 - 8. Date of test.
 - 9. Results of tests.
 - 10. Conformance with Contract Documents.
- C. When requested by Architect/Engineer, and approved by Owner, provide interpretation of test results.

1.07 LIMITS ON TESTING AUTHORITY

- A. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
- B. Agency or laboratory may not approve or accept any portion of the Work.
- C. Agency or laboratory may not assume any duties of Contractor.
- D. Agency or laboratory has no authority to stop the Work.

1.08 CONTRACTOR RESPONSIBILITIES

- A. Cooperate with testing/inspection personnel, and provide access to the Work.
- B. Notify Architect/Engineer and testing agency 48 hours prior to expected time for operations requiring testing and inspection services.

1.09 SCHEDULE OF TESTS

- A. Individual Specification Sections: Tests required and standards for testing

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

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.

**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.

2.03 PROJECT INFORMATIONAL SIGNS

- A. Painted informational signs of same colors and lettering as Project Identification sign, or standard products; size lettering to provide legibility at 100-foot distance.
- B. Provide at each field office, and directional signs to direct traffic into and within site. Relocate as Work progress requires.

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

8'-0"

SPECULATIVE BUILDING

MMRC

REGIONAL DEVELOPMENT AUTHORITY

BLUE LETTERING

WHITE BACKGROUND

Engineers & MSE of Kentucky, Inc.

Architect: Lexington, Ky.

MSE

BLUE LETTERING

Mech./Elect. Engineers: A.F.A.

Structural Engineer: Brad Walton

Contractor: Contractor Name

SIGN DIMENSIONS:
4'x8'x3/4" EXTERIOR PLYWOOD (A-B)

4" x 4" x 8' CCA
TREATED POST

DETAIL-PROJECT SIGN

N.T.S.

**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 01650 - STARTING OF SYSTEMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Starting systems.**
- B. Demonstration and instructions.**
- C. Testing, adjusting, and balancing.**

1.02 RELATED SECTIONS

- A. Section 01400 - Quality Control: Manufacturers field reports.**
- B. Section 01700 - Contract Closeout: System operation and maintenance data and extra materials.**

1.03 STARTING SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.**
- B. Notify Owner seven days prior to start-up of each item.**
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.**
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.**
- E. Verify that wiring and support components for equipment are complete and tested.**
- F. Execute start-up under supervision of applicable manufacturer's representative or Contractors' personnel in accordance with manufacturers' instructions.**
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.**

1.04 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel prior to date of Substantial Completion.**
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.**
 - 1. Warranty period to begin at start-up of season.**
- C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.**
- D. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time at designated location.**
- E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.**
- F. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.**

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

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.
- H. Submit certification prior to submission of final application for payment attesting that certain products meet Factory Mutual (FM) approval.

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 operation.

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

WAGE RATES



Steven L. Beshear
Governor

Daniel Mongiardo
Lieutenant Governor

KENTUCKY LABOR CABINET
DEPARTMENT OF WORKPLACE STANDARDS
DIVISION OF EMPLOYMENT STANDARDS,
APPRENTICESHIP & MEDIATION

1047 US Hwy 127 S - Suite 4
Frankfort, Kentucky 40601
Phone: (502) 564-3534
Fax (502) 564-2248
www.labor.ky.gov

Mark S. Brown
Secretary

Michael L. Dixon
Commissioner

November 8, 2011

MARTY FRIEDMAN
MSE OF KY INC
624 23LLINGTON WAY
LEXINGTON KY 40503

Re: MMRC INDUSTRIAL DEV AUTHORITY INC, SPECULATIVE BUILDING CONSTRUCTION

Advertising Date as Shown on Notification: November 7, 2011

Dear MARTY FRIEDMAN:

This office is in receipt of your written notification on the above project as required by KRS 337.510 (1).

I am enclosing a copy of the current prevailing wage determination number CR 6-028, dated July 1, 2011 for ROWAN County. This schedule of wages shall be attached to and made a part of the specifications for the work, printed on the bidding blanks, and made a part of the contract for the construction of the public works between the public authority and the successful bidder or bidders.

The determination number assigned to this project is based upon the advertising date contained in your notification. There may be modifications to this wage determination prior to the advertising date indicated. In addition, if the contract is not awarded within 90 days of this advertising date or if the advertising date is modified, a different set of prevailing rates of wages may be applicable. It will be the responsibility of the public authority to contact this office and verify the correct schedule of the prevailing rates of wages for use on the project. Your project number is as follows: 103-B-00150-11-6, Building

Sincerely,

A handwritten signature in black ink that reads "Michael L. Dixon".

Michael L. Dixon
Commissioner

KENTUCKY LABOR CABINET
PREVAILING WAGE DETERMINATION
CURRENT REVISION
LOCALITY NO. 028

Determination No. CR-6-028

Date of Determination: July 1, 2011

PROJECT 103-B-00150-11-6 HEAVY/HIGHWAY

**MMRC INDUSTRIAL DEVELOPMENT AUTHORITY
SPECULATIVE BUILDING CONSTRUCTION**

This schedule of the prevailing rate of wages for Locality No. 028, which includes Elliott, Fleming, Lawrence and Rowan Counties, has been determined in accordance with the provisions of KRS 337.505 to 337.550. This determination shall be referred to as Prevailing Wage Determination No. CR-6-028.

Apprentices shall be permitted to work as such subject to Administrative Regulations adopted by the Executive Director of the Office of Workplace Standards. Copies of these regulations will be furnished upon request to any interested person.

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

No laborer, workman or mechanic shall be paid at a rate less than that of the General Laborer except those classified as bona fide apprentices registered with the Kentucky State Apprenticeship Supervisor unless otherwise specified in this schedule of wage rates.

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

BUILDING CONSTRUCTION

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

HIGHWAY CONSTRUCTION

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

HEAVY CONSTRUCTION

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



Michael L. Dixon
COMMISSIONER
KENTUCKY LABOR CABINET

ASBESTOS/INSULATION WORKERS: (Mechanical only)	BASE RATE	\$30.00
	FRINGE BENEFITS	16.38

BOILERMAKERS:	BASE RATE	\$28.70
	FRINGE BENEFITS	15.74

BRICKLAYERS:

Bricklayers:	BASE RATE	\$26.51
	FRINGE BENEFITS	16.38

Sawmen, power tools, and swing/scaffold:	BASE RATE	\$29.45
	FRINGE BENEFITS	16.38

Carbon or acid brick:	BASE RATE	\$28.67
	FRINGE BENEFITS	16.38

Hot pay and gunnite:	BASE RATE	\$29.50
	FRINGE BENEFITS	16.38

CARPENTERS:

Carpenters:	BUILDING	BASE RATE	\$27.63
		FRINGE BENEFITS	14.97

Piledrivermen:	BUILDING	BASE RATE	\$28.03
		FRINGE BENEFITS	14.97

Carpenters:	HEAVY & HIGHWAY	BASE RATE	\$25.95
		FRINGE BENEFITS	13.40

Piledrivermen:	HEAVY & HIGHWAY	BASE RATE	\$26.20
		FRINGE BENEFITS	13.40

Divers:	HEAVY & HIGHWAY	BASE RATE	\$39.30
		FRINGE BENEFITS	13.40

CEMENT MASONS:	BASE RATE	\$ 22.84
	FRINGE BENEFITS	6.22

First 10 to 50 feet - .25 pr hour above base rate, .01 per foot for every additional foot above 50 feet. This shall include Swing Suspended Scaffolds or chairs and all other high and hazardous work. Working ten (10) feet below ground level or more shall receive .25 above base rate scale for hazardous work.

ELECTRICIANS:	BASE RATE	\$31.87
	FRINGE BENEFITS	19.96

Cable splicers, specialized welders, and men working 30 – 100 feet with no floor level (excluding pole or tower work done by linemen, and a scaffold originating from floor level which complies with appropriate State Code) shall be paid 5% above BASE RATE. Men working 100 feet and over shall receive double workmens rate of pay.

ELEVATOR CONSTRUCTORS:

BASE RATE \$30.75
FRINGE BENEFITS 6.23

GLAZIERS:

BASE RATE \$28.50
FRINGE BENEFITS 8.97

IRONWORKERS:

BASE RATE \$30.96
FRINGE BENEFITS 18.34

LABORERS / BUILDING:

GROUP 1: Laborers, carpenter tenders, cement finisher helpers, concrete men, wreckers, handling of empty oxygen and acetylene bottles, environmental laborers, hole watch and fire watch:

BUILDING

BASE RATE \$25.74
FRINGE BENEFITS 13.22

GROUP 2: Hod Carriers & mortar men, Jackhammer, electrical, gas or air driven tools, burning torch, wagon drill operators, tile layers, signal men, tool room men, asphalt worker, creosote material handler:

BUILDING

BASE RATE \$25.89
FRINGE BENEFITS 13.22

GROUP 3: Deck & Scow men, wrapping and applying hot and cold tar and tape on all pipes, operation of tester:

BUILDING

BASE RATE \$25.91
FRINGE BENEFITS 13.22

GROUP 4: Rock and powder men:

BUILDING

BASE RATE \$26.97
FRINGE BENEFITS 13.22

GROUP 5: Sand hog & mucker: BUILDING

BASE RATE \$26.37
FRINGE BENEFITS 13.22

GROUP 6: Caisson worker: BUILDING

BASE RATE \$26.94
FRINGE BENEFITS 13.22

LABORERS / HEAVY HIGHWAY:

GROUP 1: Aging & curing of concrete (any mode or method), asbestos abatement worker, asphalt plant laborers, asphalt laborers, batch truck dumpers, carpenter tenders, cement mason tenders, cleaning of machines, concrete laborers, demolition laborers, dredging laborers, drill helper, environmental laborer-nuclear, radiation, toxic & hazardous waste – Level D, flagmen, grade checkers, all hand digging and hand back filling, highway marker placers, landscaping laborers, mesh handlers & placers, puddler, railroad laborers, rip rap and grouters, right of way laborers, sign, guard rail & fence installers (all types), signal men, sound barrier installer, storm and sanitary sewer laborers, swampers, truck spotters & dumpers, wrecking of concrete forms, general cleanup:

HEAVY HIGHWAY

BASE RATE \$20.81
FRINGE BENEFITS 10.85

LABORERS / HEAVY HIGHWAY: CONTINUED

GROUP 2: Batter board men (sanitary & storm sewer), brickmason tenders, mortar mixer operator, scaffold builders, burner & welder, bushammers, chain saw operators, deckhand scow man, dry cement handlers, environmental laborers-nuclear, radiation, toxic & hazardous waste-Level C, forklift operators for masonry, form setters, green concrete cutting, hand operated grouter and grinder machine operator, jack hammers, lead paint abatement, pavement breakers, paving joint machine, pipe layers-laser operators (nonmetallic), plastic pipe fusion, power driven Georgia buggy & wheel barrow, power post hole diggers, precast manhole setters, walk behind tampers, walk behind trenchers, concrete chippers, surface grinders, vibrator operators, wagon drillers:

HEAVY HIGHWAY	BASE RATE	\$21.06
	FRINGE BENEFITS	10.85

GROUP 3: Asphalt luteman and rakers, gunnite nozzleleman, gunnite operators & mixers, grout pump operator, side rail setters, rail paved ditches, screw operators, tunnel laborers (free air) & water blasters:

HEAVY HIGHWAY	BASE RATE	\$21.11
	FRINGE BENEFITS	10.85

GROUP 4: Caisson workers (free air), cement finishers, environmental laborer-nuclear, radiation, toxic & hazardous waste-levels A & B, miners & drillers (free air), tunnel blasters, tunnel muckers (free air), directional and horizontal boring, air track drillers (all types), powder man & blasters, troxler and concrete tester if laborer is utilized:

HEAVY HIGHWAY	BASE RATE	\$21.71
	FRINGE BENEFITS	10.85

MARBLE, TILE & TERRAZZO:

SETTERS	BASE RATE	\$22.64
	FRINGE BENEFITS	6.10

FINISHERS	BASE RATE	\$15.42
	FRINGE BENEFITS	5.42

MILLWRIGHTS:

	BASE RATE	\$31.77
	FRINGE BENEFITS	15.91

OPERATING ENGINEERS / BUILDING:

CLASS A: Auto patrol, batcher plant, bituminous paver, cableway, central compressor plant, clamshell, concrete mixer (21 cfm or over), concrete pump, crane, crusher plant, derrick, derrick boat, ditching and trenching machine, dragline, dredge operator, dredge engineer, elevating grader and all types of loaders, hoe type machine, hoist (1 drum when used for stack or chimney construction or repair), hoisting engine (2 or more drums), locomotive, motor scraper, carry-all scoop, bulldozer, heavy duty welder, mechanic, orangepeel bucket, piledriver, power blade, motor grader, roller (bituminous), scarifier, shovel, tractor shovel, truck crane, winch truck, push dozer, highlift, forklift (regardless of lift height and except when used for masonry construction), all types of boom cats, core drill, hopto, tow or push boat, A-Frame winch truck, concrete paver, gradeall, hoist, hyster, pumcrete, Ross carrier, boom, tail boom, rotary drill, hydro hammer, mucking machine, rock spreader attached to equipment, scoomobile, KeCal loader, tower cranes (French, German and other types), hydrocrane, backfiller, gurries, sub-grader, tunnel mining machines including moles, shields, or similar types of tunnel mining equipment:

BUILDING	*BASE RATE	\$28.42
	FRINGE BENEFITS	13.12

OPERATING ENGINEERS / BUILDING: CONTINUED

CLASS A-1: Cable Crane Operators (50-ton and over), hydraulic crane (100-ton and over):

BUILDING	*BASE RATE	\$29.21
	FRINGE BENEFITS	13.12

***Operators on cranes with booms one hundred fifty (150) feet and over (including jib) shall receive fifty (\$.50) cents above base rate.**

CLASS B: All air compressors (over 900 cfm), bituminous mixer, joint sealing machine, concrete mixer (under 21 cu. ft.), form grader, roller (rock), tractor (50 hp and over), bull float, finish machine, outboard motor boat, flexplane, fireman, boom type tamping machine, truck crane oiler, greaser on grease facilities servicing heavy equipment, switchman or brakeman, mechanic helper, whirley oiler, self-propelled compactor, tractair and road widening trencher and farm tractor with attachments (except backhoe, highlift and endloader), elevator (regardless of ownership when used for hoisting any building materials), hoisting engine (1 drum or buck hoist), forklift (when used for masonry construction, Firebrick masonry excluded), well points, grout pump, throttle-valve man, tugger, electric vibrator compactor:

BUILDING	BASE RATE	\$24.20
	FRINGE BENEFITS	13.12

CLASS C: Bituminous distributor, cement gun, conveyor, mud jack, paving joint machine, roller (earth), tamping machine, tractors (under 50 hp), vibrator, oiler, concrete saw, burlap and curing machine, hydro-seeder, power form handling equipment, deckhand steersman, hydraulic post driver, and drill helper:

BUILDING	BASE RATE	\$22.98
	FRINGE BENEFITS	13.12

OPERATING ENGINEERS / HEAVY HIGHWAY:

CLASS A: A-Frame Winch Truck, Auto Patrol, Backfiller, Batcher Plant, Bituminous Paver, Bituminous Transfer Machine, All types of Boom Cats, Bulldozer, Cableway, Carry-All Scoop, Carry Deck Crane, Central Compressor Plant Operator, Clamshell, Concrete Mixer (21 cu. ft. or over), Concrete Paver, Truck-Mounted Concrete Pump, Core Drills, Crane, Crusher Plant, Derrick, Derrick Boat, Ditching and Trenching Machine, Dragline, Dredge Operator, Dredge Engineer, Earth Movers, Elevating Grader and all types of Loaders, Grade-All, Gurries, Heavy Equipment Robotics Operator/Mechanic, Highlift, Hoe-Type Machine, Hoist (two or more drums), Hoisting Engine (two or more drums), Horizontal Directional Drill Operator, Hydraulic Boom Truck, Hydrocrane, Hyster, KeCal Loader, Letourneau, Locomotive, Mechanic, Mechanically Operated Laser Screed, Mechanic Welder, Mucking Machine, Motor Scraper, Orangepeel Bucket, Piledriver, Power Blade, Pumpcrete, Push Dozer, Rock Spreader attached to Equipment, All Rotary Drills, Roller (bituminous), Scarifier, Scoopmobile, Shovel, Side Boom, Subgrader, Tailboom, Telescoping Type Forklift, Tow or Push Boat, Tower Cranes (French, German and other types), Tractor Shovel, Truck Crane, Tunnel Mining Machines including Moles, Shields, or Similar types of Tunnel Mining Equipment:

HEAVY & HIGHWAY	BASE RATE	\$26.50
	FRINGE BENEFITS	13.00

Operators on cranes with booms one hundred fifty feet (150') and over including jib shall receive \$.50 above base rate.

CLASS A-1: Operating Engineers possessing 3rd party certification (NCCCO) or (OECF) shall be paid the minimum wage rate per hour on the following equipment: Cableway, carry deck crane, cherry picker, clamshell, crane, derrick derrick boat, dragline, hoist engine (2 or more drums), hydraulic boom truck, hydrocrane, orangepeel bucket, overhead crane, piledriver, rough terrain crane, tower cranes (French, German and other types), truck crane:

HEAVY HIGHWAY	BASE RATE	\$27.50
	FRINGE BENEFITS	13.00

OPERATING ENGINEERS / HEAVY HIGHWAY: CONTINUED

CLASS B: All Air Compressors (over 900 cu. ft. per min.), Bituminous Mixer, Boom Type Tamping Machine, Bull Float, Concrete Mixer (under 21 cu. ft.), Electric Vibrator Compactor/Self-Propelled Compactor, Elevator (one drum or buck hoist), Elevator (regardless of ownership when used to hoist building material), Finish Machine, Firemen, Flex-Plane, Forklift (regardless of lift height), Form Grader, Hoist (one drum), Joint Sealing Machine, Mechanic Helper, Outboard Motor Boat, Power Sweeper (riding type), Roller (rock), Ross Carrier, Skid Mounted or Trailer Mounted Concrete Pumps, Switchman or Brakeman, Throttle Valve Man, Tractair and Road Widening Trencher, Tractor (50 HP and over), Truck Crane Oiler, Tugger, Welding Machine, Well Points, and Whirley Oiler:

HEAVY & HIGHWAY	BASE RATE	\$24.08
	FRINGE BENEFITS	13.00

CLASS B2: Greaser on Grease Facilities servicing Heavy Equipment:

HEAVY & HIGHWAY	BASE RATE	\$24.46
	FRINGE BENEFITS	13.00

CLASS C: Bituminous Distributor, Burlap and Curing Machine, Caisson Drill and Core Drill Helper (track or skid mounted), Cement Gun, Concrete Saw, Conveyor, Deckhand Oiler, Grout Pump, Hydraulic Post Driver, Hydro Seeder, Mud Jack, Oiler, Paving Joint Machine, Power Form Handling Equipment, Pump, Roller (earth), Steermen, Tamping Machine, Tractors (under 50 H.P.) and Vibrator:

HEAVY & HIGHWAY	BASE RATE	\$23.82
	FRINGE BENEFITS	13.00

All Heavy Highway operators assigned to work below ground level are to be paid ten percent (10%) above base wage rate. This does not apply to open cut work.

PAINTERS:

Drywall finishers, wall covers & dryvit & stucco:

	BASE RATE	\$22.96
	FRINGE BENEFITS	12.57

PLASTERERS:

	BASE RATE	\$22.84
	FRINGE BENEFITS	6.22

First 10 to 50 feet \$.25 per hour above base rate, \$.01 per foot for every additional foot above 50 feet. This shall include Swing Suspended Scaffolds or chairs and all other high and hazardous work. Working ten (10) feet below ground level or more shall receive \$.25 above base rate scale for hazardous work.

PLUMBERS/PIPEFITTERS:

	BASE RATE	\$28.00
	FRINGE BENEFITS	20.37

ROOFERS: (Excluding Metal Roofs)

	BASE RATE	\$13.50
	FRINGE BENEFITS	1.90

SHEETMETAL WORKERS: (Including Metal Roofs)

	BASE RATE	\$26.26
	FRINGE BENEFITS	20.33

SPRINKLER FITTERS:

BASE RATE \$29.00
FRINGE BENEFITS 16.75

TRUCK DRIVERS / BUILDING:

Truck Drivers: BUILDING BASE RATE \$9.50
FRINGE BENEFITS .72

TRUCK DRIVERS / HEAVY HIGHWAY

Truck helper and warehouseman: HEAVY & HIGHWAY BASE RATE \$16.65
FRINGE BENEFITS 5.80

Driver, winch truck & A-frame truck when used in transporting material: HEAVY & HIGHWAY BASE RATE \$16.75
FRINGE BENEFITS 5.80

Driver, semi-trailer or pole trailer, dump truck, tandum axle, and driver of distributors: HEAVY & HIGHWAY BASE RATE \$16.85
FRINGE BENEFITS 5.80

Driver on mixer trucks/all types: HEAVY & HIGHWAY BASE RATE \$16.90
FRINGE BENEFITS 5.80

Truck mechanic: HEAVY & HIGHWAY BASE RATE \$16.95
FRINGE BENEFITS 5.80

Driver, 3 tons & under, tire changer & truck mechanic helper: HEAVY & HIGHWAY BASE RATE \$16.98
FRINGE BENEFITS 5.80

Driver of pavement breakers: HEAVY & HIGHWAY BASE RATE \$17.00
FRINGE BENEFITS 5.80

Driver, over 3 tons & truck mounted rotary drill: HEAVY & HIGHWAY BASE RATE \$17.19
FRINGE BENEFITS 5.80

Driver, Euclid & other heavy earth moving equipment & low boy: HEAVY & HIGHWAY BASE RATE \$17.76
FRINGE BENEFITS 5.80

Greaser on greasing facilities: HEAVY & HIGHWAY BASE RATE \$17.85
FRINGE BENEFITS 5.80

END OF DOCUMENT
CR-6-028
JULY 1, 2011

DIVISION II - SITE WORK

SECTION 02010 - SOILS INVESTIGATION

See the attached Result of Drilling Services for the MMRC Speculative Building, Morehead, KY, by CSI, dated November 3, 2011. It is incorporated into the requirements of the contract documents and shall be followed in its entirety. See the structural notes for foundations.

END OF SECTION



Consulting Services Incorporated of Kentucky

135 West Short Street, Lexington, Kentucky 40507

November 3, 2011

MSE of Kentucky
624 Wellington Way
Lexington, KY 40503

ATTN: Mr. Marty Friedman, Architect

Subject: Result of Drilling Services
Proposed Speculative Building
Rowan County, Kentucky
CSI Project No. 1760

Dear Marty:

Consulting Services Incorporated of Kentucky (CSI) appreciates the opportunity to have provided drilling services for your project. Our scope of work was to provide soundings (borings without sampling) for a proposed speculative building in the MMRC Regional Industrial Authority, MMRC Regional Business Park, in Rowan County, Kentucky. Specifically, the project site is located along the east side of Kentucky State Route 801 and to the south of Industry Road.

On November 2, 2011, CSI personnel were on-site to mark out 15 sounding locations (see attached Sounding Location Plan). In general, these 15 soundings represent three lines of five soundings each – soundings S-1 through S-5 along the west side, soundings S-6 through S-10 along the centerline, and soundings S-11 through S-15 along the east side. A TBM (temporary benchmark) with an assumed elevation of 100.00 feet was established so that we could provide top of hole elevations. The TBM is a surveyor's nail set in the centerline of Industry Road at the centerline of the northern gravel entrance to the site.

Subsequently, a drill rig was used to perform soundings at each of these 15 locations. The results of these soundings are presented on the attached Summary of Soundings. Please note that we identified both the top of the weathered rock zone and the applicable auger refusal depth at each sounding location. Based on our observations of the auger cuttings, we believe that the site is underlain by soft shale. Thus, we marked the top of the weathered rock zone when the required drill pressure increased significantly, thus indicating a higher resistance material had been encountered. The augers were continued with considerable effort through the soft shale to obtain the reported auger refusal depths. As stated in our proposal, our scope of work did not include any engineering recommendations for this project.

We appreciate the opportunity to provide drilling services for you on this project. Please feel free to contact us if you should have any questions regarding the attached information.

Sincerely,

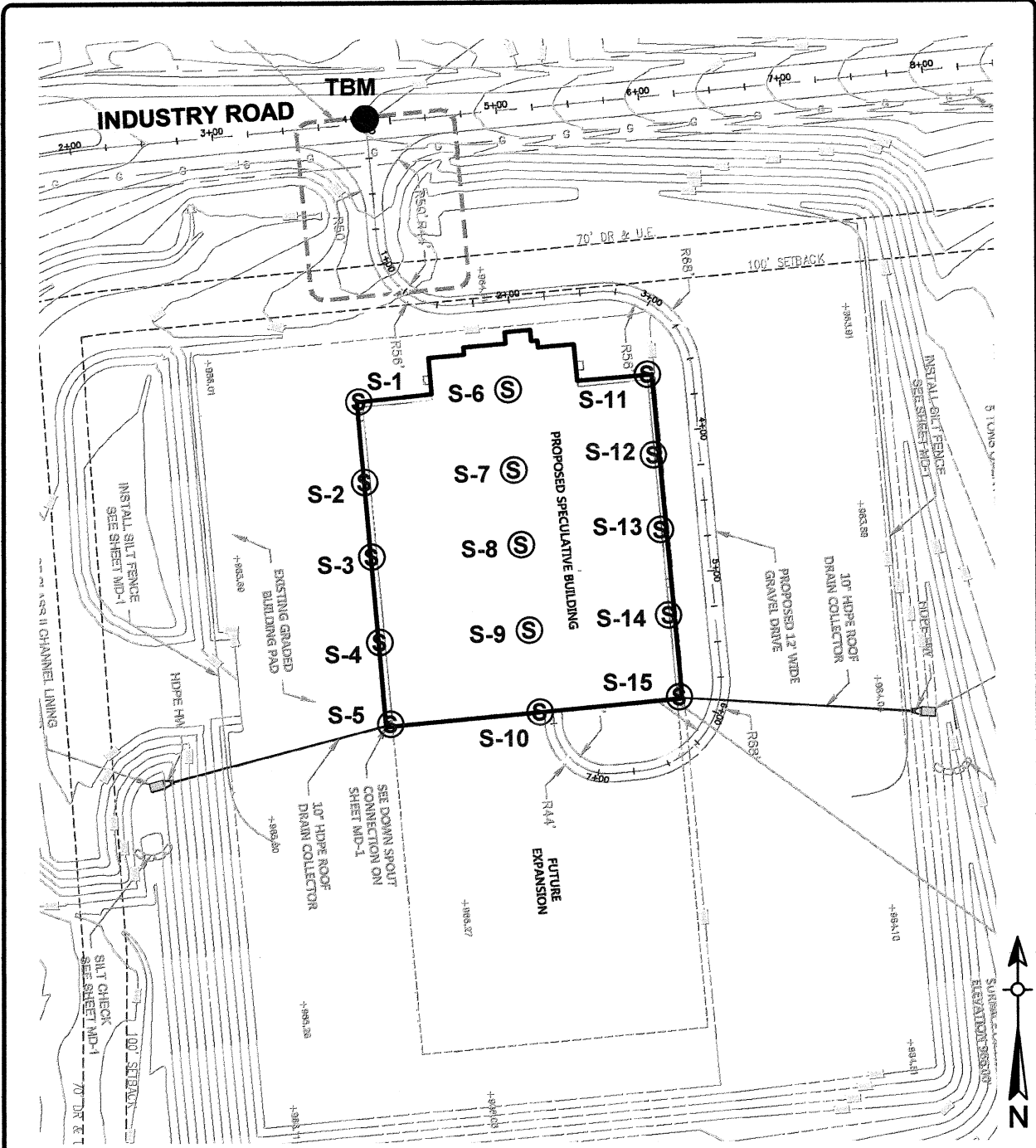


Consulting Services Incorporated of Kentucky,

A handwritten signature in black ink, appearing to read "BZH", with a long, sweeping horizontal line extending to the right.

Bruce L. Hatcher, PE, SI
Senior Principal Engineer

Attachments: Sounding Location Plan
Summary of Soundings




Sounding Location Plan adapted from provided Erosion Control & Location Site Plan, with further adaptation by CSI personnel.

Elevations surveyed based on a TBM (temporary benchmark) using an assumed elevation of 100.00 feet. The TBM is a surveyor's nail set in the centerline of Industry Road at the centerline of the northern gravel entrance into the site.

LEGEND	
⊙ S-XXX	SOUNDING LOCATIONS
●	TBM TEMPORARY BENCHMARK

FOR ILLUSTRATION PURPOSES ONLY

 Consulting Services Incorporated of Kentucky 135 West Short Street Lexington, Kentucky 40507 859.309.6021 Office 888.792.3121 Fax www.csikentucky.com	TITLE: SOUNDING LOCATION PLAN PROJECT: PROPOSED SPECULATIVE BUILDING ROWAN COUNTY, KENTUCKY	Project No: 1760 Date: November 3, 2011 Scale: Not To Scale	Drawn By: JAC Checked By: BH Drawing No: 1 of 1
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This drawing is being furnished for this specific project only. Any party accepting this document does so in confidence and agrees that it shall not be duplicated in whole or in part, nor disclosed to others without the consent of Consulting Services Incorporated of Kentucky.



Consulting Services Incorporated of Kentucky

135 West Short Street, Lexington, Kentucky 40507

Summary of Soundings Proposed Speculative Building

Rowan County, Kentucky

CSI Project No. 1760

Sounding Number	Elevation (ft.)*	Depth to Weathered Rock (ft.)	Depth to Auger Refusal (ft.)	Auger Refusal Elevation (ft.)
S-1	93.7	1.2	6.6	87.1
S-2	93.7	1.5	6.8	86.9
S-3	93.7	2.2	7.8	85.9
S-4	93.9	4.8	8.1	85.8
S-5	93.7	7.0	8.0	85.7
S-6	93.9	1.4	4.9	89.0
S-7	94.0	2.8	8.6	85.4
S-8	94.0	2.8	8.7	85.3
S-9	94.1	8.7	10.9	83.2
S-10	94.2	8.7	11.1	83.1
S-11	93.3	1.5	5.8	87.5
S-12	93.1	3.3	7.8	85.3
S-13	93.2	6.0	8.3	84.9
S-14	93.1	10.3	11.8	81.3
S-15	93.2	13.1	13.1	80.1

*= Elevations surveyed based on a TBM (temporary benchmark) using an assumed elevation of 100.00 feet. The TBM is a surveyor's nail set in the centerline of Industry Road at the centerline of the northern gravel entrance into the site.

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 re-use 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.

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

1. Establish and maintain horizontal and vertical ground control throughout the work, including staking out building corners or offsets.
2. Locate and clearly mark all utilities on or adjacent to the site.

1.2 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.

1.3 Quality Assurance

A. Codes and Standards: Perform earth and rock work in compliance with applicable requirements of governing authorities having jurisdiction. 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 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 Architect that the compaction requirements specified herein have been obtained.

1.4 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 Architect from the testing services, with copy to the Contractor:

- Observe proof-rolling.

1.5 Job Conditions

- A. **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.
- B. **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.
- C. **Protection of Persons and Property.** Barricade open excavations occurring as part of this work and post with warning lights.
- D. **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.
- E. Notify the Architect 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.
- B. **Crushed stone.** Crushed stone shall comply with Kentucky Transportation Cabinet Standard Specifications for Road and Bridge Construction.

PART 3. EXECUTION

3.1 Excavation

- A. **Excavation** consists of removal and disposal of material encountered when establishing required bottom of footing 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 Architect.
- Unauthorized excavation, as well as remedial work directed by Architect, shall be at Contractor's expense.
 - Backfill and compact unauthorized excavations, as specified for authorized excavations of same classification, unless otherwise directed by Architect.

C. Additional Excavation. When excavation has reached required subgrade elevations, notify Architect 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 Architect.
- 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. Cold Weather Protection. Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F (1 degree C).

3.2 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 Architect, 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.

3.3 Crushed Stone Placement

A. Place KY Department of Highways Number 57 stone in twelve inch lifts.

B. Compact with four passes of large vibratory roller for each lift.

3.4 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 excavated material from the site and dispose of properly.

End of Section

SECTION 02720 - STORM DRAINAGE SYSTEMS

PART 1. GENERAL

1.1 Work Included

- A. Storm drainage pipe fittings, and accessories.
- B. Storm water structures

1.2 Submittals

- A. Submit product data under provisions of Section 01300.

PART 2. PRODUCTS

2.1 Reinforced Concrete Pipe

- A. Reinforced concrete pipe shall meet requirements of ANSI/ASTM C76, Class I with Wall Type A; B; C; mesh reinforcement; inside nominal diameter as required; bell and spigot end joints.
- B. Joint device shall meet requirements of ANSI/ASTM C443, rubber compression gasket joint.
- C. Fittings shall be of the same material as pipe, molded or formed to suit pipe size and end design, in required "T", bends, elbows, cleanouts, reducers, traps, and other configurations required.

2.2 HDPE Pipe

HDPE pipe shall meet the following requirements:

- ASTM D1248 Standard Specification for Polyethylene Plastics Molding and Extrusion Materials
- ASTM F405 Standard Specification for Corrugated Polyethylene (PE) Tubing and Fittings
- ASTM F667 Standard Specification for Large Diameter Corrugated Polyethylene Tubing and Fittings.

2.3 Storm Water Structures

Storm water structures shall meet the following requirements, as applicable:

- ACI 304 - Guide for Measuring, Mixing, Transporting and Placing Concrete
- ACI 318 - Building Code Requirements for Reinforced Concrete

SECTION 02720 - STORM DRAINAGE SYSTEMS

- ASTM C478 - Specification for Precast Reinforced Concrete Manholes Sections
- ASTM 1433 - Standard Specification for Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers
- ASTM C1478 - Standard Specification for Storm Drain Resilient Connectors Between Reinforced Concrete Storm Sewer Structures, Pipes and Laterals
- ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals
- ASTM C990 - Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections Using Preformed Flexible Joint Sealant
- CRSI Manual of Standard Practice

PART 3. EXECUTION

3.1 Pipe Installation

- A. Verify that trench cut is ready to receive work, and excavations, dimensions, and elevations are as indicated on Drawings.
- B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal joints watertight.
- C. Lay pipe to slope gradients noted on drawings, with maximum variation from true slope of 1/8 inch in 10 feet.

3.2 Storm Water Structure Installation

- A. Precast concrete products shall be installed to the lines and grades shown in the contract documents or otherwise specified.
- B. Products shall be lifted by suitable lifting devices at points provided by the precast concrete producer.
- C. Products shall be installed per the precast concrete producer's recommendation.

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 100 pounds per 1,000 square feet.

2.03 Fertilizer

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

Fertilizer shall be 10-20-20 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 100 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

DIVISION III - CONCRETE

SECTION 03110 - CONCRETE FORMWORK

PART 1 - GENERAL

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

PART 2 - DESCRIPTION OF WORK

- A. The extent of formwork is indicated by the concrete structures shown on the drawings.
- B. The work includes providing formwork and shoring for cast-in-place concrete, and installation into formwork of items furnished by others, such as anchor bolts, setting plates, bearing plates, anchorages, inserts, frames, nosings and other items to be embedded in concrete (but not including reinforcing steel).

PART 3 - QUALITY ASSURANCE

- A. The Installer must examine the substrate and the conditions under which concrete formwork is to be performed, 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.

PART 4 - CODES AND STANDARDS

- A. Unless otherwise shown or specified, design, construct, erect, maintain, and remove forms and related structures for cast-in-place concrete work in compliance with the American Concrete Institute Standard ACI 347, "Recommended Practice for Concrete Formwork".
- B. Construct formwork to provide completed cast-in-place concrete surfaces complying with the tolerances specified in ACI 347, and as follows:
 - 1. Variation from plumb in lines and surfaces of walls, and arises; 1/4" per 10 ft., but not more than 1". For exposed control joint grooves, and other conspicuous lines, 1/4" in any bay or 20 ft. max; 1/2" max. in 40 ft. or more.
 - 2. Variation from level or grade in slab, walls and in arises 1/8" in 10 ft., 3/8" in any bay or 20 ft. max., and 3/4" in 40 ft. or more. For exposed horizontal grooves and other conspicuous lines, 1/4" in any bay or 20 ft. max. and 1/2" in 40 ft. or more.
 - 3. Variation from position of the linear building lines and related walls, and partitions, 1/2" in any bay or 20 ft. max., and 1" in 40 ft. or more.
 - 4. Variation in cross-sectional dimensions of thickness of slabs and walls, minus 1/4" and plus 1/2".

5. Variations in footings plan dimensions, minus 1/2" and plus 2"; misplacement or eccentricity, 2% of the footing width in direction of misplacement but not more than 2"; thickness reduction minus 2%.
 6. Variation in steps; in a flight of stairs, 1/8" for rise and 1/4" for treads; in consecutive steps, 1/16" for rise and 1/8" for treads.
- C. Before concrete placement check the lines and levels of erected formwork. Make corrections and adjustments to ensure proper size and location of concrete members and stability of forming systems.
 - D. During concrete placement check formwork and related supports to ensure that forms are not displaced and that completed work will be within specified tolerances.

PART 5 - SUBMITTALS

- A. For information only, submit 2 copies of manufacturer's data and installation instructions for proprietary materials including form coatings, manufactured form systems, ties and accessories.
- B. Submit shop drawings for fabrication and erection of specific finished concrete surfaces as shown or specified.
- C. Architects review will be for general architectural applications and features only. Design of formwork for structural stability and sufficiency is the Contractor's responsibility.

PART 6 - FORM MATERIALS

- A. Unless otherwise shown or specified, construct formwork for exposed concrete surfaces with plywood, metal, metal-framed plywood-faced or other panel type materials acceptable to Architect, to provide continuous, straight, smooth as-cast surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings. Provide form material with sufficient thickness to withstand pressure of newly placed concrete without bow or deflection.
 1. Use plywood complying with U.S. Product Standards PS-1, "B-B (Concrete Form) Plywood" Class 1, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing the legible trademark of an approved inspection agency.
- B. Form concrete surfaces which will be unexposed in the finished structure with plywood, lumber, metal, or other acceptable material. Provide lumber that is dressed on at least 2 edges and 1 side for tight fit.
- C. Provide factory-fabricated, adjustable-length, removable or snap-off metal form ties, designed to prevent form deflection, and to prevent spalling concrete surfaces upon removal.

- D. Unless otherwise shown, provide ties so that portion remaining within concrete after removal of exterior parts is at least 1½" from the outer concrete surface. Unless otherwise shown, provide form ties which will not leave a hole larger than 1" diameter in the concrete surface.
- E. Form ties fabricated on the project site and wire ties are not acceptable.
- F. Provide commercial formulation form-coating compounds that will not bond with, stain, nor adversely affect concrete surfaces, and will not impair subsequent treatment of concrete surfaces requiring bond or adhesion, nor impede the wetting of surfaces to be cured with water or curing compounds.
- G. Provide metal inserts for anchorage of materials or equipment to concrete construction, not supplied by other trades and as required for the work.

PART 7 - DESIGN OF FORMWORK

- A. Design, erect, support, brace and maintain formwork so that it will safely support vertical and lateral loads that might be applied, until such loads can be supported by the concrete structure. Carry vertical and lateral loads to ground by formwork system and in-place construction that has attained adequate strength for that purpose. Construct formwork so that concrete members and structures are of correct size, shape, alignment, elevation and position.
- B. Design forms and falsework to include assumed values of live load, dead load, weight of moving equipment operated on formwork, concrete mix, height of concrete drop, vibrator frequency, ambient temperature, foundation pressures, stresses, lateral stability, and other factors pertinent to safety of structure during construction.
- C. Provide shores and struts with positive means of adjustment capable of taking up formwork settlement during concrete placing operations, using wedges or jacks or a combination thereof. Provide trussed supports when adequate foundations for shores and struts cannot be secured.
- D. Support form facing materials by structural members spaced sufficiently close to prevent deflection. Fit forms placed in successive units for continuous surfaces to accurate alignment, free from irregularities and within allowable tolerances.
- E. Provide temporary openings in wall forms, and at other locations necessary to permit inspection and clean-out.
- F. Design formwork to be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials.
- G. Provide formwork sufficiently tight to prevent leakage of cement paste during concrete placement. Solidly butt joints and provide backup material at joints as required to prevent leakage and fins.

- H. Side forms of footings may be omitted and concrete placed directly against excavation only when requested by Contractor and accepted by Architect. When omission of forms is accepted, provide additional concrete required beyond the minimum design profiles and dimensions of the footings as detailed, at no cost to the Owner.

PART 8 - FORM CONSTRUCTION

- A. General: Construct forms complying with ACI 347, to the exact sizes, shapes, lines and dimensions shown, and as required to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screens, bulkheads, anchorages and inserts, and other features required. Use selected material to obtain required finishes.
- B. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and assure ease of removal.
- C. Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Brace temporary closures and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms in as inconspicuous location as possible, consistent with project requirements.
- D. Form intersecting planes to provide true, clean-cut corners, with edge grain of plywood not exposed as form for concrete.
- E. Provide openings in forms to accommodate other work, including mechanical and electrical work. Accurately place and securely support items required to be built into the forms.

PART 9 - FORMS FOR EXPOSED CONCRETE

- A. Drill forms to suit ties used and to prevent leakage of concrete mortar around tie holes. Do not splinter forms by driving ties through improperly prepared holes.
- B. Do not use metal cover plates for patching holes or defects in forms.
- C. Provide sharp, clean corners at intersecting planes, without visible edges or offsets. Back joints with extra studs or girts to maintain true, square intersections.
- D. Use extra studs, walers and bracing to prevent bowing of forms between studs and to avoid bowed appearance in concrete. Do not use narrow strips of form material which will produce bow.
- E. Assemble forms so they may be readily removed without damage to exposed concrete surfaces.

- F. Form molding shapes, recesses and projections with smooth-finish materials, and install in forms with sealed joints to prevent displacement.
- G. Form chamfers with 3/4" x 3/4" strips, unless otherwise shown, accurately formed and surfaced to produce uniformly straight lines and tight edge joints. Extend terminal edges to required limit and miter chamfer strips at changes in direction.
- H. Unexposed corners may be formed either square or chamfered.

PART 10 - CONTROL JOINTS

- A. See 3A section for treatment of control and construction joints, including wood screeds, metal keyways and sawcuts. Locate as indicated.

PART 11 - PROVISION FOR OTHER TRADES

- A. Provide openings in concrete formwork to accommodate work of other trades, including those under separate prime contracts (if any). Size and location of openings, recesses and chases are the responsibility of the trade requiring such items. Accurately place and securely support items to be built into forms.

PART 12 - CLEANING AND TIGHTENING

- A. Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is to be placed. Retighten forms immediately after concrete placement as required to eliminate mortar leaks.

PART 13 - FORM COATINGS

- A. Coat form contact surfaces with form-coating compound before reinforcement is placed. Do not allow excess form coating material to accumulate in the forms or to come into contact with surfaces which will be bonded to fresh concrete. Apply in compliance with manufacturer's instructions.
- B. Coat steel forms with a non-staining, rust-preventative form oil or otherwise protect against rusting. Rust-stained steel formwork is not acceptable.

PART 14 - REMOVAL OF FORMS

- A. General: Formwork not supporting concrete, such as sides of walls, and similar parts of the work, may be removed after cumulatively curing at not less than 50°F for 24-hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided that curing and protection operations are maintained.

PART 15 - RE-USE OF FORMS

- A. Clean and repair surfaces of forms to be re-used in the work. Split, frayed, delaminated or

otherwise damaged form facing material will not be acceptable. Apply new form coating compound material to concrete contact surfaces as specified for new formwork.

- B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to the Architect.

PART 16 - CAST-IN-PLACE CONCRETE WALLS

- A. Forms for concrete work shall be so constructed as to produce finished concrete of precise sizes, shapes, lines, and locations shown on drawings, as approved by the Architect.
- B. Forms shall be substantially built with sufficient strength and rigidity to support dead-weight of wet concrete, impact at pouring, force of vibration of concrete without spreading or buckling, accurately put together with tight joints to prevent leakage of cement and water.
- C. Forms shall be clean, free of papers, sawdust, dirt debris. Temporary clean-out panels shall be provided in column, interior side of wall forms and at other points where necessary to facilitate cleaning and inspection immediately before depositing concrete. Dust or debris will not be tolerated in forms when concrete is to be placed. Joints in forms for cleanout panels shall be located away from finished surfaces wherever possible. Such joints shall be neat, tight, and leave only marks of type which can be removed by light grinding finished concrete. Provide cover of polyethylene sheeting for column and wall forms to prevent accumulation of dirt, debris, etc., in forms.
- D. Form ties for finished walls, if used, must be lined up, uniformly spaced in each panel in both horizontal and vertical directions. Form tie patching shall be approved by the Architect for profile and finish. Where openings occur at right regular spacings do not use wall ties above, below or between openings. Use wall ties only through openings. Provide walers, bracing beams above, below, between openings as required to contain freshly placed concrete.
 - 1. This Contractor shall construct forms for openings, slots, beam pockets, light recesses, notches or chases required in concrete members for installation by other trades as directed by subcontractor requiring same.

End of Section

SECTION 03210 - CONCRETE REINFORCEMENT

PART 1 - 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:
 - 1. 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.
 - 1. 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:
 - 1. 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. 8 mil. polyethylene
 - b. Vapor Seal 1/8" Heavy Duty
 - 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 301 "Specifications for Structural Concrete for Buildings".
 - 2. ACI 318 "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 Compressive Strength	Max. - Min. Slump (inch)	Air Content (%)
All concrete not otherwise indicated	3,500	4-1	2%-4%
Exterior plaza slabs	4,000	3-1	4%-7%

PART 8 - CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, as follows:
1. Provide Type 1 cement, except as otherwise indicated. Type 3 cement may be used in lieu of Type 1 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.
1. 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 301.
- 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 301.
- 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.
1. 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 1 in 100, and that the probable frequency of an average of 3 consecutive tests below required compressive strength will not exceed 1 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:
1. 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 1/2" 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:
1. Ramps and Sloping Surfaces: Not more than 3".
 2. Reinforced Foundation Systems: Not less than 1" and not more than 3".
 3. All Other Concrete: Not less than 1" 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.
1. 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:
1. 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 5.1. 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 14.1, 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 ; 1 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 if the averages of all sets of three consecutive compressive strength test results equal or exceed the 28-day design compressive strength of the type or class of concrete; and, 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 field 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 representative 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 1 - 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:
 1. 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.
 1. 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.

1. 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 301-72, 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 or 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 1, unless other type acceptable to the Architect.
 - 1. 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 indicated.
- 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 1/4" 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 1/4" in 10' when tested with a 10' 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 301 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 12 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 1/2" diameter, and holes left by tie rods and bolts, down to solid concrete but, in no case, to a depth of less than 1". 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 1" 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 1" 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 03371 - GROUT

PART 1 - GENERAL

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

PART 2 - RELATED WORK SPECIFIED ELSEWHERE

- A. Structural steel base plates, anchoring devices and leveling shims: Section 5A.

PART 3 - DELIVERY AND STORAGE

- A. Prevent damage to or contamination of non-shrink grouting materials during delivery, handling and storage.
- B. Store all non-shrink grouting materials in undamaged condition with seals and labels intact as packaged by the manufacturer.
- C. Non-shrink grout - SonogROUT - Sonneborn - Contech by Sonneborn Building Products Division or approved equal to be used under bearing plates or for grouting rebar dowels into existing walls.

PART 4 - MATERIALS

- A. Non-shrink grout conforming to the following requirements:
 - 1. Manufactured under rigid quality control specifically for grout used in transferring heavy loads.
 - 2. Contain metallic and non-metallic aggregates especially graded to minimize bleeding.
 - 3. Contain metallic aggregate that is ductile and capable of withstanding impact without fracturing.
 - 4. Have an initial setting time of approximately one hour at 70 degrees F.
 - 5. Produce no settlement or drying shrinkage at 3 days or thereafter.
 - 6. Have higher strength at all ages than plain cement grout of the same flowability.
 - 7. Resist attack by oil and water and have lower absorption than plain cement grout of the same flowability.
- B. Portland Cement: ASTM C 150-72, Type 1.
- C. Sand: ASTM C 33-71a, Fine Aggregate.
- D. Pea Gravel: ASTM C 33-71a. Coarse aggregate, graded so that at least 90 percent passes 3/8-inch sieve and 90 percent is retained by a number 4 sieve.

PART 5 - MIXES

- A. For less than 2-inch clearance, or where size or shape of space makes grouting difficult, grout mix shall consist of grout material and water.
- B. For greater than 2-inch clearances where coarse aggregate will not obstruct free passage of the grout, extend grout by adding 50 pounds of pea gravel per 100 pounds of grout material.
- C. Use the minimum amount of water necessary to produce a flowable grout without causing either segregation or bleeding.
- D. Portland cement mortar for raked-out edges of non-shrink grout: 1 part Portland cement, 2 parts sand and 0.50 parts water by weight.

PART 6 - MIXING

- A. Mix non-shrink grouting materials and water in a mechanical mixer for no less than 3 minutes.
- B. Mix grout as close to the work areas as possible and transport the mixture quickly and in a manner that does not permit segregation of materials.
- C. After the grout has been mixed, do not add more water for any reason.

PART 7 - PROCEDURES

- A. Installation methods and procedures shall be approved by the Engineer's representative before work is begun.

PART 8 - SURFACE PREPARATION

- A. Remove all defective concrete, laitance, dirt, oil, grease, and other foreign material from concrete surfaces by bush-hammering, chipping, or other similar means, until a sound, clean concrete surface is achieved.
- B. Lightly roughen the concrete, but not enough to interfere with the proper placement of grout.
- C. Cover concrete area with waterproof membrane until ready to grout.
- D. Remove foreign materials from all steel surfaces in contact with grout.
- E. Align, level, and maintain final positioning of all components to be grouted.
- F. Take special precautions during extreme weather conditions according to the manufacturer's written instructions.

- G. Immediately before grouting, remove waterproof membranes and clean any contaminated surfaces.
- H. Saturate all concrete surfaces with clean water; remove excess water and leave none standing.

PART 9 - PLACING

- A. Place non-shrink grouting material quickly and continuously by the most practical means permissible; pouring, pumping, or under gravity pressure.
- B. Do not use either pneumatic-pressure or dry packing methods without written permission of the Architect.
- C. Apply grout from one side only to avoid entrapping air.
- D. Final installation shall be thoroughly compacted and free from air pockets.
- E. Do not vibrate the placed grout mixture, or allow it to be placed if the area is being vibrated by nearby equipment.
- F. Do not remove leveling shims for at least 48 hours after grout has been placed.
- G. After shims have been removed, fill voids with plain cement-sand grout.
- H. After the non-shrink grout has reached initial set, rake out all exposed edges approximately 1-inch into the grouted area and point with portland cement mortar.

PART 10 - CURING

- A. Cure grout for 3 days after placing by keeping wet and covering with curing paper or by another approved method.

End of Section

DIVISION IV - MASONRY

SECTION 04100 - MORTAR

PART 1 - 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 C150, Type I or III.
- C. Masonry cement shall conform to ASTM C91.
- D. Hydrated lime shall conform to ASTM C207.
- E. Aggregate shall be natural river sand conforming to ASTM C144, shall be clean, sharp, well graded, and free from injurious amounts of dust, lumps, shale, alkalies, 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, 1,800 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.

Mortar Type	Portland Cement	Masonry Cement	Hydrated Lime or Lime Putty	Aggregate
N	None	1 (Type II)	None	(Not less than 2¼ nor 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.

- D. Mortar shall be colored to match the Buff colored CMU.

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 re-tempered 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 (1) 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 C91.
- C. Mortar Consistency. The mortar shall be of as wet a consistency as can be conveniently handled, and it shall be re-tempered 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 1 - 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 - SUBMITTALS

- A. Duplicate samples of the following shall be submitted to the Architect for approval prior to the delivery of such materials to the project site.
 - 1. Sample of Buff-colored, split-faced CMU.

PART 3 - 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 4 - 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 5 - 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 6 - MATERIALS

- A. Masonry Units:
 - 1. 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 C331, and shall be expanded shale produced by the rotary kiln process.

- c. All units shall be made with Portland cement complying with ASTM C150, and weighing not more than 100 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 100° 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 1½ 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.
- 1. 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 A41.1 titled American Standard Building Code Requirements for Masonry.

- 1. 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 have a hot dipped galvanized finish. Place joint reinforcement directly on masonry and place mortar over wire to form bed joint.

PART 7 - 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.

- 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, (16" 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.

End of Section

DIVISION V - METALS

SECTION 05120 - STRUCTURAL STEEL

PART 1 - GENERAL

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

PART 2 - RELATED WORK SPECIFIED ELSEWHERE

- A. Grouting under base and bearing plates, Division 3.

PART 3 - FURNISHED BUT INSTALLED ELSEWHERE

- A. Anchor bolts, loose bearing plates which will be installed under Division 3.

PART 4 - REQUIREMENTS FOR REGULATORY AGENCIES

- A. AISC Specification Structural Steel for Buildings shall mean AISC Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings, current edition.
- B. Specification for Structural Joints shall mean "Specifications for Structural Joints Using ASTM A 325 or A 490 Bolts, approved by the Research Council on Riveted and Bolted Joints of the Engineering Foundation, current edition.
- C. AWS Building Code shall mean AWS "Code for Welding in Building Construction", DI .0-69.

PART 5 - QUALIFICATIONS

- A. Welding procedures, welders, welding operations and tackers shall be qualified in accordance with AWS Building Code.

PART 6 - SUBMITTALS

- A. Shop Drawings:
 - 1. Submit shop drawings indicating all shop and erection details, including cuts, copes, connection, holes, threaded fasteners and welds.
 - 2. All welds, both shop and field shall be indicated by AWS "Welding Symbols" A2.0-68.
- B. Erection Procedure: Submit descriptive data to illustrate the structural steel erection procedure, including the sequence of erection and temporary staying and bracing.
- C. Welding Procedure: Submit written description as required to illustrate each welding procedure to be performed in the specified work.
- D. Field Welding Equipment: Submit descriptive data for field welding equipment, including

type, voltage and amperage.

E. Reports of mechanical tests for high strength threaded fasteners.

PART 7 - PRODUCT HANDLING

A. Delivery of materials to be installed under other sections:

1. Anchor bolts and other anchorage devices which are embedded in cast-in-place concrete or masonry construction shall be delivered to the project site in time to be installed before the start of cast-in-place concrete operations or masonry work.
2. Provide setting drawings, templates, and directions for the installation of the anchor bolts and other devices.

B. Storage of Materials:

1. Structural steel members which are stored at the project site shall be above ground on platforms, skids or other supports.
2. Steel shall be protected from corrosion.
3. Other materials shall be stored in a weathertight and dry place, until ready for use in the work.
4. Packaged materials shall be stored in their original unbroken package or container.

PART 8 - MATERIALS

A. Steel Shapes, Bars and Plates:

1. ASTM A 36-69.

B. Structural steel, fabrication and erection shall comply with the American Institute of Steel Construction, Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings.

C. Anchor Bolts: Conform to Section 1C of ASTM A 307-68

D. High-Strength Threaded Fasteners: ASTM A 325-74.

E. Filler Metals for Welding:

1. Shielded metal-arc welding: AWS A5.1-69 or A5.5-69.
2. Submerged arc welding: AWS A5.17-69.

F. Shop Paint Primer:

1. Standard Primer: SSPC Paint 14-64T.
- G. All bolted connections shall be of high strength bolts conforming to ASTM A 325 and shall be bearing type with threads excluded from shear plane.
- H. All structural steel shall be accurately set and properly secured in place. Field connections of steel work shall be welded or bolted with high strength bolts, size as called for on the drawings. Connections shall be as detailed. All welding to be done by certified welders with at least five years experience in structural welding, and in a neat workmanlike manner.

PART 9 - FABRICATION

- A. Fabricate Structural Steel in accordance with the AISC Specification with the modifications and additional requirements specified in this section:
 1. Shop and field welding shall conform to AWS and AISC Standards and Specifications.
- B. Shop connections shall be welded.
- C. Field Connections:
 1. Provide bolted, except where welded connections are indicated.
 2. High strength threaded fasteners shall be used for bolted connections, except where standard threaded fasteners are permitted.
- D. High-Strength Bolted Construction Assembly:
 1. Tightening shall be done in accordance with Section 5 of Specifications for Structural Joints.
- E. Welded Construction:
 1. Welding process shall be limited to one or a combination of the following:
 - a. Manual shielded-arc.
 - b. Submerged arc.
- F. Column Bases shall be milled and attached to columns.
- G. Shop Painting:
 1. Shop paint all steelwork.
 2. Steelwork to be painted shall receive a one-coat shop paint system in accordance with

PART 10 - ERECTION

- A. Erect structural steel in accordance with the AISC Specifications with modifications and additional requirements of this section:
- B. Column Bases and Bearing Plates:
 - 1. Attached column bases and bearing plates for beams and similar structural members shall be aligned with wedges or shims.
 - 2. Loose column bases and bearing plates which are too heavy to be placed without a derrick or crane shall be set and wedged or shimmed.
- C. Erection Tolerances:
 - 1. Individual pieces shall be erected so that the deviation from plumb, level and alignment shall not exceed 1 to 500.
- D. Field Assembly:
 - 1. The various members forming parts of a complete frame or structure after being assembled shall be aligned and adjusted accurately before being fastened.
 - 2. Fastening of splices of compression members shall be done after the abutting surfaces have been brought completely into contact.
 - 3. Bearing surfaces and surfaces which will be in permanent contact shall be cleaned before the members are assembled.
 - 4. Splices shall be permitted only where indicated.
 - 5. Field connections, field welds, and shear connectors shall be as specified in "Fabrication."
 - 6. Erection bolts used in welded construction shall be tightened and left in place.
- E. Gas Cutting: Field correcting of fabrication by gas cutting shall not be permitted on any major member in the structural framing without prior approval of the Architect.

PART 11 - TOUCH-UP PAINTING

- A. Immediately after erection, clean field welds, bolted connections, and abraded areas of the shop paint, and paint all exposed areas with the same material as used for shop painting. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.

End of Section

SECTION 05400 - COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.01 Summary

A. Section Includes:

1. Exterior and interior nonload-bearing stud framed walls and curtainwalls.

B. Products Supplied But Not Installed Under This Section:

1. Anchor Bolts.

C. Related Sections:

1. 05120 - Structural building frame
2. 04200 - Masonry veneer
3. 07210 - Building Insulation
4. 09110 - Non-Load-Bearing Wall Framing
5. 09250 - Gypsum Board

1.02 System Requirements

A. Performance Requirements:

1. Size components to withstand design loads as shown on Drawings, and following deflection limits:
 - a. Exterior Non-Load-Bearing Curtainwall: horizontal deflection of 1/600 of wall height.

1.03 Submittals

A. Reference Section 01300 - Submittal Procedures; submit following items:

1. Product Data.
2. Shop Drawings: Show wall sections coordinated with Drawings showing framing, accessories, anchorage, and connection details.
3. Quality Assurance/Control Submittals:
 - a. Qualifications: Proof of manufacturer, installer, and welder qualifications.
 - b. Structural Design Calculations.
 - c. Certificates:
 - 1) Mill certificates signed by framing member/accessory manufacturer certifying compliance with material requirements.
 - 2) Welder

- d. Manufacturer's Installation Instructions for framing members and framing accessories.
- B. Closeout Submittals: Reference Section 01700 - Closeout Submittals; submit following items:
- 1. Record Drawings.

1.04 Quality Assurance

A. Overall Standards:

- 1. Calculate structural properties of cold-formed metal framing and accessories in accordance with AISI "Specification for the Design of Cold-Formed Steel Structural Members."
- 2. Provide structural design calculations sealed and signed by a Professional Engineer licensed in the state where the Project is located.
- 3. Welding Standards: Comply with AWS D1.1 "Structural Welding Code-Steel," and AWS D1.3 "Structural Welding Code-Sheet Steel."

B. Qualifications:

- 1. Manufacturers' Qualifications: Minimum five years experience in producing products of the type specified.
- 2. Installer Qualifications: Minimum three years experience in installation of the type of products specified.
- 3. Welder Qualifications: Current AWS Certificates for welding processes required.

1.05 Delivery, Storage, and Handling

- A. Reference Section 01620 - Product Storage and Handling Requirements.
- B. Follow manufacturer's instructions.

PART 2 - PRODUCTS

2.01 Manufacturers

- A. Studs, Tracks, Joists, Trusses: Any manufacturer complying with requirements specified herein.

2.02 Framing Members

- A. Studs: ASTM A 653/653 M steel, galvanized, channel shaped with lipped flanges, punched web, size as shown on Drawings.
- B. Tracks: ASTM A 653/653 M steel, same designation, coating, and thickness as studs except as otherwise noted, channel shaped, solid web, depth compatible with studs, size, thickness and grade as required by structural design calculations.

2.03 Framing Accessories

- A. Material: ASTM A 653 steel; SS Grade 50 (340), Class 1, 50 ksi (340 MPa) minimum yield strength, 65 ksi (450 MPa) minimum tensile strength, G60 (Z180) hot-dipped galvanized coating, except as otherwise noted.
- B. Stamp manufacturer's name on each accessory item.
- C. Provide screws with accessories designated for screw attachment.
- D. Connector Devices:
 - 1. Vertical Deflection Clips: VertiClip®, including step bushings. Rigid attachment to structure and screw attachment to stud web using step-bushings to permit frictionless vertical movement. 68 mils minimum thickness, size as noted.
 - 2. Drift System Clips: DriftClip™, including step bushings. 68 mils (1.72 mm) minimum thickness, size as required by structural design calculations.
 - a. Screw attachment to stud web using step-bushings to permit frictionless vertical movement.
 - b. Screw attachment to structure using step-bushings to permit frictionless movement in the plane of the wall.
 - 3. Rigid Clip Angles: StiffClip™. Rigid attachment to structure and stud web.
 - 4. Floor Ties: Floor to floor strap ties, 2 inches thick. Screw attachment to stud flanges. Length as required by structural design calculations.
 - 5. Hip Angle-135 degree: Rigid attachment to webs of hip framing members. Length and thickness as required by structural design calculations.
 - 6. Roof Ties: Fabricate for screw attachment to joist web and top track/stud flanges. Size and thickness as required by structural design calculations.

E. Bridging:

1. Cold rolled Channel: 1-1/2 by 1/2 inch by 56 mil thick.
 - a. Bridging Clip: BridgeClip®. Provide attachment through stud punch-out clamping onto stud web and wrapping around bridging channel. Provide holes for screw attachment to stud web and channel.
2. Flat Strap. Width and thickness as required by structural design calculations. Rigid attachment to stud flange.
3. Solid Bridging: Channel shaped bridging with lipped flanges and integral formed clips. Screw attachment to stud. 33 mils minimum thickness, size as required by structural design calculations.
4. Cross Bridging: Fabricate members for specific joist depth and spacing with one screw to each joist flange and one to each joist web. Provide bridging sized to joist depth and spacing, 36 mils minimum thickness, as required by structural design calculations.

F. Miscellaneous Items:

1. Joist Hangers: Rigid attachment to structure and joist web, 68 mils (1.72 mm) thick. Provide hanger type and size as required by structural design calculations.
2. Joist Plate: Hole reinforcing plates designed for screw attachment to joist or stud webs. Provide size and thickness as required by structural design calculations.
3. Web Stiffeners: Channel shaped stiffener. Screw attachment to joist or stud webs. Provide size and thickness as required by structural design calculations.

2.04 Fasteners

- A. Screws: Corrosion resistant coated, self-drilling, pan or hex washer head. Provide screw type and size as required by structural design calculations, or as recommended by The STEEL Network for the specific condition and thickness of materials being joined.
- B. Anchor Bolts and Studs: ASTM A 307, Grade A, carbon steel, with hex-head carbon steel nuts and flat steel washers. Hot-dip zinc coated in accordance with ASTM A 153. Provide bolt or stud type and size as required by structural design calculations.
- C. Expansion Anchors: Federal Specification FF-S-325, Group II, Type 4, Class 1. Provide bolts listed or approved by one or more of the following and of diameter and length as required by structural design calculations.
 1. International Conference of Building Officials.

- D. Powder Actuated Fasteners: Federal Specification FF-P-395b. Manufacturer from AISI 1062 or 1065 steel, austempered to a minimum core hardness of 50 to 54 HRC and zinc plated in accordance with ASTM B 633. Provide fasteners listed or approved by one or more of the following and of type, diameter and length as required by structural design calculations:
1. International Conference of Building Officials.

2.05 Miscellaneous Materials

- A. Galvanizing Repair Compound: SSPC-Paint 20, spray-can applicator.

2.06 Fabrication

- A. Shop Assembly: Fabricate assemblies to size and configuration required; fitted and connected to meet design requirements.
1. Assemble in largest practical sections for delivery to site.
 2. Reinforce and brace assemblies to withstand handling stresses.

PART 3 - EXECUTION

3.01 Examination

- A. Examine substrates upon which work will be installed.
- B. Coordinate with responsible entity to perform corrective work on unsatisfactory substrates.
- C. Commencement of work by installer is acceptance of substrate.

3.02 General Installation

- A. Install cold-formed metal framing plumb, square, true to line and securely fastened as required by structural design calculations.
- B. Following manufacturer's installation instructions. If installation instructions conflict with these specifications or Drawings, adhere to specifications or Drawings.
- C. Cut members by shearing or sawing.
- D. Install members in single piece lengths except that tracks may be spliced, butt-welded, or each length anchored to a common building frame element.

- E. Install insulation in framing spaces of insulated assemblies made inaccessible after erection.
- F. Repairs and Touch-Up: Clean damaged surfaces and coatings. Touch-up field welds and damaged galvanized surfaces with galvanizing repair compound.
- G. Tolerances:
 - 1. Variation from plumb, level, and true to line: 1/8 inch in 10 feet (1:960).
 - 2. Member Spacing: Not more than 1/8 inch (3 mm) plus or minus from spacing indicated.

3.03 Framing Member Installation

- A. Studs:
 - 1. Secure bottom and top tracks in place as required by structural design calculations.
 - 2. Install studs at spacing as shown on Drawings, at each side of openings, and not more than 2 inches from abutting walls.
 - a. Frame corners with three studs.
 - b. Frame wall openings wider than stud spacing with double stud at each jamb.
 - 3. Install supplementary framing or blocking to support work attached to framing. Where type of support is not shown, comply with industry standards.

3.04 Framing Accessory Installation

- A. Install accessories as required by structural design calculations. Provide appropriate fasteners in all predrilled holes backed by another framing member.
 - 1. Bridging Clip for Cold Rolled Channel Bridging: Secure to stud web by inserting tabs through web slots and with 2 screws. Secure to channel with one screw.

3.05 Cleaning

- A. Reference Section 01740-Cleaning.

End of Section

SECTION 05500 - MISCELLANEOUS METALS

PART 1 - 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 for 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

DIVISION VII - THERMAL AND MOISTURE PROTECTION

SECTION 07210 - FOUNDATION INSULATION

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide building insulation:
 - 1. Foundation walls, board type.

1.02 SUBMITTALS

- A. Submit for approval product data, test reports.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instruction.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Board Insulation:
 - 1. Type: Extruded polystyrene, rigid ASTM C578, at foundation.
- B. Accessories
 - 1. Adhesive and mechanical anchors and clips.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. 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. Provide full thickness in one layer over entire area, tightly fitting around penetrations.
- B. Install extruded polystyrene at foundation.

End of Section

SECTION 07900 - JOINT SEALERS

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.

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. Primers shall be as manufactured and recommended for each substrate by the manufacturer of each caulking compound used in the work.
- E. 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.
- F. 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 of 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

DIVISION VIII - DOORS AND WINDOWS

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, POLYURETHANE CORE

- A. Physical Properties:
 - “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 gauge steel)
- C. Doors shall be fabricated of:
 - 1. Cold rolled steel, interior.
 - 2. 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 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.
- I. Doors shall be reinforced internally with a 14 gage steel reinforcement for surface closers when specified.
- J. Out swinging exterior doors shall be provided with top caps for protection against weather and with a polyurethane core.
- K. 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 D-16. (Issue A).

- C. 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.
- D. Reinforcing channels, where called for, shall be 12 gauge reinforcing channel in head.

PART 8 - 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 9 - 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 10 - 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 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.

C. Door #4, provide (5) 24" x 7" acrylic lights.

1. Additional accessory for door #4: remote radio control system.

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 high lift.

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 SEL 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 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 in schedules.

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.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

Numbers given in this schedule are of the following manufacturers.

<u>PRODUCTS</u>	<u>MFG. SPECIFIED</u>	<u>APPROVED EQUAL</u>
Pivots	Hager	Ives, Rixson
Hinge	Ives	Hager, Bommer
Cylinders	Schlage	Best, Falcon
Exit Devices	Von Duprin	Precision
Closers	LCN	Corbin-Russwin, Sargent
Trim/Auxiliary	Hager Companies	Rockwood, Ives
Weather Strip	Hager Companies	Zero, NGP

2.02 HARDWARE FINISHES

US 26D	(626)	Pivots, Hinges (Interior), Locks, Bolts, Exit Devices
US 32D	(630)	Hinges (Exterior) Push/Pulls, Stops
Sprayed Aluminum	(689)	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.

2.03A PIVOTS

Heavy Weight Ball and Thrust Bearing Pivots ANSI C07162, C07321 and C07131 ¾" offset, two knuckle, handed pivot sets. Use top, bottom and one intermediate up to 8'-0" use an additional intermediate for each 12" or fraction thereof up to 8. For doors wider than 3'-6" add an additional intermediate pivot.

2.04 LOCKSETS

N/A

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 than 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 cylinders 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# 2 (pair)

Top Pivot	495
Intermediate Pivot	496
Bottom Pivot	497
Rim Cylinder	20-022
Rim Exit	33A x EO
Rim Exit	33A NL-OP
Rem. Mullion	5654
Pull	12J
Hold Open Closer	4040 H Spring Cush
Spacer	4040-61
Drop Plate	4040-30
Threshold	520S-S

Note: Weather Strip to be supplied by aluminum door supplier.

Hardware Set 2 – Tag# 1, 3

Top Pivot	495
Intermediate Pivot	496
Bottom Pivot	497
Rim Cylinder	20-022
Rim Exit	33A NL-OP
Pull	12J
Hold Open Closer	4040 H Spring Cush
Spacer	4040-61
Drop Plate	4040-30
Threshold	520S-S

Note: Weather Strip to be supplied by aluminum door supplier.

Hardware Set #3 – Tag# 4, 5, 7

Hinges	BB1191 NRP 4 ½” x 4 ½”
Rim Cylinder	20-022
Rim Exit	XP98NL-OP
Offset Pull	12J
Hold open Closer	4041 H Spring Cush
Kick Plate	190S 8” x 2”LTDW
Weather Strip	870S-N
Threshold	520S-S

Hardware Set #4 – Tag# 8 (pair)

Hinges	BB1191 NRP 4 ½” x 4 ½”
Rim Cylinder	20-022
Rim Exit	XP98NL-EO
Rim Exit	XP98NL-OP
Rem. Mullion	4954
Offset Pull	12J
Hold open Closer	4041 H Spring Cush
Kick Plate	190S 8” x 2”LTDW
Weather Strip	870S-N
Threshold	520S-S

SECTION 08800 - GLASS AND GLAZING

PART 1 - SCOPE

- A. This Section includes all labor, materials, equipment and related items required for the work of glass and glazing as shown on the Drawings and specified herein.

PART 2 - SUBMITTALS

- A. The Contractor shall submit to the Architect for approval prior to furnishing materials at the job site, in five (5) copies, manufacturer's specifications, application and performance data, etc. for all glass and glazing materials, except miscellaneous accessories specified hereunder.
- B. Samples. The Contractor shall submit if requested to the Architect for approval prior to furnishing materials at the job site, duplicate samples of the following:
 - 1. Glass of each type, not less than 3" x 5".
 - 2. Glazing compound, one (1) cartridge.

PART 3 - CODES AND STANDARDS

- A. All glazing compounds and methods of glazing shall be in accordance with applicable portions of the Flat Glass Marketing Association's "Glazing Manual", latest edition.
- B. All safety glazing shall meet requirements of the Kentucky Department of Housing, Buildings, and Construction and appropriate Kentucky Revised Statutes.

PART 4 - PRODUCT HANDLING

- A. Glass shall be delivered to the job and shall be stored on end and under cover. Glass shall be properly crated, packaged, and protected from damage. Glazing compounds shall be delivered in manufacturer's sealed containers, with attached labels properly identifying the types.

PART 5 - MATERIALS

- A. Insulating glass for installation in aluminum windows shall be of sizes shown, composed of outer and inner panes of 1/4" (for color, see elevations) 1/4" clear .548, 1" O.A. , by LOF separated by a 1/2" dehydrated air space. Each unit shall be hermetically sealed and glass shall be separated by a spacer around the edges as standard with the manufacturer.
 - 1. Warranty. Each unit shall be guaranteed by the manufacturer not to develop, under normal conditions, material obstruction of vision as a result of film formation on the internal glass surfaces caused by failure of the hermetic seal other than through glass breakage for a period of ten (10) years.

- B. Compound for glazing in openings other than those which are dry-glazed shall be non-staining, one-part polysulfide base sealant, and shall be PRC "Rubber Caulk 5000", Pecora "Synthacalk GC-9", or DAP "Flexiseal". Color of compound shall be manufacturer's standard as selected by the Architect.
- C. Miscellaneous Items. Provide neoprene spacers, setting blocks, clips, and all accessories required for the work of glazing.
- D. Other material shall be as specified hereinafter.

PART 6 - GLAZING

A. General Requirements:

1. Glazing shall be done in a weathertight and waterproof manner. No glazing work shall be done when the temperature is below 40 degree F.
 2. Glazing surfaces shall be extremely clean, dry and completely dust free before commencing application of glazing materials.
 3. Remove glazing beads completely, perform glazing operations and set back in correct location. Do not mar beads, screws and the like.
 4. Glazing shall be done at the building after windows, frames, doors, etc. are installed.
 5. Remove excess glazing compound from glass and other adjacent surfaces to prevent permanent stains or other damage.
- B. Aluminum entrance doors and fixed window frames shall be glazed in strict accordance with entrance manufacturer's instructions and details for these operations.

PART 7 - CLEANING

- A. At completion, remove dirt, stains, etc. from glass. Wash and polish glass inside and outside surfaces. Exercise care so as not scratch or damage glass. Do not use acid solution or water containing caustic soaps. Leave work in perfect condition as approved by the Architect.

End of Section

DIVISION IX - FINISHES

SECTION 09900 - PAINTING

PART 1 - GENERAL

1.01 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.

1.02 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.

1.03 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.

1.04 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.

1.05 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

2.01 ACCEPTABLE MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide paint products of one of the following:
 - 1. Glidden Professional
 - 2. Porter Paints
 - 3. PPG
 - 4. Benjamin Moore and Co.
 - 5. The Sherwin-Williams Company

2.02 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

3.01 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.

3.02 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 backpriming.
 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".

3.03 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.

3.04 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 insure 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.

3.05 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.

3.06 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.

3.07 PAINT SYSTEMS

- A. Paints listed are those of Glidden Professional 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: 4160-1000 Devguard Multi-Purpose Tank & Structural Primer 2-2.5 DFT

1st Coat: 4160-1000 Devguard Multi-Purpose Tank & Structural Primer @ 2.0-2.5 mils dft

2nd Coat: 4308-0100 Devguard Alkyd Industrial Enamel @ 2.0-2.5 mils dft per coat

3rd Coat: 4308-0100 Devguard Alkyd Industrial Enamel @ 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: 4160-1000 Devguard Multi-Purpose Tank & Structural Primer @ 2.0-2.5 mils dft

1st Coat: 4308-0100 Devguard Alkyd Industrial Enamel @ 2.0-2.5 mils dft per coat

2nd Coat: 4308-0100 Devguard Alkyd Industrial Enamel @ 2.0-2.5 mils dft per coat

3. Concrete Block

Provide clean and dulled surface for application of new paint as recommended by paint manufacturer.

1st Coat: 4000-1000 Bloxfil 4000 Heavy Duty Block Filler @ 7.0-14.5 mils dft

2nd Coat: 4206-0100 Devflex Interior/Exterior Waterborne Acrylic Semi-Gloss @ 1.5-2.0 mils dft

3rd Coat: 4206-0100 Devflex Interior/Exterior Waterborne Acrylic Semi-Gloss @ 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: 4160-1000 Devguard Multi-Purpose Tank & Structural Primer @ 2.0-2.5 mils dft

2nd Coat: 4308-0100 Devguard Alkyd Industrial Enamel @ 2.0-2.5 mils dft per coat

3rd Coat: 4308-0100 Devguard Alkyd Industrial Enamel @ 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: 1000-1200 Prep & Prime Interior Latex Wall Primer Sealer @ 1.2-1.5 mils dft

2nd Coat: 1406-0100 Dulux Pro Premium Semi-Gloss Interior Enamel @ 1.5 mils dft

3rd Coat: 1406-0100 Dulux Pro Premium Semi-Gloss Interior Enamel @ 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: 1000-1200 Prep & Prime Interior Latex Wall Primer Sealer @ 1.2-1.5 mils dft

1st Coat: 1200-0100 Dulux Pro Premium Interior Flat Latex Finish @ 1.4-2.0 mils dft

2nd Coat: 1200-0100 Dulux Pro Premium Interior Flat Latex Finish @ 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: 1000-1200 Prep & Prime Interior Latex Wall Primer Sealer @ 1.2-1.5 mils dft

1st Coat: 1402-0100 Dulux Pro Premium Eggshell Enamel Finish @ 1.5 mils dft

2nd Coat: 1402-0100 Dulux Pro Premium Eggshell Enamel Finish @ 1.5 mils dft

5. Galvanized Metal: 2 coats of an interior waterborne acrylic semi-gloss, durable and non yellowing

1st Coat: 4020-0100 Deflex DTM Flat Interior/Exterior Primer & Finish @ 2.2-3.5 mils dft

2nd Coat: 4216-0100 Devflex HP Waterborne Acrylic Semi-Gloss @ 1.5-4.0 mils dft

6. Aluminum: 2 coats of an interior waterborne acrylic semi-gloss, durable and non yellowing.

1st Coat: 4216-0100 Devflex HP Waterborne Acrylic Semi-Gloss @ 1.5-4.0 mils dft

2nd Coat: 4216-0100 Devflex HP Waterborne Acrylic Semi-Gloss @ 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: 1700-0000 WoodPride Interior Oil Wood Stain

2nd Coat: 1802-0000 WoodPride Interior Aquacrylic Satin Varnish

3rd Coat: 1802-0000 WoodPride Interior Aquacrylic Satin Varnish

8. Concrete Floors: 2 coats of waterbased coating, clear finish – #3214 Groundworks waterbased concrete sealer by Glidden Professional.

Note: Concrete must cure 45 days. Smooth-troweled concrete must be etched with muriatic acid prior to finishing. Do not apply to areas scheduled to receive flooring.

END OF SECTION

DIVISION XIII - SPECIAL CONSTRUCTION

SECTION 13120 - PRE-ENGINEERED METAL BUILDING SYSTEM

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Work of this section covers the design, fabrication and erection of a low rise, modular, rigid frame type, pre-engineered metal building of dimensions and heights indicated.
- B. Building components specified herein include structural framing, roof panels, wall panels, framed openings, flashings, gutters and downspouts, bracing, fasteners, and accessories as indicated or specified.
- C. Work Specified in Other Sections
 - 1. Concrete (foundations)
 - 2. Masonry
 - 3. Interior finishes such as sprinklers, ceilings, etc.
 - 4. Field painting

1.02 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. The latest edition of each reference shall apply unless otherwise specified.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

AISC S326 (1989) Voluntary Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings. (Allowable Stress Design)

AMERICAN IRON AND STEEL INSTITUTE (AISI)

AISI - 01 (2001) Specification for the Design of Cold-Formed Structural Steel

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A36/A572/A992 Structural Steel Shapes

ASTM A653 Steel Sheet, Zinc-Coated (G-90 Galvanized) by Hot-Dip Process, Structural (Physical) Quality.

ASTM A475 Extra High Strength Grade Cable

ASTM A529 High-Strength Structural Steel Flat Bars

ASTM A1011 SS/HSLAS Cold-Formed Structural Shapes

ASTM A792 SS Steel Sheet (For Cladding Panels), Aluminum-Zinc Alloy Coated by Hot-Dip Process

ASTM A53 / A500, Gr. B Hollow Structural Shapes

ASTM A307 Common Bolts

ASTM A325 / A490 High Strength Bolts

ASTM B117 Salt Spray (Fog) Testing

ASTM D523 Specular Gloss

ASTM D4214 Evaporating Degree of Chalking of Exterior Paints

ASTM D968 Abrasion resistance of Organic Coatings by Falling Abrasive

ASTM D2244 Calculation of Color Differences from Instrumentally Measured Color Coordinates

ASTM D2247 Testing Water Resistance of Coatings in 100% Relative Humidity

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1 Structural Welding Code-Steel (Latest Edition Unless Noted)

FEDERAL SPECIFICATIONS (FS)

FS TT-P-664 Protective Coatings for Fabricated Structural Members

METAL BUILDING MANUFACTURERS ASSOCIATION (MBMA)

MBMA-01 (2002) Low Rise Building Systems Manual

UNDERWRITERS LABORATORIES, INC (UL)

UL 580 Test for Uplift Resistance of Roof Assemblies

1.03 QUALITY ASSURANCE

- A. Manufacturer Qualifications: United States owned company regularly engaged in the fabrication of metal building systems for a minimum of 10 consecutive years and a member of the Metal Building Manufacturer's Association.
 - 1. Certified by American Institute of Steel Construction (AISC) Metal Building Certification Program (Category - MB).
- B. As a basis of quality, these specifications herein delineate the material quality, design criteria and workmanship used in building systems designed, manufactured and furnished by United Structures of America, Inc. Like products of other manufacturers may be approved provided they meet all the requirements specified herein. Approval of such is subject to requirements as set forth in the general section of these specifications.
- C. All structural mill sections and welded up plate sections shall be designed in accordance with the AISC "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings", and all cold-formed steel structural members shall be designed in accordance with AISI "Specifications for the Design of Cold-Formed Steel Structural Members".
- D. All roof and wall panels shall be designed in accordance with the AISI "Specifications for the Design of Light Gauge Cold-Formed Steel Structural Members".
- E. All welding shall be in accordance with the AWS "Structural Welding Code", D1.1.
- F. Building loading application and design shall be in accordance with the Kentucky Building Code.

1.04 SUBMITTALS

- A. Certifications: Provide a letter of design certification for the structural framing system, signed and sealed by a qualified professional engineer registered in the state where the jobsite is located. The certification letter shall indicate the location (city and state) where the building is designed and the location of the manufacturing plant. AISC – Category MB certification shall be indicated for the Design facility and the Manufacturing facility.

- B. Design Drawings: Submit anchor bolt layouts, framing plans, elevations and necessary sections and details.
 - 1. Provide erection drawings bearing the seal of a Professional Engineer registered in the state of Kentucky.
 - 2. Provide layouts of roofing and siding panels, edge conditions, panel joints, corners, trims and flashings.
- C. Foundation Reactions: Submit foundation reactions and anchor bolt sizes. It is the responsibility of the foundation design engineer to design and engineer the foundations, as well as determine the required anchor bolt embedment length and details to resist anchor bolt pull-out and bearing stresses acting on the anchor bolts and base plates.

1.05 DESIGN LOADING CRITERIA

- A. Wind Loads. See Sheet S-3.1.
- B. Roof Load: See Sheet S-3.1.
- C. Snow Load. See Sheet S-3.1.
- D. Additional Dead Loads are the mechanical roof top units. See Mechanical plans. The Design Dead Load shall be the weight Metal Building framing and components only.
- E. Auxiliary (Collateral) Design Loads shall be 5 PSF to account for additional loads imposed by fire protection systems, ceilings and lighting, etc., as well as the actual weight of equipment or mechanical units located on or attached to the building. Refer to drawings for location of equipment and mechanical units.

F. DEFLECTION LIMITS

- 1. Rigid Frame: H/240
- 2. Rigid Frame: L/200.
- 3. Purling: L/240
- 4. Girts: L/360
- 5. End Wall Columns: H/240
- 6. End Wall Rafters: L/240
- 7. Spandrels at Front Office: L/500
(10 Year Wind Occurrence)

- G. Seismic Loads. See Structural.

1.06 WARRANTIES

- A. Provide building manufacturer's warranty guaranteeing the building system against defects in material for one year from the date of acceptance and shall provide for replacement of warranted material as required within that time period.

- B. Roof Panel Integrity: Provide manufacturer's standard twenty year warranty against perforation of metal panels due to corrosion under normal weather and atmospheric conditions.
- C. Wall and Roof Panel Finish: Provide manufacturer's standard twenty year warranty against cracking, peeling and color fade. The following are the color fade and chalking limitations:
 - 1. Color Retention: No color change in excess of an average of 5 NBS Units when measured in accordance with the procedure set forth in ASTM D2244.
 - 2. Chalking: Minimum of 8 rating when tested in accordance with ASTM D659.
- D. Weathertightness: 20 years.

PART 2 - PRODUCTS

2.01 DESCRIPTION

- A. The main building shall be a double slope building of steel rafters and columns, with building width, length and bay spacing, eave height and roof slope as indicated on the drawings. The front office shall be a lean-to structure by the PEEM as indicated on the drawings.

2.02 PRIMARY FRAMING

- A. The pre-engineered structure shall be a rigid frame "RF" manufactured of solid web members having tapered depth.
- B. The materials used in the fabrication of the primary framing shall be designed utilizing standard practices, generally in compliance with the AISC code.
 - 1. Structural flat plate, strip and/or bar stock generally shall conform to the physical requirements of ASTM A1011, ASTM A572, ASTM A529, A607, or ASTM A36 as applicable, and shall have a minimum yield strength of 55,000 psi.
 - 2. W, M, and S shapes shall be of material conforming to the physical requirements of ASTM A36/A572/A992 and shall have a minimum yield strength of 36,000 psi.
 - 3. Round pipe sections shall be of material conforming to the physical requirements of ASTM A53 grade B and shall have a minimum yield strength of 35,000 psi.
 - 4. Members fabricated from plate or bar stock materials shall have flanges and webs joined on one side of the web by a submerged arc continuous weld process.

2.03 ENDWALL FRAMING @ REAR OF BUILDING

- A. Endwall framing shall include the corner columns, endwall columns and endwall rafters, and shall be manufactured of cold-formed light gage sections, welded plate sections and/or structural shapes.

- B. Materials used in the fabrication of endwall framing systems shall be designed utilizing standard practices, generally in compliance with the applicable sections of AISC and AISI.
 - 1. Cold-formed members shall be fabricated of material conforming to the physical requirements of ASTM A1011 and shall have a minimum yield strength of 55,000 psi.
 - 2. Structural shapes shall be of material conforming to the physical requirements of ASTM A36/A572/A992 and shall have a minimum yield strength of 50,000 psi.
 - 3. Members fabricated from plate or bar stock materials shall have flanges and webs joined on one side of the web by a submerged arc continuous weld process.

2.04 SECONDARY FRAMING

- A. Secondary framing shall be the structural members which distribute the loads to the primary framing systems, and shall include the eave struts, purlins, girts, wind bracing and other miscellaneous structural members. They shall be manufactured of cold-form light gage sections, welded plate sections and/or structural shapes.
 - 1. Eave struts shall be sized as required.
 - 2. Purlins and girts shall be nominal 8" "zee" or "cee" shaped members, and shall be designed as simple span, partially continuous or continuous for the specified loads.
 - 3. Wind and seismic longitudinal bracing shall consist of a system of diagonal cable or structural shapes bracing.
 - 4. Miscellaneous members shall normally be those members such as base angles, flange braces, jambs, headers, etc. These members shall be engineered for the specific purpose they serve within the over-all Metal Building System.
- B. Materials used in the fabrication of secondary framing shall be designed utilizing standard practices, generally in compliance with the applicable sections of AISC and AISI.
 - 1. Cold form members shall be fabricated of material conforming to the physical requirements of ASTM A1011 or A607 and shall have a minimum yield strength of 55,000 psi.
 - 2. Cable bracing shall be fabricated of material conforming to the physical requirements of ASTM A475-78 for extra strength grade.

2.05 STRUCTURAL PRIMER

- A. After fabrication, all components fabricated from welded plate sections, structural shapes or round pipe shall be prepared equal to the standards of SSPC-SP2 and primed with one shop coat of red primer which meets or exceeds the end performance of Federal Specification TTP-664. Primer shall be applied to a dry film thickness of 1 mil.
- B. Material used for components fabricated by cold form process shall be precoated by a commercial coater using a preparation process equal to SSPC-SP10 and after oven heating, apply a red oxide primer which meets or exceeds the end performance of TTP-664. Primer shall be applied to a dry film thickness of .5 mil.

2.06 ROOF COVERING

- A. Roof covering shall consist of the roof panels, their attachments, trim and sealants for use on the exterior of the roof and shall be equal to USA Guardian Mechanical-LOK Standing Seam, 24" coverage trapezoidal panel. The roof panels shall be installed on a ½" nom. block thermal float system.
- B. Material used in the fabrication of roof panels shall be a minimum of 24 gage having a minimum yield strength of 50,000 psi. Exterior finish shall have a precision coated, commercial grade Aluminum-Zinc Alloy.

2.07 WALL PANELS AND TRIM

- A. Siding and trim coverings shall consist of wall panels, their attachments and trim or flashings for use on the exterior of the walls and/or attachment to the roof covering. Siding shall be equal to USA "A" Architectural Profile as described in the following:
 - 1. Siding coverings consisting of an Architectural Style profile "A" shall provide a 36" net coverage having 1-1/4" deep major ribs at 12" on center.
- B. Material used in the fabrication of wall panels shall be a minimum of 26 gage having a minimum yield strength of 80,000 psi Siliconized Polyester coating. Colors shall be as selected by the owner from the manufacturers standard colors.
- C. Material used in the fabrication of flashing and trim for the gutters and downspouts, corners, wall openings, etc. shall be of the same thickness and finish as the wall panel. Colors shall be selected by the owner from the manufacturers standard colors.

2.08 ACCESSORIES

- A. ROOF FLASHING UNITS shall nominally be used for roof mounted mechanical equipment and/or vents. Flashings units are not intended to support any type of load. Loads are supported by means of subframes and/or auxiliary secondary support systems. Flashing units base configuration shall match the panel profile of the roof on which it is used.
 - 1. CURB UNITS are available in peak or hillside applications. Curbs are at least 18 gage galvanized material with welded construction and are insulated. Provide roof curb units with a plain galvanized finish to match the roof panel finish.
 - 2. ROOF JACKS shall be for flashing of plumbing vent stacks and/or other pipe-like penetrations. Jacks shall be black with flat, malleable bases that can be field formed to fit any standard panel configuration. Jacks shall have a heat range of -65 degrees centigrade to +250 degrees centigrade.
- B. FRAMED OPENINGS IN WALLS shall normally be an opening framed with 16 gage minimum, cold-formed members designed to meet the specified loads. Openings shall be trimmed in accordance with USA's standard practices.

- C. Blanket Insulation: Glass fiber, with factory laminated facing material
1. Glass fiber: Odorless, neutral colored, long filament, flexible resilient, produced in compliance with the NAIMA 202 specifications.
 2. Main Building Thermal Resistance: to meet R-13 at walls and R-19 at roof @ 75°F mean temperature. At front office, R-19 at ceiling; at walls, conventional R-19 faced fiberglass batt insulation.
 3. Flame spread Index: 25 or less, when tested in accordance with UL 723.
 4. Smoke Developed Index: 50 or less, when tested in accordance with UL 723.
 5. UL Classified.
 6. Facing: White polypropylene scrim kraft; 0.0015 inch (0.04 mm) thick polypropylene film, glass fiber scrim reinforcing, 11 lb. kraft paper; permeance 0.09 perms (1.1 ng/Pa s sq m). Composite fiberglass and facing to meet Flame Spread of 25 or less, Smoke Developed of 50 or less, when tested in accordance with UL 723.
 7. Provide facing 3 inches (75 mm) wider on both edges than blanket.
 8. Width: As required for installation.
 9. Use blanket insulation at roof and rear walls.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Erection of the pre-engineered building shall be performed by a company regularly engaged in the erection of metal buildings for a minimum of 5 years.
- B. Work shall be coordinated with work of other trades so that construction work of all trades can be properly completed.
- C. Before proceeding with the erection and in time to permit correction of defective setting, the owner shall verify the location and elevation of all anchor bolts for column bases.
- D. Erection practices shall conform to the MBMA "Code of Standard Practices". Section 5

3.02 ERECTION

- A. Erect building in accordance with the building manufacturer's erection drawings and written instructions.
- B. Field modifications shall not be made to structural members except as authorized by the building manufacturer.
- C. Erect building and all components plumb, true and level to lines and profiles indicated.
- D. Framing: Level base plates to a true even plane with full bearing to supporting structures.
- E. Purlins and Girts: Locate and space girts to suit door and window arrangements and heights. Secure purlins and girts to structural framing and hold rigidly to straight line with temporary shoring until secured by exterior sheeting.

- F. Bracing: Provide diagonal cable bracing (or other bracing as required by design) in roof and sidewalls as indicated on the erection drawings.
- G. Siding and Roofing: Arrange and nest side-lap joints so prevailing winds blow over lapped joints. Apply panel and associated items for neat and weather tight enclosure. Avoid panel creep or applications not true to line. Protect factory finishes from damages.
 - 1. Field cutting of panels by torch is not permitted.
 - 2. Install weatherseals as per manufacturer's instruction.
- H. Sheet Metal Accessories: Install gutters, downspouts, curbs, trim and other sheet metal accessories in accordance with manufacturer's recommendations for positive anchorage to building and weathertight anchorage.
- I. Insulation: Install concurrently with wall and roof panels. Install blankets straight and true with both sets of tabs sealed to provide a complete vapor barrier. Install insulation at eave and base to prevent wicking of water from gutter and sheeting notch.

3.03 CLEAN-UP AND PAINTING

- A. Clean building and components free of dirt, dust, grease and oil.
- B. Prepare surfaces and touch up structural steel, purlins, girts and other framing members with coating system of same type and color as used in shop coat.
- C. Clean exposed surfaces of the building promptly after erection is completed. Clean pre-finished work per coating manufacturer's directions.

END OF SECTION