SPECIFICATIONS

FOR

Softball Press Box
Lake Land College District Number 517
Mattoon, Illinois 61938

PROJECT NO. 2023-007

Bid Date: July 26, 2023

A/E Project # 2721073

Architect / Engineer:
The Upchurch Group, Inc.
123 N. 15th St.
Mattoon, Illinois
61938
License #184-003401
Phone: 217.235.3177
upchurchgroup@ upchurchgroup.com

SECTION 00010

TABLE OF CONTENTS

END OF SECTION

SECTION 00100

ADVERTISEMENT FOR BIDS

Bids: July 26, 2023
LAKE LAND COLLEGE DISTRICT #517
MATTOON, ILLINOIS
Project No. 2023-007

The Lake Land College District Number 517 Board of Trustees will receive sealed bids for a Softball Press Box.

Bids will be received until 1:00 PM Central Standard Time on Wednesday, July 26, 2023 in the office of the Vice President for Business Services, in the Board and Administration Center on the campus of Lake Land College, 5001 Lake Land Boulevard, Mattoon, IL. Bids received after this time will not be accepted. Bids will be opened and publicly read immediately after the specified closing time. All interested parties are invited to attend. Obtain bidding documents/requirements at the office of the Vice President for Business Services, phone (217) 234-5224, gnuxoll1@lakelandcollege.edu. Prospective Bidders are able to; view, download and print, and/or order hard copies for delivery; full sets of the plans and specifications at www.upchurchgroupplanroom.com . Visit plan room for directions, or send email (include project name, your name, your company name, address, and phone number) requesting instructions to aclimer@upchurchgroup.com. There will be a $25.00 non-refundable fee to download; the non-refundable fee for hard copies will vary depending on size of plans and specs. You will be able to view full sets before purchasing. All official notifications, meeting minutes, addenda, if any, and other Bidding Documents will be offered only through www.upchurchgroupplanroom.com.

The Board of Trustees reserves the right to waive irregularities and reject all bids or parts of bids.

Successful Bidders shall have the sole responsibility of complying with all aspects of existing Prevailing Wage Policies.

Lake Land College actively promotes continuing economic development in compliance with the Business Enterprise for Minorities, Females, and Persons with Disabilities Act (30 ILCS 575) . Successful Prospective Vendors shall have the sole responsibility of complying with all aspects.

Gary Cadwell
Chairperson - Lake Land College Board of Trustees

SECTION 00200

INSTRUCTIONS TO BIDDERS

PART 1 GENERAL

1.01 DEFINITIONS

A. Lake Land College Board of Trustees will be hereafter referred to in this Specification as “Owners” and all correspondence shall be addressed to: Vice President for Business Services, Lake Land College, 5001 Lake Land Blvd., Mattoon, IL 61938.

B. A Bidder is a person or entity who submits a Bid to the Owner.

C. Bidding Documents include the Advertisement for Bid, Instructions to Bidders, Bid Forms and supplements, and Addenda.

D. Contract Documents include any Contract forms, Specifications, Drawings, Addenda, and modifications.

E. An Agreement is a written agreement between the Owner and Contractor setting forth the obligations of the parties thereunder, including but not limited to the provision of the specified goods and materials, the basis of payment and the contract time.

F. A Bid is a complete and properly signed proposal to provide the goods and services for the sums stipulated therein, submitted in accordance with the Bidding Documents.

G. The Base Bid is the sum stated in the Bid for which the Bidder offers to provide the goods and services described in the Bidding Documents as the base, to which items may be added or from which items may be deleted for sums stated in Alternate Bids.

H. An Alternate Bid is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding changes in the items, as described in the Bidding Documents, are executed.

I. A Unit Price is an amount stated in the Bid as a price per unit of measurement for goods or services as described in the Bidding Documents or in the proposed Contract Documents.

1.02 DOCUMENTS

A. Copies of the Bidding Documents may be obtained at the Office of the Vice President for Business Services, 5001 Lake Land Boulevard, Mattoon, Illinois 61938, (217) 234-5224, gnuxoll1@lakelandcollege.edu.

1.03 EXAMINATION OF DOCUMENTS

A. Bidders shall examine all documents. Failure to do so will not relieve a successful bidder of his obligation to provide all labor and materials necessary to carry out the provision of his contract for the sum stated thereon.

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

1.04 EXAMINATION OF PREMISES

A. Before submitting proposals for this work, each bidder will be held to have examined the premises and satisfied himself as to the conditions existing and under which he will be obliged to operate, or that will in any manner, affect the work of this contract.

B. No allowance will be made subsequently in this connection in behalf of the contractor for any error or negligence on his part. The contractor agrees to accept the existing conditions as found at the time of signing of contract.

1.05 VISITING THE SITE

A. Each bidder may visit the site and examine it as stipulated above. No special arrangements are required to make this visit.

1.06 AREAS, QUANTITIES AND MEASUREMENTS

A. The contractor shall be responsible for all areas, quantities, and measurements related to the work to be performed under this contract. No extra charge or compensation shall be allowed the contractor for any error or negligence on his part. The contractor shall visit the job site and acquaint himself with all conditions concerning this work.

1.07 INTERPRETATIONS DURING BIDDING

A. If any Bidder is in doubt as to the meaning of any part of the Bidding Documents, they may submit a written request to: Vice President for Business Services, 5001 Lake Land Boulevard, Mattoon, Illinois 61938; for an interpretation of that part.

B. Written requests for interpretations or clarifications must be made no later than three (3) working days prior to the Bid Date specified in the Advertisement for Bids.

C. Any interpretation or change will be made only by Addenda numbered, dated, and issued by the Owner to each Bidder on record as having received a set of Bidding Documents and will be available for inspection wherever the

Bidding Documents are kept available for that purpose. Lake Land College will not be responsible for any other explanations or interpretations of the Bidding Documents.

1.08 SUBSTITUTION OF PRODUCTS

A. Manufacturer's trade names are used in specifications for the express purpose of establishing a standard of quality and coordination of design, not for the purpose of limiting competition.

B. All sizes of equipment must be as specified, and all pieces of equipment must include or have those features which are set forth in the specifications.

C. No substitution will be considered unless a written request has been submitted with their bid.

D. Bidders proposing substitutions in writing must submit detailed specifications with catalog cuts or manufacturer's literature, pictorially portraying that on which they are bidding for comparison to specified items by the Owner.

E. Any additional explanation or statement which the Bidder wishes to make must be placed in the same envelope and attached to the proposal. Unless the Bidder so indicates, it is understood that the Bidder has bid in strict accordance with the specifications and drawings and has made no substitutions, modifications or additional stipulations.

F. Bids shall not contain any recapitulation of the work to be done and no oral, telephone, facsimile or email proposals or modifications will be considered.

1.09 QUALIFICATION OF BIDDERS

A. Bidders may be disqualified and their Bids not considered for any of the following specific reasons:

1. Reason to believe collusion exists among Bidders.

2. The Bidder being interested in any litigation against the Owner.

3. The Bidder being in arrears on any existing contract or having defaulted on a previous contract.

4. Lack of competency as revealed by the financial statement, experience, and equipment, questionnaires, or qualification statement.

5. Uncompleted work, which in the judgment of the Owner will prevent or hinder the prompt completion of additional work if awarded.

B. If requested, a Bidder shall submit to the Owner a confidential Financial Statement in a sealed envelope.

1.10 PREPARATION OF BID:

A. All bids must be submitted on the bid form contained herein. Oral, telephone, facsimile, electronic mail, or telegraph bids will not be accepted.

B. The Bidder shall base the bid on materials complying with the Bidding Documents, and shall list all information where the bid form requires.

C. The blank spaces in the bid form shall be filled in correctly with ink or typewritten. A bid form containing an alteration or erasure of any price contained in the bid which is used in determining the lowest responsible bid shall be rejected unless the alteration or erasure is corrected as herein provided:

1. An alteration or erasure must be crossed out and the correction printed in ink or typewritten adjacent to the alteration or erasure.

2. The person signing the bid must initial the correction in ink.

3. In the event that any price used in determining the lowest responsible bid is expressed by the Bidder in both written and numerical form, the written representation shall govern in all cases.

D. If the bid form includes alternates, each Bidder shall bid on each alternate. Failure to comply may be cause for rejection.

E. If an individual submits Bid, he or his duly authorized agent must sign his name. If a firm, association or partnership submits the Bid, the name, address and title of each member must be given, and an official or duly authorized agent must sign the Bid. Powers of attorney authorizing agents or others to sign Bids must be properly certified and must be in writing and submitted with the Bid.

F. Bids from individuals or partnerships, if signed by an attorney-in-fact, shall have attached to the bid the power of attorney, evidencing the authority to sign the bid. If the bid is signed by any other legal entity, the authority of the person signing shall be attached to the bid.

G. A W-9 Form is required with each bid submittal.

1.11 EXEMPTION FROM SALES TAX ON MATERIALS

A. The Owner is exempted by Section Three of the Illinois Use Tax Act (Sec 3, House Bill 1610 approved July 31, 1961. IL. Rev. Stat. 1961, Chap. 120 Sec 439.3) from paying any of the taxes imposed by that act and sales to the Owner

are exempt by Section Two of the Illinois Retailer's Occupation Tax Act (Section 2, House Bill 1609, Approved July 31, 1961 IL. Rev. Stat. 1961, Chap. 120 Sec. 441) from any of the taxes imposed by that Act.

1.12 IDENTIFICATION AND SUBMITTAL OF BID

A. Each bid and all papers bound and attached to it shall be placed in an envelope and securely sealed therein. The envelope shall be plainly marked with the following:

1. The word "BID"

2. Name and address of the Bidder.

B. The envelope of the bid shall be addressed

to: Vice President for Business Services
Lake Land College
Softball Press Box Project #2023-007
5001 Lake Land Boulevard
Mattoon, Illinois, 61938

C. Bids shall be delivered before the time set for the opening of the bids. Bids arriving by mail or otherwise after the time designated for the opening of bids will be returned unopened. Oral, telephone, facsimile, electronic mail, or telegraph bids shall not be accepted.

1.13 MODIFICATION OR WITHDRAWL OF BID

A. A bid may not be modified after submittal. Bidders may withdraw a bid at any time before opening. A Withdrawal of a Bid must be made in writing or in person by a bidder or his duly authorized agent. If a firm, association or partnership wishes to withdraw a bid, an official or duly authorized agent must sign the written request or appear in person.

B. Once withdrawn, the bidder must submit a new bid prior to the opening in order to be considered.

C. No Bid may be withdrawn or modified after the Bid opening except where the award of the Contract has been delayed beyond 60 days after date of Bid.

1.14 OPENING OF BIDS

A. The Bids submitted will be opened at the time and place stated in the Advertisement for Bids and publicly read aloud and thereafter shall remain on file with the Owner.

B. After Bids are opened, the Bids will be tabulated for comparison on the basis of the Bid prices and quantities shown on the Bids.

C. The Owner reserves the right to withhold the award of the Contract for a period of 60 days from the date of the opening of Bids and no award will be made until the Owner is satisfied as to the responsibilities of the low Bidders.

D. Until final award of the Contract, the Owner reserves the right to reject any or all Bids or proceed to do the work otherwise in the best interest of the Owner.

1.15 EVALUATION AND CONSIDERATION OF BIDS

A. The Owner reserves the right to reject all bids or parts of bids, and to waive informalities therein.

B. For the purpose of determining the lowest responsible bidder in the consideration of all bids submitted, the Owner reserves the right to accept or reject any or all alternates in the numerical order in which they appear on the bid form.

1.16 DISQUALIFICATION OF BIDDERS

A. Bids will not be considered if they show any omissions, additions, alterations of form, conditions not requested unauthorized alternate Bids or irregularities of any kind. However, the Owner reserves the right to waive any irregularities and to make the award in the best interest of the Owner.

B. The Bidder acknowledges the right of the Owner to reject any or all Bids and to waive any informality or irregularity in any Bid received. In addition, the Bidder recognizes the right of the Owner to reject a Bid if the Bidder fails to submit the data required by the Bidding Documents.

C. For the purpose of determining the lowest responsible bidder in the consideration of all bids submitted, the Owner reserves the right to accept or reject any or all alternates in the numerical order in which they appear on the bid form.

1.17 APPLICABLE LAWS

A. All applicable state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over the Work shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.

B. Bidder’s signatures shall be construed as acceptance of and willingness to comply with all provisions of the acts of the General Assembly of the State of Illinois relating to the Department of Human Rights Act, previously the Illinois

Fair Employment Practices Act, Prevailing Wage Act for workers in our area, preference to citizens of the United States and residents of the State of Illinois, and discrimination and intimidation of employees. Provisions of said acts are hereby incorporated by reference and become a part of this proposal and specification.

1.18 EXECUTION OF THE AGREEMENT

A. The successful Bidder, if awarded the Project, shall sign the necessary Agreements with the Owner and furnish Payment and Performance Bonds and Certificates of Insurance, if required elsewhere in this document, but no such Agreement shall be in force and effect until it is executed by all parties, and the Payment and Performance Bonds and Certificates of Insurance have been approved.

B. Failure to execute and return the Agreement within ten (10) calendar days may result in the rescinding of the Contract award.

1.19 RECORDS:

A. The Contractor shall maintain, for a minimum of 5 years after the completion of the contract, adequate books, records and supporting documents to verify the amounts, recipients, and uses of all disbursements of funds passing in conjunction with the contract; the contract and all books, records and supporting documents related to the Contract shall be available for review and audit, and the Contractor agrees to cooperate fully with any audit conducted and to provide full access to all relevant materials.

END OF SECTION

SECTION 00400

BID FORM

PROJECT
IDENTIFICATION: Softball Press Box, Project # 2023-007

BID TO: Board of Trustees
C/O Vice President for Business Services
Lake Land College District Number #517
5001 Lake Land Boulevard
Mattoon, Illinois, 61938

BID FROM: _____
_____
_____

The undersigned Bidder agrees, if this Bid is accepted, to enter into an Agreement with the Owner, in the form included in the Bidding Documents, to perform and furnish all materials, labor and equipment as specified or indicated in the Bidding Documents for the Bid Price and within the Bid Times indicated in this Bid and in accordance with the terms and conditions of the Contract Documents.

In submitting this Bid, Bidder represents that:

A. This Bid will remain subject to acceptance for 60 days after the day of the bid opening.
B. The Owner has the right to reject this bid.
C. Bidder will sign and submit the Agreement with the Bonds and other documents as required by the Bidding requirements within 15 days after the Owner's Notice of Award. A W-9 Form is required.
D. Bidder has copies of all the Bidding Documents.
E. Bidder is familiar with federal, state and local laws and regulations.
F. Bidder has correlated the information known to Bidder with the Bidding Documents.
G. This Bid is genuine and not made in the interest of or on the behalf of an undisclosed person, firm or corporation and is not submitted in conformity with an agreement or rules of a group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited another Bidder to submit a false or sham Bid; Bidder has not solicited or induced a person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself an advantage over another Bidder or over the Owner.
H. Bidder has received the following addenda receipt of which is hereby acknowledged.

Date	Number
_____	_____
_____	_____

Bidder will provide all materials, labor and equipment as specified in accordance with the Contract Documents for the following price(s):

STIPULATED-SUM BID PRICE

(Softball Press Box) _____ Dollars ($_____)
(use words) (figures)

Bidder agrees to provide all materials, labor and equipment, as specified.

SUBMITTED on _____, 2023

Company _____, (Seal)

Address _____

Signed _____

_____
(Printed Name)

Phone _____
Fax _____
Email _____

END OF SECTION

SECTION 00600

BONDS & CERTIFICATES

PART 1 GENERAL

1.01 BID DEPOSIT AND CONTRACT SECURITY

A. No bid security will be required for this project.

1.02 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

A. Performance Bond required for bids over $50,000.

B. Contractors shall be required to furnish, in duplicate, a Performance Bond and a Labor and Material Payment Bond in strict conformance to, and submitted on A.I.A. Document A-312 equal to the full amount of their Contract covering the faithful performance of the Contract and the payment of all obligations arising thereunder in such form as the Owner may prescribe and with such sureties as he may approve.

C. The Contractor's Bonding Agency shall carry either a Rating of "A-VIII" on the AM Best Rating System or be able to show Comparable Financial Status and Bonding Volume. Acceptance of Bonding Agency qualification shall be approved by the Owner.

D. NOTE: This Performance Bond, and Labor and Material Payment Bond, shall be furnished and in effect before any work is started under this Contract.

E. The life of the Bond and guarantee shall extend twelve (12) months beyond the day on which final payment under the Contract falls due, or the date of which the Owner accepts the work as completed whichever comes first. If final acceptance is by mutual agreement, a proper date shall be determined.

F. If before the expiration of the twelve (12) month guarantee period, a Contractor has been notified by the Owner regarding any work to be completed or corrected, any unpaid bills presented to the Owner, or any other unfinished business, the expiration of the twelve (12) month period does not relieve the Contractor or his bondsmen of the proper execution of such items.

G. The Contractor or his bondsmen shall pay any lien or court costs and attorney's fee of the Owner, and cost that any creditor may incur in the forced collection of any just claim, and interest from date of filing lien until payment is made.

H. In the event the Contractors should default and it becomes necessary for the sureties to complete the Contract, the Owner reserves the right to approve all Contractors and Subcontracts obtained by the sureties.

I. The General Conditions of this Contract shall govern all issued, and any provisions of the bonds in conflict with these general conditions shall be waived.

1.03 FAILURE TO FURNISH PERFORMANCE BOND

A. Should the successful Bidder fail or refuse to sign a formal written Contract with the Owner, or fail or refuse to furnish a Performance Bond satisfactory to the Owner and the Director within ten (10) days after written notification of the acceptance of the proposal by the Owner, the Bidder will be considered to have abandoned the proposal. In such event the Owner shall retain all proceeds of the Bid Security (Bid Bond or Certified Check) in order to secure a "Successful Bidder". The term "Successful Bidder" shall be deemed to include any bidder whose proposal is accepted by the Owner.

1.04 COMPENSATION AND PUBLIC LIABILITY INSURANCE

A. Principal Contractors shall carry sufficient insurance on their workmen to absolutely protect the Owner from any liability or damage resulting to the workmen as provided under the "Workmen's Compensation Act", and "Structural Works Act".

B. The Principal Contractors and all Subcontractors performing services on said site shall take out and furnish to the Owner, and maintain during the life of this Agreement, complete Owner's Protective Liability Insurance in the amounts as specified herein for bodily injury, property damage, liability, or damage resulting to the Workmen as provided under the Workmen's Compensation and Structural Works Act of the State of Illinois as shall protect the Owner, Principal Contractor, and any Subcontractor performing work covered by this Agreement from claims for damages of personal injury including accidental death, as well as, from claims for property damage which may arise from operations under this Agreement, whether such operations be by the Principal Contractors or by any Subcontractors or by anyone, directly or indirectly employed by either of them, and the amounts of such insurance shall not be less than:

1. Comprehensive Automobile Liability:

a) $1,000,000 Bodily Injury per person.
b) $1,000,000 Bodily Injury per occurrence.
c) $ 500,000 Property Damage per occurrence.
d) $1,000,000 Combined Single Limit coverage for bodily injury and property damage per occurrence in the same aggregate limit will be accepted in lieu of the separate limits specified above.

2. Workman's Compensation: Statutory Limits

   a) Employer's Liability: $500,000 Bodily Injury per person.

   b) The Contractor may use a Self-Insured plan for Workman's Compensation Insurance if the plan is approved by the State of Illinois. For approval, the Contractor shall obtain a Certificate from the Illinois Industrial Commission, Office of Self-Insurance Administration, Springfield office.

3. Comprehensive general Liability:

   a) $1,000,000 Bodily Injury per person.
   b) $2,000,000 Product and Completed Operations Aggregate
   c) $1,000,000 Bodily Injury aggregate limit.
   d) $1,000,000 Property Damage per occurrence.
   e) $2,000,000 Property Damage aggregate limit.
   f) $1,000,000 Combined Single Limit coverage for bodily injury and property damage per occurrence in the same aggregate limit will be accepted in lieu of the separate limits specified above.

4. Umbrella

   a) $1,000,000 Umbrella

B. The above Comprehensive General Liability Insurance shall be specifically endorsed to cover the terms of Liability Insurance for the Owner as set forth hereinafter.

C. The Contractor shall cause Certificates of Insurance to be deposited with the Owner.

1.05 LIABILITY INSURANCE FOR OWNER

A. The Contractor shall purchase and maintain public liability insurance naming the Owner and his agents and employees as insured with respect to any claim that may be made against the Owner or his agents and employees arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense shall be covered by such insurance only if (a) it 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 in 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 the claimant contends that the Owner or his agents or employees are in part negligent or otherwise legally culpable with regard to the loss.

B. Such insurance shall provide a defense for the Owner and his agents and employers, including the cost of defense counsel and other expenses of litigation.

C. Principal Contractors shall carry the insurance of their Subcontractors or shall require their Subcontractors to carry their own insurance in the amounts stated above.

D. This insurance shall cover all Agreements and any extra work connected with the construction of this Project.

E. Contractors shall instruct their Insurance Companies to supply the Owner with Certificates of Insurance showing that such insurance is kept in force until completion of the Agreement. These Certificates of Insurance shall be provided before Contractors start any work under this Agreement.

1.06 BUILDERS RISK INSURANCE (Owner)

A. Immediately after the signing of construction contracts or at such time as construction materials become situated upon the construction site or sites, the Owner will effect and maintain upon the entire structure on which work of this Contract is to be done, and upon all materials, on or adjacent thereto, intended for use thereon, to 100 percent of the insurable value thereof, an All- Risk Coverage Insurance Policy.

B. This insurance will not cover Contractor's equipment, tools, or storage sheds and temporary buildings.

C. Any loss is to be made adjustable with and payable to, the Owner, Contractors, Subcontractors, and Material Dealers as their interests may appear at the time of loss.

D. The Owner, Contractor, and all Subcontractors waive all rights of action, each against the others, for damages caused by fire or other perils covered by insurance provided for under the terms of this Contract, except such rights as they may have to the proceeds of insurance held by the Owner as trustee.

END OF SECTION

SECTION 00800

SUPPLEMENTARY CONDITIONS

PART 1 GENERAL

1.01 DEFINITIONS

A. Where the term "Owner" is used throughout these specifications same shall mean the Lake Land College Board of Trustees or the Lake Land College Vice President for Business Services as their agent.

B. Where the term "Director" is used, it shall refer to the Athletic Director.

C. Where the term "Contractor", "Prime Contractor", or "Principal Contractor" is used, it refers to anyone having a Principal Contract with the Owner.

D. Where the term "Subcontractor" is used, it refers to anyone having a Contract for labor or material with any of the Principal or Prime Contractor on the job.

1.02 THEFT, ETC.

A. The Contractors shall be responsible for any damage or loss resulting to the work, materials, or tools due to theft, or in any manner not covered by the insurance called for elsewhere in these Specifications. Payments on account of Contract do not relieve Contractors of this obligation. Contractors may carry Theft Insurance at their own option.

1.03 SOCIAL SECURITY, UNEMPLOYMENT INSURANCE

A. The Contractors shall keep records and pay, all social security, withholding tax, unemployment insurance, and other taxes imposed by the various governmental authorities and laws.

1.04 MATERIAL AND WORKMANSHIP

A. The owner or his agent shall have full power to reject any material or workmanship which, in their opinion, do not conform with these specifications or drawings, and cause same to be immediately removed and reconstructed without additional cost to the Owner

1.05 PERMITS

A. The Owner will obtain and pay for all permits required by Local Law, except as indicated otherwise in these specifications.

1.06 CLEANING OF GROUNDS AND BUILDINGS

A. At the completion of the project and before final acceptance by the Owner, the area shall be cleared of all rubbish, materials, and debris which accumulate during the process of work under this Contract. See section 01110 – Summary of Work, of these Specifications.

1.07 SUBCONTRACTORS

A. The Principal Contractors shall be responsible for any and all Subcontractors working under them, and shall carry insurance for them or see that they are carrying it themselves so as to relieve the Owner of any and all liability.

B. Nothing contained in the Contract Documents shall create any contractual relation between any Subcontractor and the Owner.

C. The Owner assumes no responsibility for the overlapping or omission of parts of the work by various Subcontractors in their Contracts with the Principal Contractors.

1.08 PATCHING

A. The expense of any undue alterations, cutting, patching, or repairing of damage due to carelessness or neglect caused by any trade shall be borne by the Contractor for that trade. The work shall be done by the workmen of the Contractor whose work was damaged so that such patching will be least conspicuous.

1.09 OTHER WORK NOT IN CONTRACT

A. The Owner reserves the right to let separate Contracts for other work in connection with this project, but agrees that such work shall not interfere with the work of the Contracts previously made.

1.10 EXTRAS AND CHANGES

A. Should any extra work or changes be required during the work, the Owner and Contractor shall agree upon the price for such extra work or changes and the Owner shall issue a change order to the Contractor for such work as agreed upon. Payment shall be made under same conditions as for original Contract.

B. No payment shall be made for extra work or materials unless a formal written change order is issued by the Owner.

1.11 CORRECTION OF WORK AFTER FINAL PAYMENT

A. Neither the final Certificate, nor payment, nor any provision in the Contract Documents shall relieve the Contractor of responsibility for faulty materials or workmanship discovered to be not as specified or shown on the Drawings.

B. The Contractor shall remedy any defects due thereto, and pay for, any damages to other work resulting therefrom, which shall appear within a period of one year from the date of acceptance.

C. The Owner shall give notice of observed defects with reasonable promptness. The Owner shall judge the defects as to maintenance, workmanship, or material defects.

D. All questions arising under this article shall be decided by the Owner subject to arbitration.

1.12 LOCAL LABOR

A. It is the desire of the Owner that the Contractors make use of all local labor, material, insurance, etc., if possible, as long as it does not work a hardship on the Contractors.

1.13 PRECEDENCE OF DOCUMENTS

A. The Contract Documents shall be given precedence in the following order, provided they are in existence at the time of the closing of the Contracts:

1. Agreement
2. General Conditions of the Contract
3. Any Valid Building Code
4. Specifications
5. Full Sized Detail Drawings
6. Large Scale Drawings
7. General Drawings

1.14 PROTECTION OF GENERAL PUBLIC

A. All Contractors shall provide protection of the general public at all times, providing protection devices as prescribed by laws having jurisdiction.

B. The Contractor will, at all times, take all reasonable precautions for the safety of employees on the project, and of the public and all other persons who may be affected, and will comply with all applicable provisions of Federal, State, and Municipal Safety Laws and Building and Construction Codes.

1.15 GUARANTEE & WARRANTIES

A. All Prime Contractors shall guarantee their work and the work of their Subcontractors for a period of one year from the date of acceptance of their work, unless stipulated for a longer period of time under specific sections of the specifications.

B. All items requiring a warranty certificate from the manufacturer shall be executed and the certificate delivered to the Owner before final payment can be approved.

1.16 SUPERINTENDENT

A. The General Contractor shall keep a capable superintendent on the job site at all times when major work is in progress. This Superintendent shall lay out all work required under the Contract and also assist other Contractors in laying out and planning their work.

B. The Contractors, or his Superintendent, shall also notify other Contractors when it will be necessary to install certain work and take complete responsibility for co-ordination of construction.

1.17 REQUIREMENTS

A. All Contractors shall comply with all laws, rules and regulations governing the work under this Contract.

B. Should the Contractor observe anything in the contract documents that is contrary to any code requirement, he shall notify the Owner immediately in writing. The Owner shall issue all changes required to correct the variance, and be responsible for code interpretations.

1.18 OCCUPATIONAL SAFETY AND HEALTH

A. It shall be each Contractor's responsibility to comply with all local, state and federal laws and regulations governing job safety and health standards, and the requirements of the "Occupational Safety and Health Act of 1970" enacted by Congress and signed into law on December 29, 1970 and all applicable changes, revisions, and amendments.

1.19 FAIR EMPLOYMENT PRACTICES

A. All Contractors agree that, in accordance with an Act to prohibit discrimination and intimidation on account of race or color in employment and Contracts for public buildings or public works, approved July 8, 1933, as amended, no person will be refused or denied employment in any capacity on the grounds of race or color, nor be discriminated against in any manner by reason thereof in connection with the performance of the work set forth in the attached drawings and specifications; nor will any unfair employment practice, as defined in the Fair Employment Practices Act, approved July 21, 1961 and all applicable changes, revisions, and amendments, be committed by the said Contractor.

1.20 PREVAILING WAGE POLICY

A. The Owner has established a general prevailing rate of hourly wage in said District, as determined by the Illinois Department of Labor.

B. All Contractors and Subcontractors shall comply with the following and any later amendments thereto:

C. "Illinois Statutes, as amended by Act approved August 8, 1961, (SB No. 250) (Rev. State Chap. 48, Sec. 39S-1 et.seq.) declared to be the policy of the State of Illinois that a wage of no less than the general prevailing hourly rate as paid for work of a similar character in the locality in which the work is performed, shall be paid to all laborers, workmen and mechanics employed by or on behalf of any and all public bodies engaged in public works, exclusive of maintenance work."

D. Contractors shall have the responsibility of complying with all aspects of the Prevailing Wage Policy.

E. Certified payroll documentation must be provided to the college by the 15th of the following month.

1.21 BUSINESS ENTERPRISE FOR MINORITIES, FEMALES, AND PERSONS WITH DISABILITIES ACT

A. On August 25, 2015, Governor Rauner signed into law the Business Enterprise for Minorities, Females, and Persons with Disabilities Act (30 ILCS 575), effective immediately. The Act stipulates certain requirements regarding the use of businesses owned by minorities, females and persons with disabilities for the procurement of goods and services by State agencies, universities, and community colleges.

B. The College recognizes the importance of increasing the participation of businesses owned by minorities, females and persons with disabilities in public contracts in an effort to overcome the discrimination and victimization such firms have historically encountered. It is the College's policy to promote the economic development of businesses owned by minorities, females and persons with disabilities by setting aspirational goals to award contracts to businesses owned by minorities, females, and persons with disabilities for certain services as provided by the Business Enterprise for Minorities, Females and Persons with Disabilities Act, 30 ILCS 575/0.01 et seq. (the "Act") and the Business Enterprise Council for Minorities, Females, and Persons with Disabilities (the "Council").

C. Certified Business Enterprise Contractors

1. In determining whether a business is owned by a minority, female, or person with disabilities, the College shall require the business to provide proof of certification by the Business Enterprise Council, an entity delegated the authority to make certifications by the Business Enterprise Council, or by a state agency with statutory authority to make such a certification, that the business entity is owned by a minority, female, or person with a disability, or by submitting an ownership affidavit provided by the College.

D. Subcontractors and Suppliers

1. The College's aspirational goals are based on the total dollar amounts awarded to businesses owned by minorities, females, and persons with disabilities. All funds awarded to any certified subcontractors and/or suppliers shall be included for the College's aspirational goals, so long as the expenditures are direct, necessary, and proximately related to the work or service of the contract.

E. Evaluation of Contracts to Facilitate Aspirational Goals

1. These procedures shall not eliminate, alter, reduce, alleviate or modify in any way the College's procedures for purchasing. However, in addition to the College's purchasing procedures, the College shall evaluate all contracts, except those subject to federal reimbursement, to determine whether the

bidder or contracting party assists the College in meeting its aspirational goals as set forth above, and increase the participation of businesses owned by minorities, females, and persons with disabilities in contracts with the College.

F. Bidding Requirements.

1. Bid Documents

a. When the College procedures and/or state law require the College to competitively bid a contract, the College shall state in its bid documents the College's aspirational goal for the contract. The College's bid documents shall also require each bid submitted for a contract to include: (i) the bidder's name, (ii) the bid amount, and (iii) a business enterprise program utilization plan indicating the percentage of disadvantaged businesses that will be awarded by the bid.

2. Lowest, Responsive and Responsible Bidder

a. As required by state law and the College's purchasing procedures, the College shall award contracts subject to state public bidding requirements to the lowest, responsive and responsible bidder. A bidder's failure to complete a utilization plan or submit necessary certifications shall be an issue of "responsiveness" which may make the bidder ineligible to receive the contract. In awarding contracts, the College shall also consider that the definition of "lowest responsible bidder" is broader than "lowest bidder" or "financially responsible", and that in proper circumstances, certain public interests can be considered as "responsible" in the College's discretion as allowed by applicable state laws, rules or regulations.

3. Opportunity to Cure

a. In the event that a bidder offers the lowest, responsive and responsible bid but fails to meet the contract's aspirational goals, the College shall notify the bidder of this deficiency and give the bidder no more than ten (10) days to cure that deficiency. The College may provide the bidder with sufficient information necessary to obtain the Business Enterprise Council's list of certified businesses owned by minorities, females and persons with disabilities. The bidder may only cure this deficiency by subcontracting with businesses that are certified as provided in these procedures.

4. Good Faith Effort Procedures

a. If the bidder cannot meet the contract's aspirational goal, the bidder must document in the utilization plan its good faith efforts that could reasonably have been expected to meet the goal. The College shall consider the quality, quantity, and intensity of the bidder's efforts, and may evaluate the bidder's:

i) Solicitation through all reasonable and available means of certified subcontractors, suppliers, and/or vendors that have the capability to perform the work required by the contract. The bidder must solicit this interest to give certified businesses sufficient time to respond to the solicitation, must provide adequate information about the plans, specifications, and contract requirements in a timely manner, and must take appropriate steps to follow up initial solicitations.

ii) Use of resources from the College, the Business Enterprise Council, and any other business or community groups that provide assistance in the recruitment and placement of certified businesses.
iii) Selection of portions of the contract work to be performed by certified vendors to increase the likelihood that the goal will be achieved. This includes, where appropriate, breaking out contract work items or services into economically feasible units to facilitate participation by certified businesses, even when the bidder might otherwise prefer to perform the work or services with its own employees.
iv) Negotiation in good faith with interested certified businesses. In order to show good faith efforts, the bidder's utilization plan shall include the names, addresses, and telephone numbers of certified businesses that were considered, and an explanation for why an agreement could not be reached.
v) Thorough investigation of the capabilities of certified businesses and not rejecting them as unqualified without sound reasons.
vi) Efforts to assist interested certified businesses in obtaining contract required lines of credit, insurance, equipment, supplies, materials, or other related assistance or services.

5. Award of Contract
a. If the College determines that the bidder is the lowest, responsive and responsible bidder and has either met the contract's aspirational goals or has made a good faith effort to meet the goal, the College may award the contract to the bidder. The College shall have the right to reject all bids and re-bid the contact in its sole discretion.

6. Incorporation into Contract
a. The successful bidder's utilization plan shall become part of the awarded contract and shall not be modified or amended without the College's written consent.

END OF SECTION

SECTION 01110

SUMMARY OF WORK

PART 1 GENERAL

1.01 SCOPE

A. The work to be done under this section includes the furnishing of all labor, materials, equipment and services necessary for and reasonably incidental to the proper execution and completion of the Softball Press Box in accordance with the drawings and as herein specified.

1. Building size 20'x20'.
2. Removal of site concrete around the press box, existing press box, and foundation.
3. New concrete foundation and floor.
4. New wood framed building on both levels including exterior stairs.
5. New metal siding, fascia, soffit, and shingle roof.
6. New doors and windows.
7. New floor covering and paint on second floor of press box.
8. Relocation of exterior water spout.
9. New electric panel, lighting and outlets.
10. Site work including new concrete sidewalks around building.

1.02 LOCATION

A. This project is located on the campus of Lake Land College, 5001 Lake Land Boulevard, Mattoon, Illinois.

1.03 COMMENCEMENT AND COMPLETION DATE

A. All work on this project is subject to the College's schedule and circulation needs, which are as follows:

1. Coordinate Work schedule with the Athletic Director. This project and bid will be taken to the Board of Trustees meeting on August 14, 2023 for approval. Coordination of the work schedule can begin after Board approval is granted. Once construction begins on the project, the project needs to be completed as soon as possible weather permitting.

2. Two days' notice is required for schedule changes.

3. Saturdays are available with prior approval from the College.

4. Any alternate dates MUST be coordinated with the College.

5. PROVIDE PROPOSED SCHEDULE WITH BID.

1.04 COORDINATION WITH OWNER

A. The campus will be occupied by the Owner and the general public during all phases of construction. It shall be the Contractors responsibility to coordinate the work with the Owner to maintain access to roadways, parking and buildings during normal hours of operation, and to minimize conflict with the College's schedule.

B. Sequence of work shall be coordinated with the College and be scheduled to minimize inconveniences for the College students and staff.

C. A copy of the College calendar is available upon request.

D. The Contractor shall notify the Owner three (3) working days prior to commencing work on site.

1.05 CONTRACTOR'S RESPONSIBILTIES

A. The General Contractor on this project regardless of whether he has a Contract for the General Construction or complete Construction Work shall have the responsibility of coordinating and directing the work. This shall include the scheduling and/or co-ordination of all other Prime Contractors having a contract with the Owner and shall include assistance to these Contractors in the layout of their work when it must be coordinated with work the General Contractor is performing. The General Contractor shall include the cost of performing this co-ordination in his Bid.

B. The remaining Prime Contractors and Subcontractors on the project will be charged with scheduling their own work so that it can be coordinated with the General Contractors schedule. They shall give the General Contractor their full co-operation.

1.06 UTILITY SERVICE DISRUPTION

A. This project will not require interruption of utility service.

1.07 BUILDING PROTECTION

A. The Contractor shall be responsible for protecting the existing buildings and contents from damage from any cause as a result of work to be performed under this Contract. Any damaged to buildings or contents shall be repaired or replaced to equal the original condition of the damaged area or contents.

B. All damaged buildings or contents shall be repaired or replaced at the Contractor's expense and to the satisfaction of the Owner.

1.08 SITE PROTECTION

A. The Contractor shall be responsible for protecting the adjacent site from damage from any cause as a result of work to be performed under this Contract. Any damaged areas, including yard areas and plants, walks, steps, paved areas, irrigation system, etc., shall be repaired or replaced to equal the original condition of the damaged areas.

B. All damaged areas shall be repaired at the Contractor's expense and to the satisfaction of the Owner.

1.09 MATERIAL STORAGE

A. The Owner will allocate certain areas of the site for the purpose of storing materials and equipment and locating Contractor's temporary office. The Contractor shall contact the Owner before any materials are situated in the building or on the site and determine a general plan for storing materials.

B. Materials are shall be placed on the site in a neat and orderly manner.

1.10 CLEANING OF GROUNDS

A. The site shall be maintained free of unnecessary debris and clutter during all phases of construction.

B. At the completion of the project and before final acceptance by the Owner, the site shall be cleared of all rubbish, materials, and debris which accumulated during the process of construction.

1.11 WEATHER CONDITIONS

A. Work shall be performed only when weather permits.

PART 2 PRODUCTS

2.01 WARRANTY

A. All materials shall carry full manufacturer's warranties.

PART 3 EXECUTION

3.01 INSTALLATION

A. Application shall be performed according to manufacturer's recommendations.

B. Vehicles shall be kept in good repair so that no excessive noise or emissions are created.

C. Contractor shall take all necessary precautions to protect existing paving, buildings, structures, landscaping etc., from damage.

D. All materials shall be installed according to manufacturer's recommendations to assure validity of manufacturer's warranty.

END OF SECTION

SECTION 01290

PAYMENT PROCEDURES

PART 1 GENERAL

1.01 PAYMENTS

A. The Owner will make payment on account of the Contract as follows:

1. Upon completion of all work as directed in these specifications the Contractor shall request payment in full. Payment made via ACH is strongly encouraged.

2. Payment will be made provided Director certifies that the work meets all requirements of these specifications. Successful bidder must provide a W-9 for processing of payment.

3. The Contractor shall provide an invoice for the work which will satisfy the following:

1) Itemize separate line item cost for each major division of work, using specifications Table of Contents as basis for format for listing cost of work.

2) List all major subcontracts and subcontractors.

3) All forms must be typed and all sections of the forms completed.

4) All forms must have ORIGINAL SIGNATURE and be NOTARIZED.

1.02 PAYMENTS WITHHELD

A. The Owner may withhold, or on account of subsequently discovered evidence, nullify the whole or part of any payment to such an extent as may be necessary to protect the Owner from loss on account of:

1. Defective work not remedied.

2. Claims filed or reasonable evidence indicating probable filing of claims.

3. Failure of the Contractor to make payment properly to Subcontractors for materials and/or labor.

4. A reasonable doubt that the Contract can be completed for the balance then unpaid.

5. Damage to another Contractor.

B. When the above conditions are remedied payment will be made for the amounts withheld.

C. Should the Contractor fail to perform any work according to the drawings and specifications, or should he refuse to correct any work not done according to the drawings and specifications, the Owner may, after having given the Contractor ten days written notice, construct such work or make repairs necessary to meet the requirements of the Contract. The cost of such work shall be deducted from the final payment due the Contractor.

LIEN WAIVERS

A. Before final payment, the Contractor shall submit Lien Waivers marked "FINAL" from all Subcontractors and Material Suppliers covering all labor and materials furnished on the job. All Lien Waivers shall have ORIGINAL SIGNATURES and be NOTARIZED.

B. If any Lien or unpaid bills should be presented to the Owner after full payment has been made to a Contractor, the Contractor or his bondsmen shall refund to the Owner all the money the latter may be compelled to pay in discharging such obligations, including all court costs and reasonable attorney's fees.

C. During the course of construction should there be any doubt regarding whether or not the Contractor has been paying his bills or subcontractors promptly, Waivers of Lien - Partial may be requested and shall be submitted.

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 TEMPORARY ELECTRICAL ENERGY

A. Temporary electrical energy is not required for this work.

1.02 WATER FOR CONSTRUCTION WORK

A. Water for construction purposes is available at the site, and shall be paid for by the Owner. Contractors shall arrange for their own distribution. Temporary distribution apparatus shall not be allowed to interfere with normal functions of the Owner.

1.03 TEMPORARY SANITARY FACILITIES

A. Toilet facilities in the existing buildings may be used by Contractor's personnel during performance of the work. Coordinate the use of existing toilet facilities with the building officials.

B. Maintain toilet facilities used by Contractor's personnel in a clean and sanitary condition.

END OF SECTION

1. GENERAL

1.01 REQUIREMENTS INCLUDE

A. Contractor to comply with all laws, rules and regulations governing the work:
1. When Contractor observes that contract documents are at variance with specified codes, notify A/E in writing immediately. Architect/Engineer will issue all changes in accord with General Conditions.
2. When Contractor performs any work knowing or having reason to know that the work is contrary to such laws, rules and regulations and fails to so notify the Architect/Engineer, Contractor shall pay all costs arising therefrom. However, it is not the Contractor's primary responsibility to make certain that the contract documents are in accordance with such laws, rules and regulations.

B. Related Requirements:
1. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to work of this section.

1.02 DEFINITIONS & ABBREVIATIONS

A. Definitions:
1. Dates: Reference Codes, Regulations and Standards are the issue current at date of bidding documents unless otherwise specified.
2. Codes: Codes are rules, regulations or statutory requirements of government agencies.
3. Standards: Standards are requirements set by authorities, custom or general consent and established as accepted criteria.

B. Abbreviations:

1.	ADA	Americans with Disabilities Act.
2.	AGCI	Associated General Contractors in Illinois.
3.	ANSI	American National Standards Institute.
4.	ASHRAE	American Society of Heating, Refrigeration and Air-Conditioning Engineers.
5.	ASTM	American Society for Testing and Materials.
6.	AWWA	American Waterworks Association.
7.	IBC	International Building Code.
8.	CDB	Capital Development Board.
9.	FM	Factory Mutual Engineering Corporation.
10.	ICC	International Code Council.
11.	ICCB	Illinois Community College Board.
12.	IDOT	Illinois Department of Transportation.
13.	IDPH	Illinois Department of Public Health.
14.	IDPR	Illinois Department of Professional Regulation.
15.	NFPA	National Fire Protection Association.
16.	OSFM	Office of State Fire Marshal.
17.	SOS	Secretary of State.
18.	OSHA	Occupational Safety and Health Administration

1.03 QUALITY ASSURANCE

A. Architect/Engineer has designed the project with full knowledge of code requirements and has copies of all specified codes available for Contractor's inspection.

B. Contractor:

1. Ensure that copies of specified codes and standards are readily available to Contractor's personnel. Copies are available at Contractor's expense from source or publisher.
2. Ensure that Contractor's personnel are familiar with workmanship and installation requirements of specified codes and standards.

1.04 REGULATORY REQUIREMENTS

A. Source and requirements:
1. CDB:
   a. Illinois Accessibility Code, August 17, 2016
   b. Requirements for Seismic Load Design, August 1977.
2. FED:
   a. CPSC: Architectural Glazing Materials, as amended 1981.
   b. DHEW:
      1) Title V - Handicapped Accessibility
      2) Title IX - Regulations Prohibiting Sex Discrimination in Education.
   c. ADA 1990
3. IBC: International Building Code, 2012 edition.
4. IDPH: Illinois Plumbing Code, 2014.
5. IFC: International Fire Code, 2009 IFC Amendments
6. NEC: National Electrical Code, 2012
7. IDOT:
   a. Standard Specifications for Road and Bridge Construction, including all supplements, April 1, 2016, except where otherwise specified.
      1) Change all references to "Engineer" to "Architect/Engineer".
      2) References to "Method of Measurement" and "Basis of Payment" do not apply.
8. IDPR: Illinois Roofing Industry Licensing Act, as amended (Illinois Revised Statutes, ch. 111, par. 7501 et. seq.).
9. OSFM:
   a. Boiler and Pressure Vessel Safety Act and Rules and Regulations (Illinois Revised Statutes, ch. 127½, par. 151 et. seq.).
   b. Tactile identification on Certain Elevators (Illinois Revised Statutes, ch. 111½, par. 3901 et. seq.).
   c. Installation of Elevators (Illinois Revised Statutes, ch. 111½ par. 4001 et. seq.).
   d. Illinois Rules and Regulations for Fire Prevention and Safety, NFPA 101-2000.
10. SOS: Ramp on All New or Reconstructed Curbs for Persons Using Wheelchairs. (Illinois Revised Statutes, ch. 24, "Illinois Municipal Code", Sec. 11-80-11. Public Act 78-322, as amended.).
11. STANDARDS:
   a. AGCI/ISPE: Standard Specifications for Water and Sewer Main Construction in Illinois, Revised.
   b. ANSI No. A.17.1, American Standard Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks, April 1, 1974.
   c. ANSI No. C-2, National Electrical Safety Code, 1999 Edition.
   d. ASHRAE No. 62, Standard for Natural and Mechanical Ventilation, 1973.
   e. ASHRAE No. 90, Energy Conservation in New Building Design, revised 1977.
   f. ASHRAE 15, Safety Code for Mechanical Refrigeration, 1994.
   g. AWWA: Water and Sewer Main Construction.
   h. NFPA: National Fire Codes
      1) No. 70-96, National Electrical Code, 2002.
      2) No. 101-85, Life Safety Code.
12. OSHA: Occupational Safety and Health Administration

B. The Architect/Engineer may reference other codes or standards throughout the Project Manual when deemed appropriate for proper compliance with regulatory requirements.

END 01 41 00.

1. GENERAL

1.01 SUMMARY

A. Section Includes

1. Demolition and removal of building.
2. Demolition and removal of concrete floor slab and all foundations.
3. Demolition and removal of site improvements items.
4. Demolition and removal of capped and abandoned site utilities.
5. Site fill material, final grading and seeding.

1.02 DESCRIPTION OF WORK

A. Unless directed otherwise in the Construction Documents, the Contractor shall:

1. Remove and properly dispose of all structures, trash, rubbish, basement walls, floors, foundations, sidewalks, steps and driveways from the specified parcel.
2. Remove all materials from the demolition site in accordance with federal, state, and local regulations.
3. Disconnect all utility services before demolition.
4. Perform site clearance, grading, and restoration.
5. Complete the demolition work in accordance with the plans and technical specifications and any special provisions included in the Contract Documents.

1.03 DEFINITIONS

A. Remove: Remove and legally dispose of items, except those identified for use in recycling, re-use, and salvage programs.

B. Environmental Pollution and Damage: The presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human or animal life; affect other species of importance to humanity; or degrade the utility of the environment for aesthetic, cultural or historical purposes.

C. Inert Fill: A permitted facility that accepts inert waste such as asphalt and concrete exclusively for the purpose of disposal.

D. Inert Solids/Inert Waste: Non-liquid solid waste including, but not limited to, soils and concrete, that does not contain hazardous substances or soluble pollutants at concentrations in excess of water-quality standards established by a regional water board and does not contain significant quantities of decomposable solid waste.

D. Class III Landfill: A landfill that accepts non-hazardous materials such as household, commercial, and industrial waste, resulting from construction, remodeling, repair and demolition operations. A Class III landfill must have a solid waste facilities permit from the governing state/local entity.

E. Demolition Waste: Building materials and solid waste resulting from construction, remodeling, repair cleanup, or demolition operations that are not hazardous. This term includes, but is not limited to, asphalt concrete, Portland cement concrete, brick, lumber, gypsum wallboard, cardboard and other associated packaging, roofing material, ceramic tile, carpeting, plastic pipe and steel. The materials may include rock, soil, tree stumps, and other vegetative matter resulting from land clearing and landscaping for construction or land development projects.

1.04 MATERIALS OWNERSHIP

A. Demolished materials shall become the Contractor’s property and shall be removed, recycled, or disposed from project site in an appropriate and legal manner.

1.05 QUALITY ASSURANCE

A. Demolition firm Qualifications: Engage an experienced demolition contractor that has successfully completed demolition work similar to that indicated for this project.

B. Regulatory Requirements: Comply with governing EPA notification regulations before starting demolition. Comply with hauling and disposal regulations of authorities having jurisdiction. Obtain and pay for all permits required.

1.06 PROJECT CONDITIONS

A. Buildings to be demolished will be vacated and their use discontinued before start of work.

B. Sale of removed items or materials on-site will not be permitted.

1.07 PROTECTION OF THE PUBLIC AND PROPERTIES

A. The Contractor shall be responsible for removing any demolition debris of mud from any street, alley, or right of way resulting from the execution of the demolition work.

B. If it should become necessary to close any traffic lanes, it shall be the Contractor's responsibility to acquire the necessary permits and to place adequate barricades and warning signs as required.

C. The Contractor shall be responsible for any damage to public sidewalks abutting or adjacent to the demolition site resulting from the execution of the demolition work.

D. It shall be the Contractor's responsibility to place and construct the necessary warning signs, barricades, fencing and temporary pedestrian sidewalks to maintain access around the demolitions site.

E. A temporary fence shall be erected around all excavation, dangerous building or structures to prevent access to the public. Such fence shall be at least four feet high, consistently restrictive from top to grade, and without horizontal openings wider than two inches. The fence shall be erected before demolition and shall not be removed until the hazard is removed.

2. PRODUCTS (NOT USED)

3. EXECUTION

3.01 EXAMINATION

A. Verify that utilities have been disconnected and capped. Sanitary sewer lines, water lines, and gas lines shall be capped at the property line before demolition begins. Electric utilities, telephone and cable services shall be terminated at the utility pole or utility junction box."

B. Survey existing conditions and correlate with requirements indicated to determine extent of demolition and recycling required.

C. Survey condition of the building to determine whether removing any element might result in a structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during demolition

D. Perform surveys as the work progresses to detect hazards resulting from demolition activities.

3.02 PREPARATION

A. As part of the project scope, the Contractor shall obtain all government agency approvals and permits required for demolition activities.

B. Conduct demolition operations and remove C&D materials to ensure minimum interference with roads, streets, walks, and other adjacent occupied and utilized facilities

1. Do not close or obstruct streets, walks, or other adjacent occupied or utilized facilities without permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

C. Provide and maintain interior and exterior shoring, bracing or structural support to preserve stability and prevent movement, settlement, or collapse of buildings to be demolished and adjacent buildings to remain.

1. Strengthen or add new supports when required during progress of demolition.

3.03 EXPLOSIVES

A. Explosives: Use of explosives will not be permitted.

3.04 ENVIRONMENTAL CONTROLS

A. Comply with federal, state and local regulations pertaining to water, air, solid waste, recycling, chemical waste, sanitary waste, sediment and noise pollution.

3.05 DEMOLITION

A. Building demolition: Demolish buildings completely and remove from the site. Use methods required to complete work within limitations of governing regulations and as follows:

1. Locate demolition equipment throughout the building and remove debris and materials so as not to impose excessive loads on supporting walls, floors or framing.
2. Demolish concrete and masonry in sizes that will be suitable for acceptance at disposal facilities.
3. Remove structural framing members and lower to ground by method suitable to avoid free fall.
4. Break up and remove concrete slabs on grade.
5. Remove all disconnected, abandoned utilities on site.

B. Below-Grade Construction: Demolish foundation walls and other below-grade construction, as follows:

1. Break up and completely remove all below-grade construction, including foundation walls and footings.
2. Break up and completely remove below-grade concrete slabs.
3. Below-Grade Areas: Completely fill below-grade areas and voids resulting from building demolition operations to levels shown or to match existing finish grades with satisfactory soil materials.

C. Damages: Promptly repair damages to adjacent facilities caused by demolition operations.

3.06 HANDLING OF DEMOLISHED MATERIALS

A. General: Promptly re-use, salvage, recycle or dispose of demolished materials. Do not allow demolished materials to accumulate or be stored on-site for more than fourteen (14) days.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off the District's property and legally reuse, salvage, recycle or dispose of materials.

3.07 SITE RESTORATION

A. Foundation and basement shall be filled with compacted CA-6 material, see Section 31 20 00 - Earthwork for compaction requirements.

END 02 06 10

1. GENERAL

1.01 WORK INCLUDES

A. Base Bid: Contractor, provide concrete work shown and specified for:
1. Footings.
2. Slabs.
3. Formwork.
4. Steel Reinforcement.
5. Admixtures.
6. Accessories.
7. Expansion & Control Joints.
8. Concrete Placement.
9. Finishing.
10. Curing.
11. Portland Cement Concrete Sidewalks

1.02 QUALITY ASSURANCE

A. Qualifications of Ready-Mix Plant: IDOT certified concrete plant.

B. Regulatory Requirements: See 01 60 00.

1. IBC - 2015.
2. ACI.
3. CRSI.
4. Illinois Steel Products Procurement Act (83-1030).

C. Contact vapor barrier manufacturer to schedule a pre-construction meeting and to coordinate a review, in person or digital record of the vapor barrier installation.

D. Vapor Barrier manufacturer must provide Life of Building warranty or equivalent.

1.03 REFERENCES

A. Codes and Standards: Cited Codes and Standards, or specified parts thereof, govern the work. In conflict between specified Codes and Standards and project specifications or Regulatory Requirements, make written request to Architect/Engineer for decision regarding governing requirements. Do not perform any work until receipt of Architect/ Engineer's written instructions.

1. American Concrete Institute (ACI):

a. ACI 301 - Specifications for Structural Concrete for Buildings, including all ACI and ASTM Standards therein referenced.
b. ACI 318 - Building Code Requirements for reinforced concrete.
2. Concrete Reinforcing Standard Practice.
a. CRSI Manual of Standard Practice.
b. CRSI Recommended Practice for Placing Reinforcing.

B. Manufacturer's Catalogs: The catalogs of specified manufacturers, current at date of bidding documents, are incorporated herein by reference to the same effect as if repeated herein in full.

C. Illinois Department of Transportation (IDOT): Standard Specifications for Road and Bridge Construction, adopted April 1, 2016 and all updates current at time of bidding, except references to “Method of Measurement: and “Basis of Payment” shall be deleted. All references to “Engineer” change to “Architect/Engineer”.

1.04 SUBMITTALS: In accord with 01 33 00, submit:

A. Reinforcement, placement, laps, connections.

B. Product Data:
1. Concrete Mix Designs; Interior Concrete and Exterior Concrete

2. Admixtures
3. Surface treatment and Grout.

1.05 DELIVERY, STORAGE & HANDLING

A. Deliver all products in sufficient quantity and time to maintain approved construction schedule. Deliver all packaged materials in manufacturer's original containers, with all labels and markings intact and legible. Remove materials and damaged containers immediately from the site.

B. Store all products in a secure, dry location, out of way of construction operations. Store materials on pallets, a minimum of 4 in. off the ground. Prevent intermixing of granular materials.

C. Handle materials in a manner to prevent damage to the materials, to other stored products, to existing construction and project work. Follow product manufacturer's instructions.

1.06 SEQUENCING/SCHEDULING

A. Schedule all work in a manner to maintain the approved construction schedule. Cooperate and coordinate with other contractors to ensure timely completion and to eliminate interferences.

2. PRODUCTS

2.01 MATERIALS

A. Formwork: Comply with ACI 301 and ACI 347.

1. Plywood forms: Any species, sound, undamaged sheets. Thickness in accord with ACI 347.
2. Lumber forms: Any species, sound, undamaged boards. Grade stamp clearly visible. Size suitable for supporting weight of fresh concrete with minimum deflection.
3. Steel forms: Suitably stiffened to support weight of fresh concrete with minimum deflection.
4. Form Ties: Removable or snap-off metal; adjustable length.
5. Contractor may omit forms for footings when soil is suitable and excavations have been accurately made; otherwise, use forms. Obtain Architect/Engineer's written approval before placing any concrete against earth sides.

B. Metallic Reinforcement:

1. Bars: ASTM A615, Grade 60 yield grade billet-steel, deformed bars; uncoated finish.
2. Welded steel wire fabric: ANSI/ASTM A185 plain type in flat sheets; uncoated finish.
3. Accessories:
   a. Tie Wires: FS QQ-W-461, Annealed steel, black, minimum 15 gage.
   b. Chairs, bolsters, bar supports, spacers: Sized and shaped for strength and support of reinforcement during installation and placement of concrete. Include load bearing pad on bottom to prevent vapor retarder puncture.

C. Cement: ASTM C150, Portland cement; grey Type I normal.

D. Fine and Coarse Aggregates: ASTM C33. Fine Aggregate: natural, hard, clean sand. Coarse Aggregate: crushed stone or gravel.

E. Water: Clean, fresh, potable. Free from oils or other substances injurious to concrete or reinforcement.

F. Admixtures:
1. Air Entrainment: ASTM C260.
2. Calcium Chloride: NOT PERMITTED.

G. Expansion and Construction Joints:

1. Formed Construction Joints: Galvanized steel, tongue and groove type, with removable top strip exposing sealant trough; knockout holes spaced 6 in o.c., ribbed spikes with tongue to fit top screed edge.

2. Joint Filler. ANSI/ASTM D1752, Type II; regranulated cork particles impregnated and bound with asphalt or resins; resiliency recovery of 95% if not compressed more than 50% or original thickness.

H. Accessories:

1. Bonding Agent: Two component epoxy resin.
2. Vapor Resistant Sheet: Must meet or exceed all requirements of ASTM E 1745, Class A;
   a. Permeance of less than 0.01 perms.
   b. Tensile Strength: ASTM E 1745, 70 lbs-f/in. (Min) - MD. 70 lbs-f/in. (Min) - CD.
   c. Puncture Resistance: ASTM D 1745, 2200 grams, minimum.
   d. Resistance to Organisms and Substrate in contact with Soil, ASTM E154, Section 13.
   e. Vapor Transmission Rate: ASTM E 96, 0.008 WVTR or less.
   f. Sheet barrier type; Green, Yellow or Blue polyethylene film for under floor slab on grade application.
   g. Not less than 15 mil thick.
   h. All vapor resistant sheet system components must be manufactured by a single manufactures and be compatible with each other.
   i. Seam Tape: High Density Polyethylene Tape with pressure sensitive adhesive. Minimum 4" width.
   j. Vapor Proof Mastic: As approved by Vapor Resistant Sheet System manufacturer.
   k. Pipe Boots: Construct pipe boots from vapor barrier material and pressure sensitive tape per manufacturers instructions.

I. Waterstops:

1. Shall be placed at all cold joints and penetrations.
2. Curing Materials:
   a. Absorptive Mat: Burlap-polyethylene, 8 oz./sq. yd., bonded to prevent separation during use.
   b. Membrane Curing Compound: ASTM C309, Type 1
3. Polyethylene Film: ASTM E 1745 Class A, B, C, 15 mil thick, green, yellow or blue color. Do not use on hard troweled surfaces.
4. Sealing of Interior Exposed Concrete. For interior concrete floors which are to remain exposed to view (see Room Finish Schedule): provide Sonneborn's Sonothane HS, Concrete Impressions CI-MPRS-30 or Tamms Clearseal 300.

2.02 CONCRETE MIX

A. Comply with ASTM C94. In conflict between referenced Standard and project specifications, notify Architect/Engineer immediately. Confirm notification in writing. Do not proceed with concrete work until Architect/Engineer provides written direction.

B. Provide specified concrete as follows:

1.	Compressive Strength @ 28 days:	4000 psi (minimum)
2.	Air Entrainment:	4 - 8 percent
3.	Slump:	2 - 4 inches

C. If at any time during construction concrete strength falls below specified strength, or proves unsatisfactory for any reason, immediately notify Architect/Engineer. Confirm notification in writing.

D. Use air entrainment admixture for all concrete that will be exposed to freeze / thaw cycling.

E. The concrete ready mix supplier must contact the Hydrophobic Concrete Admixture Manufacturer before designing and testing any new mix designs, to receive guidance on achieving proper water absorption characteristics. The concrete ready mix supplier must also report the test results to the Hydrophobic Concrete Admixture Manufacturer. All values must be within the specification limits.

1. All concrete materials used for testing must be same as concrete materials used for construction.
2. All concrete for INTERIOR floor slabs above grade will contain Hydrophobic Concrete Admixture and additional ingredients including:

a. Hydrophobic Concrete Admixture at the rate of one U.S. gallon per cubic yard of concrete (5 liters per cubic meter).
b. Superplasticizer at the manufacturer's recommended rate and appropriate for the placement requirements of the project.

3. Cementitious Content: The cementitious content of concrete containing Hydrophobic Concrete Admixture will not be less than 550 lbs/yd^3 (325 kg/m^3) with up to 15% fly ash or 50% slag replacement.
4. Water-Cement Ratio: 0.42 maximum. Water content of Hydrophobic Concrete Admixture and other admixtures to be included in the water-to-cementitious ratio.

F. Do not use other admixtures without Architect/Engineer's prior written authorization.

2.03 REINFORCING BARS

A. General Conditions:

1. All fabrication shall be done at the mill or shop prior to shipment.

2. No substitutions shall be obtained before the bars or fabric are fabricated or ordered. At the time of shipment, the surface of all reinforcement bars, fabric, and prestressing strands shall be free from loose mill scale, dirt, oil, grease, or other foreign substances. A light coating of rust, which may form during storage under acceptable conditions at the mill or warehouse, will not be deemed cause for rejection. Stocks of reinforcement bars, fabric or strand either at the mill or warehouse, which have not been protected in an adequate manner during storage, will not be accepted.

3. At the time the bars and fabric are placed in the work, they shall be free from rust which pits the surface or scales off dirt, oil grease, or other foreign substances. A light coating of rust, which may form during storage on the work under acceptable conditions, will not be deemed cause to require cleaning. Thin powdery rust and tight rust is not considered detrimental and need not be removed.

B. Reinforcement Bars:

1. Reinforcement bars, including epoxy coated reinforcement bars, shall conform to the requirements of ASTM A615, Grade 60 deformed bars.

3. EXECUTION

3.01 INSPECTION: Inspect all prior construction and conditions under which work will be performed. Report in writing to Architect/Engineer all conditions that would adversely affect proper execution of the work. Do not proceed with the work until all unsatisfactory conditions have been corrected.

A. Site verification of conditions for Vapor Retarder Sheet System:

1. Apply Vapor Retarder Sheet System within range of ambient and substrate temperatures recommended by vapor barrier manufacturer. Do not apply on frozen ground.
Prepare surfaces in accordance with manufacturer's instructions.

2.

B. Site verification of conditions for Hydrophobic Concrete:

1. Verify that site conditions are acceptable for placement of vapor-resistant concrete construction – Vapor Retarding Sheet System and concrete with Hydrophobic Concrete Admixture.
Utilize Hydrophobic Concrete Admixture Manufacturer's pre-placement inspection

2.

services.
Do not proceed with concrete placement until conditions unacceptable to the Hydrophobic

3.

Concrete Admixture Manufacturer are corrected.

3.02 FORMWORK

A. Design: Design, engineer, construct, maintain and remove all formwork in accord with ACI 301, Chapter 4.

B. Preparation:

1. Verify lines, levels and measurements before proceeding with formwork.

2. Hand trim sides and bottoms of earth forms; remove loose dirt prior to placing concrete.

3. Ensure that forms conform to shape, lines and dimensions of members shown on drawings.

4. Minimize and symmetrically align form joints and make watertight to prevent leakage of mortar.

5. Arrange and assemble formwork so that concrete will not be damaged during stripping of forms.

C. Erection:

1. Provide bracing to ensure stability of formwork. Strengthen formwork liable to be overstressed by construction loads.

2. Provide temporary ports in formwork to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain. Close ports with tight fitting panels, flush with inside face of forms, neatly fitted so that joints will not show in exposed concrete surfaces.

3. Do not displace or damage in-place vapor retarder.

4. Construct formwork to maintain tolerances in accord with ACI 301.

D. Form Release Agent:

1. Apply form release agent on formwork in accord with manufacturer's current printed instructions. Apply prior to placing reinforcement, anchoring devices and embedded items.

E. Form Removal:

1. Notify Architect/Engineer 24 hours prior to removing formwork.

2. Do not remove forms and bracing until concrete has sufficient strength to support its own weight, and construction and design loads which may be imposed on it.

F. Cleaning:

1. Clean forms to remove foreign matter as erection proceeds.

2. Ensure that water and debris drain to exterior through clean-out ports.

3. During cold weather, remove ice and snow from forms. Do not use de-icing salts. Do not use water to clean out completed forms, unless formwork and construction proceed within heated enclosure. Use compressed air to remove foreign matter.

G. Form Re-use:

1. Contractor may reuse formwork that is free from defects, cracks or damage caused by previous use.

2. Remove, replace or repair all portions of formwork designated for reuse. Make all repairs using same type of material as originally used. Make all repaired areas smooth and flush.

3.03 REINFORCEMENT BARS

A. Storage and Protection:

1. The reinforcement bars, when delivered on the job, shall be stored above the surface of the ground upon platforms, skids or other supports, and shall be protected from mechanical injury and from deterioration by exposure. When placed in the work, they shall be free from dirt, detrimental scale, paint, oil, or other foreign substances.

B. Cutting and Bending:

1. Reinforcement bars shall be cut and bent at the mill or shop to the shapes shown on the plans before shipment to the work. Bending in the field will not be permitted **except** to correct errors, damage by handling and shipping, and minor omissions in shop bending.

C. Patching and Securing:

1. All reinforcement bars shall be placed and tied securely at the locations and in the configuration shown on the plans prior to the placement of concrete. Reinforcement bars shall not be placed by sticking or floating into place during or immediately after placement of the concrete.

2. Bars shall be tied at all intersections except where the center to center dimension is less than 300 mm (1 ft.) in each direction, in which case alternate intersections shall be tied. The number of ties as specified shall be doubled for lap splices at the stage construction line of concrete bridge floors when traffic is allowed on the first completed stage during the pouring of the second stage.

3. Prior to the placement of any concrete, all mortar or other foreign material shall be removed from the reinforcement. Placement of the concrete shall not commence until the A/E has inspected and approved the reinforcement placement. The Contractor shall correct any misalignment of the reinforcement bars occurring during the placement of the concrete.

4. The clearances from the face of the form shall be maintained by the use of chairs or other supports approved by the A/E. Clearance from the bottom of footing shall be maintained by concrete blocks, cement bricks, suspended in place, or other supports system approved by the A/E. Pebbles, stones, building bricks, and wood blocks shall not be used for bar supports.

D. Splicing:

1. Reinforcement bars shall be furnished in the full lengths indicated upon the plans. No splicing of bars, except where indicated on the plans, will be permitted without the written approval of the A/E. All reinforcement bars specified along a continuous line of bars shall be lapped the specified length and shall be contact spliced and wired together. All lapping reinforcement bars, not specified along a continuous line and contact spliced, shall be placed a clear distance apart of at lest 65 mm (2½") or contact spliced, whichever requires the least adjustment in the bar spacing specified.

2. Splicing of reinforcement bars by welding will not be allowed.

3.04 ADMIXTURES

A. Air Entrainment: Add air entrainment admixture to achieve specified percentages of air content. Follow admixture manufacturer's current printed instructions.

B. Chemical Admixtures. Use only upon receipt of Architect/Engineer's prior written approval.

C. Moisture Vapor Protection in Concrete Flooring

3.05 ACCESSORIES

A. Bonding Agent:

1. Prepare previously placed concrete by cleaning with a steel brush.

2. Apply bonding agency in strict accord with manufacturer's current printed instructions.

B. Fill and Vapor Retarder Sheet

1. Surface preparation:

a. Granular fill: Clean mixture of crushed stone or crushed or uncrushed gravel; ASTM D448, Size 57, with 100 percent passing a 1-1/2-inch (38-mm) sieve and 0 to 5 percent passing a No. 4 (4.75-mm) sieve.

b. Granular course: Install granular fill over proof rolled base, moisten, and compact with mechanical equipment to elevation tolerances of plus 0 inches or minus 3/4 inches. Install fines over top of granular base to provide a flat surface for vapor retarder covering above.

c. Verify that fill materials are dry and clean, ready to receive the work. Remove all loose or foreign matter and all protuberances that would puncture or otherwise damage the membrane.

2. Installation:

a. Installation shall be in accordance with manufacturer’s instructions and ASTM E 1643-98.

b. Unroll vapor barrier with the longest dimension parallel with the direction of the concrete placement.

c. Lap vapor barrier over footings and seal to foundation walls.

d. Overlap joints 6” and seal with manufacturer’s tape

d. Seal all penetrations (including pipes) per manufacturer’s instructions.

e. No penetration of the vapor barrier is allowed except for reinforcing steel and permanent utilities. Do not cut or puncture vapor retarder.

f. Repair damaged areas by cutting patches of vapor barrier, overlapping damaged area 6”, and taping all four sides with tape.

B. Waterstops and groutable hose waterstop system components: Install in accordance with Hydrophobic Concrete Admixture Manufacturer’s recommendations and the drawings.

1. Bentonite waterstops:

a. Shall be placed at all cold joints and penetrations

b. Preparation:

1. Brush off all dust and debris and apply a coat of primer or spray adhesive to the area where the waterstop is to be placed on the standing structural member.
2. Using moderate hand pressure press a continuous bead of waterstop firmly into position on the standing structure. Check to be certain that the waterstop has bonded to the primed area.
3. For proper joining, cut ends with sharp tool at 45 degree angle, and then place ends over one another
4. Peel the protective backing from the exposed side of the waterstop.

Knead the overlapped ends together to form continuous, uninterrupted gasket.

5. For shotcrete applications, in addition to the instructions above, utilize masonry nails to hold the waterstop in place.on the concrete. Masonry nails should be spaced approximately 12 inches apart. Waterstop must be glued and tied with the use of tie wires to all penetrations.

c. Bentonite waterstops must not be installed more than 2 days prior to concrete placement. After installation of waterstops, cover the waterstop with a plastic sheet to protect from weather damage.

d. Bentonite waterstops shall be dry and not activated when concrete is placed. If the waterstops have been water damaged they shall be replaced before the concrete is placed.

Other waterstops and groutable hose waterstop systems:

1. Shall be placed as on drawings and as per Hydrophobic Concrete Admixture

a. Manufacture's recommendations

3.06 EXPANSION & CONSTRUCTION JOINTS

A. Preparation: Properly locate and form expansion, control and contraction joints in accord with drawings and approved shop drawings.

B. Installation:

1. Expansion Joints:

a. Install expansion joints at right angles to concrete surface; extend through full depth or thickness of concrete.

b. Cut-back exposed expansion joint material a minimum of 3/8 in. from surface of concrete; fill with sealant flush to surface; tool smooth.

2. Place formed construction joints in floor slab. Set top screed to indicated elevations. Secure to resist movement of wet concrete.

3. Install joint anchorage in accord with manufacturer's current printed instructions. Use primers recommended by joint filler and sealant manufacturer.

4. Apply sealants in accord with 07 90 00.

5. Joints for Concrete Curb and Gutter shall be according to Article 606 of the IDOT Standard Specifications.

3.07 CONCRETE PLACEMENT

A. Preparation:

1. Notify Architect/Engineer and Testing Agency at least 48 hours prior to scheduled placements of all concrete. Confirm notification in writing.

a. Prior to placement, Architect/Engineer will inspect all lines, grades, elevations, formwork, reinforcement and accessories.

b. Do not proceed with concrete work without Architect/Engineer's written approval of all items.

2. Ensure that forms are properly coated with form release agent.

3. Ensure that all reinforcement, sleeves, conduits, pipes, frames for openings, anchors,

inserts, and other embedded items are in place and properly anchored.

4. Ensure that all reinforcement is clean and free of all material harmful to concrete.

5. Verify proper placement of vapor retarder and perimeter insulation.

B. Placement:

1. Place all concrete in accord with ACI 301.

2. Ensure that in-place items, reinforcement, embedded items, vapor retarder and insulation are not dislodged or displaced during placement.

3. Convey all concrete from mixer to place of deposit as rapidly as possible by means that will prevent segregation or loss of materials.

4. Deposit concrete as nearly as practicable in its final position to avoid segregation due to rehandling or flowing.

   a. Place concrete at the rate that will keep concrete plastic at all times and flowing readily into spaces around reinforcement.

   b. Do not use concrete that has partially hardened or that has been contaminated with foreign materials.

   c. retempering will not be allowed.

   d. Do not allow concrete to free fall more than 4 ft.

   e. Place all concrete on clean, well-thawed, damp surfaces, free from water; never upon soft mud or dry porous earth.

5. Once started, place concrete continuously between predetermined construction and control joints. Continue placing until panel or section is completed; keep top surfaces level. (Do not break or interrupt successive pours so that cold joints occur.)

6. Slabs on Fill:

   a. Place a porous fill over subgrade, consisting of clean washed gravel or crushed stone graded from 3/4 in. to 1-1/2 inc.; 4 in. thick. Roll or tamp fill until thoroughly compacted.

   b. Install vapor retarder, insulation, reinforcement, embedded items as specified.

   c. Provide wood runways for wheeled equipment for transporting concrete over in-place construction. Prevent dislodgement or damage to in-place items.

   d. Saw cut control joints at an optimum time after finishing. Us 3/16 in. thick blade; cut 1/4 depth of slab thickness.

   e. Separate slabs from vertical surfaces with joint filler. Extend joint filler from bottom of slab to within ½ in. of finished slab surface.

   f. Place concrete of indicated thickness and strike off at proper levels to receive specified finishes.

   g. Set continuous expansion joint strips, seal joint tightly at strips and spaces around pipes, sleeves or conduits penetrating slabs.

   h. See Finish Schedule at end of Section.

   i. Tolerances: Provide Class A tolerances to floor slabs in accord with ACI 301.

C. Weather Conditions:

1. Place all concrete in accordance with ACI 305R-89 (hot weather placement) and ACI 306-88 (cold weather placement).

2. Concrete temperature when deposited: Minimum 50°F; maximum 85°F.

3. In freezing weather, provide suitable means for maintaining concrete temperature at a minimum of 70°F. for three days, or 50°F. for five days after placing.

4. Cooling of concrete to outside temperature: Not faster than 1° per hour for first day and 2° per hour thereafter until outside temperature is reached.

5. Maximum temperature of concrete produced with heated aggregated, heated water, or both, at any time during its production or transportation: 90°F.

6. Do not mix salt, chemicals or other foreign materials in concrete to prevent freezing or to accelerate hardening of concrete.

3.08 PATCHING

A. Upon completion of each concrete placement, Architect/Engineer will inspect the work, and will order all concrete not formed as shown on drawings or approved shop drawings, or which is out of level or alignment, or which shows defective surfaces, to be removed and replaced with satisfactory work.

1. Upon Contractor's written request, Architect/Engineer may give written authorization to patch specific defective surfaces.

2. The Architect/Engineer's authorization to patch any defective area will not be considered a waiver of the Architect/Engineer's right to order removal and replacement of defective work when patching is not satisfactory.

3. When authorized, perform patching in accord with ACI 301, Ch. 9.

4. At Contractor's option, a bonding agent may be used instead of or in addition to bonding grout, provided the bonding agent does not affect color of concrete. Use bonding agent in accord with manufacturer's current printed instructions. Apply after all cutting, chipping and cleaning of oil, dust, dirt, grease or loose surface materials have been removed.

5. Building up patching to match appearance of surrounding exposed concrete surfaces. Apply bonding agent to honeycombed areas, aggregate pockets or other voids, and fill with motor consisting of Portland cement and aggregate selected to match existing concrete and finish of existing surfaces. Cure patches to prevent cracks.

6. Patching and surfacing compound may be used for thin patches where it is not necessary to match the color, texture and finish of surrounding concrete surfaces.

3.09 DEFECTIVE CONCRETE

A. Modify or replace concrete not conforming to indicated lines and levels, details and elevations.

B. Repair or replace concrete not properly placed or finished, or not of specified type.

3.10 FINISHES

A. Slabs: Provide level slabs except where otherwise indicated on drawings. Determine all top-of-slab elevations by use of preset runners supported by adjustable chairs set to proper elevation. Architect/Engineer will obtain readings by use of surveyor's level to verify elevations of runners and supporting formwork. Schedule the work so that these readings may be obtained before beginning concrete placement and without causing delay in the work.

1. Place concrete for all slabs continuously between construction joints; consolidate by vibration. Bring to correct level with a straight edge and strike off. Use bull floats or

darbies to force coarse aggregate down and to produce a smooth surface, free from humps and hollows.

2. Power float all slabs to a texture consistent with the existing tennis courts. Begin power floating when water sheen has disappeared or the mix has stiffened sufficiently that the weight of a man standing on it leaves only a slight imprint on the surface. If two power floating operations are necessary to bring the surface to the specified state, allow the concrete to stiffen or become harder before beginning the second floating operation.

3. Perform additional finishing, including brooming, flushing and steel troweling as specified.

4. When steel trowel finish is specified, provide power and hand troweling. Begin power troweling as soon as little or no cement past clings to the blades. Continue troweling until the surface is dense, smooth and free of all minor blemishes such as trowel marks.

5. Maximum variation in surface tolerance for troweled finishes "B" and "C": 1/8 in. in 10 ft. If variations greater than this exist, the Architect/Engineer may direct the Contractor to grind the surfaces to bring them within the tolerance specified. Patching of low spots will not be permitted. Perform grinding as soon as possible, preferably within three calendar days, but not until the concrete is sufficiently strong to prevent dislodging coarse aggregate particles.

6. Sprinkling of dry cement or a mixture of dry cement and sand on the surface of the fresh concrete to absorb water or to stiffen the mix will not be permitted.

7. Finishes:

   a. Finish "A". (For exposed concrete floors which will remain exposed, receive finished flooring, special coatings, paint, harder or sealer): Finish with a steel trowel. Use final hand troweling to remove slight imperfections left by troweling machines and to bring surface to a dense, smooth polished final finish. Continue hand troweling until a ringing sound is heard as the trowel passes over the surface.

   b. Finish “B”. For coarse-textured, concrete -formed surfaces intended to receive plaster, stucco or wainscoting.

   c. Finish "C" (Interior or exterior ramps, exterior slabs, platforms. sidewalks, curb and gutter, and steps): Trowel to a smooth, dense surface. Finish with a fine-hair push broom, perpendicular to the direction of pedestrian or vehicular traffic. Finish gutter parallel to the direction of water flow.

   d. Finish “D”. For a minimum quality surface where roughness is not objectionable and applied where surface will be permanently concealed. I.e. footings, foundation walls, etc. .

   e. Exposed aggregate finish shall be constructed as follows:

      1) Materials:
         a) An IDOT approved Class SI concrete mix from an IDOT certified ready-mix plant that incorporates gravel as the coarse aggregate.

      2) Installation:
         a) Install and compact subbase per plan details, place concrete, finish, spray retarder to 1/8" deep on top, let cure 4 - 24 hours.
         b) Hose and brush-off evenly. Let dry and cure for 4 - 6 weeks.
         c) Power wash off top surface to remove remaining cement matrix and clean exposed aggregates.
         d) Wash off, let dry and spray a sealer approved by the A/E.

3.11 FIELD QUALITY CONTROL - INSPECTIONS & TESTS

A. General Contractor shall employ a Testing Agency whom shall make the following inspections and tests in accord with ACI 301.

1. Compression strength test for each 50 cu. yds. of concrete, or fraction thereof, on specimens taken at point of discharge from the truck immediately before placing of each design mix daily. A set of test specimens will consist of four standard 4 in. x 8 in. cylinders in accord with ASTM C172 and ASTM C39. Two cylinders will be tested at seven days, the other two at 28 days. The complete test set will be picked up by the Testing Agency in 24 hours after casting and taken to the Testing Agency's laboratory for further curing and testing.

2. Three additional cylinders will be made during a placement which requires temporary heating. These cylinders will be left in the enclosure in the same environment as concrete placed. One cylinder will be tested at three days, one at seven days, the third at 28 days to verify adequacy of temporary heating system.

3. Slump test will be performed in accord with ASTM C143, with one test made for each 50 cu. yds. of concrete, or fraction thereof.

4. Air entrainment test will be performed in accord with ASTM C173 or C231, with one test made for each 50 cu. yds. of concrete, or fraction thereof.

5. When tests indicate concrete strength below that specified, improper slump or air entrainment, or when visual defects indicate poor quality concrete has been placed, Architect/Engineer or Testing Agency will immediately notify Contractor. Contractor may, at its own expense, have additional tests made; including compression tests on cored cylinders in accord with ACI 318. Architect/Engineer will order the removal of all non-conforming or defective concrete, and its replacement with concrete meeting project specifications.

6. Testing Agency shall provide copies of all test and locations of test to the Architect/engineer within 7 days of the test results.

B. The General Contractor shall give the Testing Agency and Architect/Engineer 48 hours advance notice of placing any concrete. The Testing Agency shall make test cylinders, air and slump tests and witness placement of concrete. If the Testing Agency or Architect/Engineer is not present to perform or witness the foregoing because of less than 48 hours notice, the General Contractor shall hire, at his own expense, an independent testing lab to take and test core samples at locations directed by the Architect/Engineer.

3.12 LIQUID HARDENER AND SEALER -

A. Seal interior concrete floors which will remain exposed and make dust-proof by applying one additional coat of curing compound as specified. Make every effort to eliminate staining of concrete during construction.

B. Apply the second coat after completion of construction, at the minimum rate of 1 gal. per 450 sq. ft. Verify that surfaces are thoroughly set, sound, dry, clean and free from dust, dirt, oil or paint. Repair holes and depressions and finish smooth or to match texture of adjacent floor areas. Uniformly apply with spray, roller or soft pushbroom, ensuring that all voids and minor depressions are fully coated.

3.13 ADJUST & CLEAN

A. Upon completion, thoroughly inspect all work. Correct all defects. Remove defective work when patching is not authorized by Architect/Engineer.

B. Clean up and remove all surplus materials, packing, rubbish and debris resulting from the work and legally dispose of off site.

3.14 PROTECTION

A. Protect finished concrete work so that work will be without flaw or damage at Architect/Engineers's acceptance.

1. GENERAL

1.01 WORK INCLUDES

A. Base Bid:
Contractor provide all rough carpentry, including miscellaneous items normally provided by carpentry trade, including but not limited to the following:
1. Exterior sheathing (plywood or oriented strand board sheathing, thickness as shown on drawings).
2. Moisture preservative treated wood base plate.
3. Wood nailers, plates, blocking, furring, grounds, etc.
4. Rough hardware including bolts, nuts, washers, nails, spikes, “H’ clips, etc.
5. Wood blocking and supports in conjunction with installation of grab bars, toilet accessories and other miscellaneous specialties.
6. Provide laminated wood joist.

1.02 QUALITY ASSURANCE

A. Lumber grading rules and wood species to conform with Voluntary Product Standard PS 20-70; Grading rules of the following associations apply to materials furnished under this section.
1. Northeastern Lumber Manufacturer's Association, Inc. (NELMA).
2. Southern Pine Inspection Bureau (SPIB).
3. West Coast Lumber Inspection Bureau (WCLIB).
4. Western Wood Products Association (WWPA).
5. Northern Hardwood and Pine Manufacturer's Association (NHPMA).

B. Plywood and OSB grading rules:
1. Softwood Plywood - Construction and Industrial: Product Standard PS1-66.
2. American Plywood Association Performance Rating Standard PRP 108.

C. Grade Marks: Identify all lumber and plywood by official grade marks:
1. Lumber: Grade stamp to contain symbol of grading agency, mill number or name, grade of lumber, species or species grouping or combination designation, rules under which graded, where applicable and condition of seasoning at time of manufacture.
   a. S-GRN: Unseasoned.
   b. S-DRY: Maximum 19% moisture content.
   c. MC-15 or KD: Maximum of 15% moisture content.
   d. Dense.
2. Preservative Treatment of lumber shall be treated according to appropriate AWPA Standards. Each piece of treated material shall bear an identification stamp or end tag which includes the name of the inspection agency, product class, and preservative.
3. Softwood Plywood & OSB: Appropriate grade trademark of the American Plywood Association.
   a. Type, grade, class and identification index.
   b. Inspection and testing agency mark.

1.03 WORKMANSHIP QUALITY

A. Workmanship for rough carpentry shall be in accordance with requirements of National Lumber Manufacturers Association.
1. Cut members square on bearings and fit closely.
2. Set accurately to lines and levels and plumb.
3. Secure rigidly in place at bearings and connections.
4. Use bolts and strap iron where required for best possible results.
5. Use metal framing anchors where needed to strengthen structure and to anchor against wind uplift.

2. PRODUCTS

2.01 LUMBER

A. Dimensions:
   1. Specified lumber dimensions are nominal.
   2. Actual dimensions conform to industry standards established by American Lumber Standards Committee and rules writing agencies.

B. Moisture Content: Kiln dried to 15% maximum at time of installation for framing and decking.

C. Surfacing: Surface four side (S4S) unless specified otherwise.

D. Framing lumber, 2" to 4" thick, 2" to 12" wide, any commercial softwood species:
   1. General Framing: Stud grade of standard and better.
   2. Plates, blocking, bracing, bulk headings, nailers, and general utility purposes: Utility grade.
   3. Economy grade shall not be used.

2.02 EXTERIOR WALL SHEATHING

A. Size: 1/2 inch thick (see drawings) x 4 feet wide x 8, 9 or 10 feet long.

B. Composition: 5 ply Plywood or OSB

C. Each sheet shall bear the stamp of the American Plywood Association which includes a span rating which is equal to or greater than the spacing of the framing members to which sheets are applied.

2.03 EXTERIOR ROOF SHEATHING

A. Size: 5/8 inch thick x 4 feet wide x 8 feet long.

B. Composition: 5 ply Plywood or OSB

C. Each sheet shall bear the stamp of the American Plywood Association which includes a span rating which is equal to or greater than the spacing of the framing members to which sheets are applied.

2.04 WOOD JOIST

A. Provide pre-engineered floor trusses, see structural drawings for locations.

2.05 ROUGH HARDWARE:

A. Nails, Spikes and Staples: Hot-dipped galvanized stainless steel or aluminum for exterior locations and high humidity locations; plain finish for other interior locations; size and type to suit application; staples shall not be used for fastening wood structurally.

B. Bolts, Nuts, Washers, Lags, Pins, and Screws: Medium carbon steel; sized to suit application; galvanized for exterior locations, high humidity locations, plain finish for other interior locations.

C. Fasteners: Toggle bolt type for anchorage to hollow masonry and expansion shield and lag bolt type for anchorage to solid masonry or concrete.

D. Bar or Strap Anchors: ASTM A525 zinc-coated steel, 16 gauge minimum.

E. Framing Anchors: Minimum of 18 gauge zinc-coated steel, size and configuration determined by type of connection required.

F. Wood Structural Panel Edge Reinforcement commonly called “H” clips, 18 ga. or 20 ga. to match thickness of sheathing.

3. EXECUTION

3.01 INSTALLATION - GENERAL

A. Blocking and all other carpentry items shall be laid out as called for by drawings or required by the

nature of the work and shall be cut and fitted as necessitated by conditions encountered. All work shall be plumbed, leveled and braced with sufficient nails, spikes, bolts, etc., to ensure rigidity.

B. All pieces of wood or other carpentry material with a defect or defects that prevent it from serving its intended purposes satisfactorily, including crooked, warped, bowed, or otherwise defective material, even if within the limits of grade specified, will be rejected and shall be replaced with an acceptable piece. Blocking used as reveals as detailed on drawings shall be free of exposed knots.

C. Wood furring, including blocking and stripping necessary to maintain lines of and support finishes shown on the drawings shall be provided.
   1. Wood furring shall be provided to receive trim at windows and other openings in outside walls.
   2. Wood blocking, nailers and grounds shall be provided to receive engaging woodwork, cabinets, grab bars, toilet partitions, toilet accessories and/or other finished items.
   3. Wood furring, blocking, stripping, nailers, grounds, called for by drawings or necessitated by conditions, shall be secured in place with approved types and sizes of nails, ties, bolts, inserts, spaced to provide secure and rigid support.

D. Verify that surfaces to receive rough carpentry materials are prepared to exact grades and dimensions. Application or installation of materials constitutes acceptance of existing conditions.

E. Frame wood members to a close fit, set accurately to required lines and levels and secure rigidly in place in accordance with details. Cut and fit framing, blocking, and furring to accommodate other work as required.

3.02 PRESSURE TREATED WOOD PRODUCTS

A. Provide preservative pressure treated wood base plates in direct contact with concrete or masonry

B. Apply two brush coats of same preservative used in original treatment to all sawed or cut surfaces of treated lumber.

3.03 INSTALLATION OF EXTERIOR WALL SHEATHING

A. Place sheathing vertical on walls.

B. Secure ends of sheets over firm bearing; maintain minimum of 1/16" and 1/8" spacing between joints of sheets.

C. Place the long dimension of sheathing sheets parallel to framing members.

D. Secure to framing members using 8d common nails at 6" o.c. along the sheet edges and 12" o.c. in the field of the sheet.

3.04 INSTALLATION OF EXTERIOR SHEATHING / DECKING

A. Place sheathing with end joints staggered.

B. Secure ends of sheets over firm bearing; maintain minimum of 1/16" and 1/8" spacing between joints of sheets.

C. Place the long dimension of sheathing sheets perpendicular to framing members.

D. Provide “H” clips at midspan between roof trusses at each row of roof sheathing.

E. Secure to framing members using 10d common nails at 6" o.c. along the sheet edges and 12" o.c. in the field of the sheet.

3.05 INSTALLATION OF EXTERIOR GYPSUM SHEATHING

A. Place sheathing with end joints staggered.

B. Secure ends of sheets over firm bearing; maintain minimum of 1/16" and 1/8" spacing between joints of sheets.

C. Place the long dimension of sheathing sheets perpendicular to framing members.

D. Secure to framing members using nails or screws at 6" o.c. along the sheet edges and 12" o.c. in the field of the sheet.

3.06 ROOF BLOCKING

A. Furnish and install all wood roof blocking and nailers required by drawings.

B. Blocking shall be sizes and shapes indicated on details and as required by conditions encountered.

3.07 ROUGH HARDWARE

A. Rough hardware needed for proper installation of all carpentry and millwork shall be provided.

B. Nails, spikes, screws, bolts and similar items shall be of proper types and ample sizes to fasten and hold various members securely in place.

3.08 ADJUST AND CLEAN

A. Remove from site all rubbish, debris and packaging produced by operations and leave site in a "broom clean" condition.

B. Adjust all working items to fit snugly yet work freely.

3.09 PROTECTION

A. All carpentry items subject to damage during construction or affected by weather shall be properly protected.

B. Protect completed work from damage until project is completed and accepted.

END 06 10 00

1. GENERAL

1.01 WORK INCLUDES

A. Base Bid:
1. General Contractor provide shop-fabricated wood trusses as shown on the drawings and as specified herein. Work to include anchorage, blocking, curbing, miscellaneous framing and bracing.

1.02 DEFINITIONS

A. MANUFACTURER: A manufacturer who is regularly engaged in design and fabrication of wood truss components.

B. TRUSS: The terms “truss” and “wood truss component” refer to open web load-carrying assemblies suitable for support of roof decks or floors in buildings.

C. TRUSS INSTALLER: Builder, contractor, or sub-contractor who is responsible for the field storage, handling, and installation of trusses.

1.03 DESIGN

A. Trusses shall be designed in accordance with these specifications and where any applicable design feature is not specified herein, design shall be in accordance with applicable provisions of latest edition of *National Design Specifications for Wood Construction (NDS)* of the American Forest and Paper Association (AF&PA), and *Design Specifications for Metal Plate Connected Wood Trusses (ANSI/TPI 1)*, of the Truss Plate Institute (TPI), and code of jurisdiction.

B. Manufacturer shall furnish design drawings bearing seal and registration number of an Illinois licensed structural engineer. Drawings shall be approved by the A/E prior to fabrication.

C. Truss design drawings shall include as minimum information:
1. Span, depth or slope and spacing of trusses
2. Required bearing width
3. Design loads, as applicable:
    a. top chord live load
    b. top chord dead load
    c. bottom chord live load
    d. bottom chord dead load
    e. concentrated loads and their points of application
    f. wind and seismic criteria as shown on drawing sheet S0.01.
4. Adjustment to lumber and plate design loads for condition of use
5. Reactive forces, their points of occurrence and direction
6. Plate type, gage, size and location of plate at each joint
7. Lumber size, species and grade for each member
8. Location of any required continuous lateral bracing
9. Calculated deflection ratio and/or maximum deflection for live and total load
10. Maximum axial compressive forces in truss members
11. Location of joints
12. Connection requirements for
    a. truss to truss girders
    b. truss ply to ply
    c. field splices.

1.04 SUBMITTALS

A. Shop Drawings in accordance with Section 01 33 00.

2. PRODUCTS

2.01 MATERIALS

A. Lumber
1. Lumber used for truss members shall be in accordance with published Values of lumber rules writing agencies approved by board of review of American Lumber Standards Committee. Lumber shall be identified by Grade mark of a lumber inspection bureau or agency approved by that Board, and shall be as shown on design drawings.
2. Moisture content of lumber shall be no less than 7 percent nor greater than 19 percent at time of fabrication.
3. Adjustment of values for duration of load or conditions of use shall be in accordance with *National Design Specifications for Wood Construction (NDS)*.
4. Fire retardant treated lumber, if applicable, shall meet specifications of truss design, use category UCFA as specified by the American Wood Protection Association, section 2303.2 of the International Building Code from the International Building Code Council, and ANSI/TPI 1, par 6.4.9 and NDS par 2.3.4. Lumber treater shall supply certificate of compliance including specified design values and use conditions, including minimum acceptable galvanizing level for galvanized steel fasteners used with their FRT lumber.

B. Metal connector plates shall be manufactured by truss manufacturer and shall be not less than 20 gage and shall meet or exceed ASTM A653-94 grade 37, and shall be hot dipped galvanized according to ASTM A653-94, coating designation G60. Working stresses in steel are to be applied to effective ratios for plates as determined by test in accordance with ANSI/TPI.

2.02 FABRICATION

A. Trusses shall be fabricated in a properly equipped manufacturing facility of a permanent nature. Trusses shall be manufactured by experienced workmen, using precision cutting, jigging and pressing equipment meeting requirements of ANSI/TPI 1-1995, Section 3. Truss members shall be accurately cut to length angle and true to line to assure proper fitting joints within tolerances set forth in ANSI/TPI 1, Chapter 3, and proper fit with other work.

3. EXECUTION

3.01 HANDLING, INSTALLATION AND BRACING

A. Trusses shall be handled during fabrication, delivery and at job site so as not to be subjected to excessive bending.

B. Trusses shall be unloaded on smooth ground to avoid lateral strain. Trusses shall be protected from damage that might result from on-site activities and environmental conditions. Prevent toppling when banding is removed.

C. Handle during installation in accordance with latest version of *Building Component Safety Information* (BCSI 1) from TPI, and ANSI/TPI 1. Installation shall be consistent with good workmanship and good building practices and shall be responsibility of Truss Installer.

D. Apparent damage to trusses, if any, shall be reported to Manufacturer prior to installation.

E. Trusses shall be set and secured level and plumb, and in correct location. Trusses shall be held in

correct alignment until specified permanent bracing is installed.

F. Cutting and altering of trusses is not permitted.

G. Concentrated loads shall not be placed atop trusses until all specified bracing and bridging has been installed and decking is permanently nailed in place. Specifically avoid stacking full bundles of decking or other heavy materials onto unsheathed trusses.

H. Erection bracing is always required. Exercise care to prevent toppling or dominoing of trusses during installation.

END 06 17 53

1. GENERAL

1.01 WORK INCLUDES

A. Work includes air leakage criteria for, materials and installation methods supplementing other air seal materials and assemblies; and air seal materials to connect and seal openings, joints, and junctions between air seal materials and assemblies.

B. Contractor provide weather barrier assembly, for vertical building envelope protection that will maintain air/moisture resistance while maintaining moisture-vapor permeability. The assembly consists of the following:
1. Weather barrier membrane
2. Seam Tape
3. Flashing
4. Fasteners

1.02 REFERENCES

A. ASTM International
1. ASTM C920; Standard Specification for Elastomeric Joint Sealants
2. ASTM C1193; Standard Guide for Use of Joint Sealants
3. ASTM D882; Test Method for Tensile Properties of Thin Plastic Sheeting
4. ASTM D1117; Standard Guide for Evaluating Non-woven Fabrics
5. ASTM E84; Test Method for Surface Burning Characteristics of Building Materials
6. ASTM E96; Test Method for Water Vapor Transmission of Materials
7. ASTM E1677; Specification for Air Retarder Material or System for Framed Building Walls
8. ASTM E2178; Test Method for Air Permeance of Building Materials
9. ASTM E2357; Standard Test Method for Determining Air Leakage of Air Barrier Assemblies

B. AATCC – American Association of Textile Chemists and Colorists
1. Test Method 127 Water Resistance: Hydrostatic Pressure Test

C. TAPPI
1. Test Method T-410; Grams of Paper and Paperboard (Weight per Unit Area)
2. Test Method T-460; Air Resistance (Gurley Hill Method)

D. Sealant, Waterproofing and Restoration Institute
1. SWRI - Sealant Specification

1.03 SUBMITTALS

A. Refer to Section 01 33 00 Submittal Procedures.

B. Product Data: Submit manufacturer current technical literature for each component.

C. Samples: Weather Barrier Membrane, minimum 8-1/2 inches by 11 inch.

D. Quality Assurance Submittals

1. Manufactures Instructions: provide manufactures written installation instructions.

1.04 QUALITY ASSURANCE

A. Qualifications
1. Installer shall have experience with installation of commercial weather barrier assemblies under similar conditions.
2. Installation shall be in accordance with weather barrier manufacturer's installation guidelines and recommendations.
3. Source Limitations: Provide commercial weather barrier and accessory materials produced by single manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

A. Refer to Section 01 60 00 Product Requirements.

B. Deliver weather barrier materials and components in manufacturer's original, unopened, undamaged containers with identification labels intact.

C. Store weather barrier materials as recommended by weather barrier manufacturer.

1.06 SCHEDULING

A. Review requirements for sequencing of installation of weather barrier assembly with installation of windows, doors, louvers and flashings to provide a weather-tight barrier assembly.

B. Schedule installation of weather barrier materials and exterior cladding within nine months of weather barrier assembly installation.

2. PRODUCTS

2.01 AIR BARRIERS

A. Acceptable Manufacturer's
1. DuPont; 4417 Lancaster Pike, Chestnut Run Plaza 728, Wilmington, DE 19805; 1-800-44-TYVEK (8-9835); http://www.construction.tyvek.com
2. Innovative Energy
3. Tenneco
4. Or approved equal

2.02 MATERIALS

A. Basis of Design: spunbonded polyolefin, non-woven, non-perforated, weather barrier is based upon DuPont™ Tyvek® CommercialWrap® and related assembly components.

B. Performance Characteristics:
1. Air Penetration: 0.001 cfm/ft2 at 75 Pa, when tested in accordance with ASTM E2178. Type I per ASTM E1677. ≤0.04 cfm/ft2 at 75 Pa, when tested in accordance with ASTM E2357
2. Water Vapor Transmission: 28 perms, when tested in accordance with ASTM E96, Method B.
3. Water Penetration Resistance: 280 cm when tested in accordance with AATCC Test

Method 127.

4. Basis Weight: 2.7 oz/yd^2, when tested in accordance with TAPPI Test Method T-410.
5. Air Resistance: Air infiltration at >1500 seconds, when tested in accordance with TAPPI Test Method T-460.
6. Tensile Strength: 38/35 lbs/in., when tested in accordance with ASTM D882, Method A.
7. Tear Resistance: 12/10 lbs., when tested in accordance with ASTM D1117.
8. Surface Burning Characteristics: Class A, when tested in accordance with ASTM E 84. Flame Spread: 10, Smoke Developed: 10.

2.03 ACCESSORIES

A. Seam Tape: Polyethylene or Polyester self adhering type, mesh reinforced, 3 inch wide, Compatible with sheet material.

B. Adhesive: Compatible with sheet seal and substrate, permanently non-curing.
1. Provide adhesive recommended by weather barrier manufacturer.
2. Products:
   a. Liquid Nails® LN-109
   b. Denso Butyl Liquid
   c. 3M High Strength 90
   d. Adhesives recommend by the weather barrier manufacturer.

C. Fasteners:
1. Tyvek Wrap Caps, as distributed by DuPont: #4 nails with large 1-inch plastic cap fasteners, or 1-inch plastic cap staples with leg length sufficient to achieve a minimum penetration of 5/8-inch into the wood stud or equal.

D. Sealants
1. Provide sealants that comply with ASTM C920, elastomeric polymer sealant to maintain watertight conditions.
2. Products:
   a. Sealants recommended by the weather barrier manufacturer.

E. Primers:
1. Provide flashing manufacturer recommended primer to assist in adhesion between substrate and flashing.
2. Products:
   a. 3M High Strength 90
   b. Denso Butyl Spray
   c. Primers recommended by the flashing manufacturer

F. Flashing
1. Flexible membrane flashing materials for window openings and penetrations.
2. Straight flashing membrane materials for flashing windows and doors and sealing penetrations such as masonry ties, etc.
3. Thru-Wall flashing membrane materials for flashing at changes in direction or elevation (shelf angles, foundations, etc.) and at transitions between different assembly materials.
4. Preformed Inside and Outside Corners and End Dams as distributed by DuPont: Preformed three-dimensional shapes to complete the flashing system used in conjunction with DuPont™ Thru-Wall Flashing.

3. EXECUTION

3.01 EXAMINATION

A. Verify substrate and surface conditions are in accordance with weather barrier manufacturer recommended tolerances prior to installation of weather barrier and accessories.

3.02 INSTALLATION – WEATHER BARRIER

A. Install weather barrier over exterior face of exterior wall substrate in accordance with manufacturer recommendations.

B. Install weather barrier prior to installation of windows and doors.

C. Start weather barrier installation at a building corner, leaving 6-12 inches of weather barrier extended beyond corner to overlap.

D. Install weather barrier in a horizontal manner starting at the lower portion of the wall surface with subsequent layers installed in a shingling manner to overlap lower layers. Maintain weather barrier plumb and level.

E. Sill Plate Interface: Extend lower edge of weather barrier over sill plate interface 3-6 inches. Secure to foundation with elastomeric sealant as recommended by weather barrier manufacturer.

F. Window and Door Openings: Extend weather barrier completely over openings.

G. Overlap weather barrier
1. Exterior corners: minimum 12 inches.
2. Seams: minimum 6 inches.

H. Weather Barrier Attachment:
1. Attach weather barrier to studs through exterior sheathing. Secure using weather barrier manufacturer recommended fasteners, space 12 -18 inches vertically on center along stud line, and 24 inch on center, maximum horizontally.
   a. Apply 4 inch by 7 inch piece of air barrier manufacturer approved alternate to air barrier membrane prior to the installation cladding anchors.

3.03 SEAMING

A. Seal seams of weather barrier with seam tape at all vertical and horizontal overlapping seams.

B. Seal any tears or cuts as recommended by weather barrier manufacturer.

3.04 OPENING PREPARATION (for use with non-flanged doors)

A. Flush cut air barrier at edge of sheathing around full perimeter of opening.

B. Cut a head flap at 45-degree angle in the weather barrier at window head to expose 8 inches of sheathing. Temporarily secure weather barrier flap away from sheathing with tape.

3.05 OPENING PREPARATION (for use with flanged windows)

1. Cut weather barrier horizontally along the bottom and top of the window opening.
2. From the top center of the window opening, cut weather barrier vertically down to the sill..
3. Fold side and bottom weather barrier flaps into window opening and fasten.

B. Cut a head flap at 45-degree angle in the air barrier at window head to expose 8 inches of sheathing. Temporarily secure weather barrier flap away from sheathing with tape.

C. Cut 9-inch wide flashing a minimum of 12 inches longer than width of sill rough opening.

D. Cover horizontal sill by aligning flashing edge with inside edge of sill. Adhere to rough opening across sill and up jambs a minimum of 6 inches. Secure flashing tightly into corners by working in along the sill before adhering up the jambs.

E. Fan flashing at bottom corners onto face of wall. Firmly press in place. Mechanically fasten fanned edges. Mechanical fastening is not required for self adhering flashing membrane.

F. On exterior, apply continuous bead of sealant to wall or backside of window mounting flange across jambs and head. Do not apply sealant across sill.

G. Install window according to manufacturer's instructions.

3.06 THRU-WALL FLASHING / WEATHER BARRIER INTERFACE AT WINDOW HEAD

A. Cut flap in weather barrier at window head.

B. Prime exposed sheathing.

C. Install lintel as required. Verify end dams extend 4 inches minimum beyond opening.

D. Install end dams bedded in sealant.

E. Adhere 2 inches minimum thru-wall flashing to wall sheathing. Overlap lintel with thru-wall flashing and extend ¼ inch minimum beyond outside edge of lintel to form drip edge.

F. Apply sealant along thru-wall flashing edges.

G. Fold weather barrier flap back into place and tape bottom edge to thru-wall flashing.

H. Tape diagonal cuts of air barrier.

I. Secure weather barrier flap with fasteners.

3.07 FIELD QUALITY CONTROL

A. Notify manufacturer's designated representative to obtain periodic observations of air barrier assembly installation.

3.08 PROTECTION

A. Protect installed weather barrier from damage.

END OF 07 27 00

1. GENERAL

1.01 WORK INCLUDES

A. Base Bid: Contractor Provide:

1. General Contractor to provide fiberglass shingles and related roofing items as shown on the drawings and herein specified.
   a. Install new
      1) Felt Paper.
      2) Fiberglass Shingles.
      3) Drip Edge & Rake Metal.
      4) Step Flashings.
      5) Vent Pipe Flashings.
      6) Roof Vents.

1.02 QUALIFICATIONS OF INSTALLERS

A. Employ only experienced workmen, skilled in the installation of the specified shingles.

B. Quality Assurance: Where required for extended limited warranty coverage, the installer must be approved or otherwise authorized by the manufacturer to install all roofing products on this project.

C. Roofing Contractor shall hold an Illinois Roofing License.

1.03 REFERENCES

A. Cited Standards and specified manufacturer's catalogs, current at the date of bidding documents, are incorporated herein by reference and govern the work. If conflict is discovered between the Standards or catalogs and the project specifications, request written clarification from the A/E. Do not proceed with the work until receiving such clarification.

B. Asphalt Roofing Manufacturer's Association (A.R.M.A.), Rockville, MD 20852 "Residential Asphalt Roofing Manual".

C. Sheet Metal and Air Conditioning Contractor's National Association (SMACNA). "Architectural Sheet Metal Manual", 5th edition, 1993.

D. American Society for Testing Materials (ASTM).

E. Underwriters Laboratories, Inc. (UL).

F. APA The Engineered Wood Association, Tacoma WA 206-565-6600.

G. Factory Mutual, Norwood MA.

1.04 SUBMITTALS

A. Make all submittals in accord with the Standard Documents for Construction, Section 01 33 23.

B. Roofing Contractor to provide proof of Illinois Roofing license.

C. Product Data:
   1. Two copies of manufacturer's literature showing application instructions for the

specified shingles.
2. Two copies of manufacturer's standard warranty.
3. Samples:
   a. Two manufacturer's shingle swatches showing color, texture, and construction of the specified shingles.
   b. Two representative samples of the sheet metal used with the roofing.
   c. Two roofing nails, exact gauge and length to be used.
   d. Two – 6"x6" swatch of ice and water dam sheet to be used.

1.05 DELIVERY, STORAGE, & HANDLING

A. Deliver all materials requiring a fire and wind resistance classifications in unopened packages with the label attached.

B. Store all materials on clean, raised platforms, a minimum of 4 inches above the ground, and with weather protective covering when stored outdoors.

C. Remove the damaged or defective materials from the job site.

1.06 JOB CONDITIONS

A. Existing Construction:

B. Environmental Requirements:
1. Remove existing roofing in dry weather.
2. Install new roofing in dry weather.

C. Protection:
1. Avoid traffic on completed work.
2. Restore to original condition, or replace with like materials, all work or materials damaged by the roofing operation.

1.07 WARRANTY

A. General Contractor's Warranty: **Two (2) years** on workmanship.

B. Manufacturer's Warranty: **Forty (40) year** / Lifetime standard prorated.

2. PRODUCTS

2.01 MATERIALS

A. Fiberglass shingles, laminated, random overlay tab, either metric size or standard size, with a U.L. Class "A" and Wind Resistant Label.

B. Acceptable Manufacturers & Products:
1. CertainTeed "Landmark Pro"
2. GAF "Timberline HDZ"
3. IKO "Cambridge"
4. Owens Corning "Duration"

C. Drip Edge & Rake Edge Metal:
1. .019 prefinished aluminum, 2 3/4 inch deck flange, 1 3/4 inch fascia, with a 1/4 inch drip at the lower edge. Maximum length: 12'. Color to be selected by the A/E from

manufacturer's standard colors.

D. Ice & Water Dam Sheet: None required at non-heated or cooled buildings.
   1. Acceptable Manufacturers to be same as Shingles:
      a. CertainTeed "WinterGuard"
      b. GAF "WeatherWatch"
      c. IKO "ArmourGard"
      d. Owens Corning "WeatherLock Flex"

E. Roofing Felt:
   1. Comply with ASTM D226; Type 1; Non-Perforated. Comply with ASTM D4869.
   2. Synthetic Felt acceptable manufacturers to be same as Shingles:
      a. CertainTeed "RoofRunner"
      b. GAF "FeltBuster"
      c. IKO "Stormtite"
      d. Owens Corning "DeckDefense"

F. Hip & Ridge Shingle
   1. Acceptable Manufacturer to be same as Shingles:
      a. CertainTeed "ShadowRidge"
      b. GAF "Seal-A-Ridge"
      c. IKO "Hip and Ridge 12"
      d. Owens Corning "ProEdge Flex"

G. Shingle Starter:
   1. Acceptable Manufacturers to be same as Shingles:
      a. CertainTeed "SwiftStart"
      b. GAF "QuickStart"
      c. IKO "EdgeSeal"
      d. Owens Corning "Starter Shingle Roll"

H. Nails: **NOTE: STAPLES ARE NOT PERMITTED.** Pneumatic nailing may be permitted by the A/E after he has witnessed and approved the nailing machine's ability to consistently drive nails flush.
   1. Galvanized roofing nails, 11 gauge minimum, 3/8 inch diameter head, barbed or deformed shank, and a minimum length to provide total penetration through the deck.

I. Step Flashing: Nailable substrate: .024 mil finish aluminum, 8 inches by 7 inches overall, bent in the middle 90 degrees to form two 4 inch by 7 inch areas.

J. Valleys
   1. Underlayment: Ice & water dam sheet.
   2. 90 lb. sheet roll roofing membrane
   3. Shingles: Closed-cut. Note Woven or Laced Valley is not permitted.

K. Roof Vents:
   1. Ridge Vent
      a. Mid-America Building Products, Ridge Master – Plus
      b. Air Vent, Inc., ShingleVent II
      c. Owens Corning: Vent Sure 4' Weather Protector
      d. GAF Materials Corp, Cobra Snow Country Ridge Vent

   2. Roof Vent: Intake
      a. Pre-finished aluminum, slant back style. (50 sq. in. net free area min.).

3. Roof Louver Vent – Exhaust
   a. MasterFlow square top with round louver model number RV50, color as selected by A/E.
   b. Air Vent, Inc. square top with round louver, model RVA51, painted finish
   c. Lomanco, Inc: square top with round louver, model 550Pro, color as selected by A/E

L. Asphaltic Plastic Cement, ASTM D4586, Type II.

M. Vent Pipe Flashing: EPDM rubber “boot” with integral aluminum deck flange.

3. EXECUTION

3.01 INSPECTION

A. Inspect all surfaces to receive new shingles and accessory items, and report to the Architect/Engineer in writing, all conditions that could adversely affect their correct installation and longevity.

B. Do not proceed with the work until all deficiencies have been corrected.

3.02 INSTALLATION

A. Install drip edge under the ice and water dam sheet at the eaves.

B. Unroll the ice and water dam sheet, cut into two nearly equal length pieces. Remove approximately 3 feet of the release paper and align the edge with the lip of the drip edge, sticky side down. Continue to peel the release paper and adhere the membrane. Overlap vertical and horizontal joints at least 4 inches. Install ice & water dam sheet a minimum of 24” inside the building wall line.

C. All Valleys: Center a 36 inch wide strip of ice and water dam sheet in the valley. Press the sheet into the valley to eliminate any voids. Laps to be 6” with the water flow. Install 90 lb. granular surface roll roofing, lap minimum 6” with the water flow and secure at 16” to 18” along edge of sheet.

D. Install felt over the entire roof area. Install with a 2 inch horizontal lap, and a 4 inch vertical lap, including the valley ice & water dam sheet. Do not nail within 8 inches of a valley centerline.

E. Install drip edge on top of the felt and ice & water dam sheet along the rakes, overlapping joints minimum 1-1/2 inches with the water flow.

F. Closed Cut Valleys:
   1. Extend shingles from one side of the valley ONLY at least 12 inches beyond the valley centerline. DO NOT nail within 8 inches of the centerline.
   2. Snap a chalk line 2 inches back from the centerline and trim shingles from the other side of the valley flush with the chalk line.
   3. Secure shingle tabs within 8 inches of the valley centerline with plastic roof cement only, no nails.
   4. LACED OR WOVEN CLOSED VALLEYS ARE NOT PERMITTED.

G. Snap a level chalk line approximately 7 inches up from the drip edge to provide a straight line guide for the starter course when the eave is crooked.

H. Use manufacturer's pre-made starter shingle or self-sealing shingles with the tabs cut off for starter strips. Do not invert the starters to avoid mispositioning the asphalt sealant strip.

I. Install the first course over the starter strips. Place nails as recommended by the manufacturer for the style of shingle. Install starter and shingles with 1/4" overhang at both the eaves and rakes.

J. Install the second and succeeding course with exposure of each course, and offset between courses as recommended by the manufacturer.

K. STACK BONDING IS NOT PERMITTED.

L. Use a minimum of 4 nails per shingle, placed as recommended by the manufacturer for that particular type of shingles. STAPLES ARE NOT PERMITTED.

M. Secure the portion of the shingles within 8 inches of the valley centerline with plastic cement only. Do not install nails less than 8 inches from the valley centerline. Use shingles at least twenty four inches wide next to the valley. Metal valleys to have 6 inch maximum exposure at the eave.

N. Replace all shingles with exposed nails. Drive nails flush, but do not crush the shingle.

O. Step flashing on nailable walls: Install 5-1/2" up front from the butt of the shingle, or as recommended on the package. Secure with one nail at the top of the roof portion.

P. Hip and Ridge Shingles: Use manufacturer's recommended cap shingle for the intended purpose. Use two nails, placed 5-1/2" in from the butt end, and 1 inch in from each edge, or as recommended on the package. If the temperature is under 50 degrees F, store the shingles for hip and ridge use in a heated area for a sufficient time to allow them to be formed without cracking.

3.03 ADJUST AND CLEAN

A. Thoroughly inspect all completed work. Replace all shingles or other work that is damaged, and correct all other defects.

END 07 31 07

1. GENERAL

1.01 WORK INCLUDES

A. Base Bid: Contractor to provide prefinished aluminum soffit with concealed fastening system and matching trim as required for a complete installation.

B. Base Bid: Contractor to provide factory-formed panels in vertical installation. Metals flashings and trim.

1.02 REFERENCES

A. NAAMM - Metal Finishes Handbook.

B. SMACNA - Architectural Sheet Metal Manual.

C. ASTM - American Society for Testing and Materials
1. ASTM A653/A653M Standard Specification for Steel Sheets, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
2. ASTM A792/A792M Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy Coated by the Hot-Dip Process.
3. ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
4. ASTM D2247 Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
5. ASTM E1680 Standard Test Method for Determining the Rate of Air Leakage Through Exterior Metal Systems Under Specified Pressure Differences Across the Specimen.
6. ASTM E1646 Standard Test Method for Water Penetration of Metal Systems by Uniform Static Air Pressure Difference.

1.03 SUBMITTALS

A. Submit shop drawings and product data under provisions of Section 01 33 00.

B. Indicate material profile, jointing pattern, jointing details, fastening methods, and installation details.

C. Submit manufacturer's installation instructions under provisions of Section 01 33 00.

D. Submit samples under provisions of Section 01 33 00.

1.04 SYSTEM DESCRIPTION

A. Panel Performance Requirements: Provide panels, which have been manufactured, fabricated, and installed to withstand structural and thermal movement, wind loading, and weather exposure to maintain manufacturer’s performance criteria without defects, damage, failure, or infiltration of water.

B. Finish Performance Requirements:
1. Two coat coil applied, baked on full strength (70% resin, PVF2) fluorocarbon coating: thickness of 0.7-0.8 mil color coat for a total 0.9 to 1.1. mil total system dry film thickness.
2. Color change and fade resistance: No cracking, peeling, blistering or loss of adhesion when tested in accordance with ASTM G23; color change, after removal of surface deposits such as dirt or chalk, maximum 5 NBS units.
3. Humidity resistance: No blistering, peeling or loss of adhesion after 1000 hours testing, in accordance with ASTM D2247.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications:
1. Provider of “hands on” installer training programs at manufacturer facility.
2. Minimum of ten years’ experience in manufacturing metal wall system.
3. Provider of product produced in a permanent factory environment with fixed roll-forming equipment.

B. Installer Qualifications:
1. Experience on at least five projects of similar size, type, and complexity as this project that have been in service for a minimum of two years with satisfactory performance of the metal

panel system.
2. Employer of works for this project who are competent in techniques required by manufacturer for installation indicated and who shall be supervised at all times when material is being installed.

1.06 SOURCE QUALITY

A. Source Quality: Obtain metal panel products from a single manufacturer.

1.07 STORAGE AND HANDLING

A. Deliver materials in manufacturer's ordering instructions and lead time requirements to avoid construction delays.

B. Packing, Shipping, Handling, and Unloading:
1. Bundle panels in waterproof wrapping paper when nested, or wooden crates when panels cannot be nested.
2. Package trim and accessories in waterproof wrapping paper.

C. Store products under provisions of Section 01 60 00.

D. Stack preformed and prefinished material to prevent twisting, bending, abrasion, scratching, or denting. Elevate one end of each skid to allow for moisture runoff and to provide ventilation.

E. Maintain dry, heated storage area for products of this section until installation of products.

F. Remove strippable plastic film before storage under high-heat conditions.

G. Prevent contact with materials during storage which may cause discoloration or staining.

1.08 WARRANTY

A. Panel Material: Furnish manufacturers 25 year warranty covering the panel against rupture, structural failure, or perforation.

B. Panel Coating:
1. Polyvinylidene Fluoride: Furnish manufacturer's 40 year warranty covering cracking, checking, and peeling, and 30 year warranty covering fade and chalk on the two coat coil applied, baked on full strength (70% resin, PVF2) fluorocarbon coating. Manufacturer's warranty may exclude surface deterioration due to physical damage and corrosive environments.
2. Silicone Modified Polyester: Furnish manufacturer's 30 year warranty covering cracking, checking, and peeling, and 30 year warranty covering fade and chalk. Manufacturer's warranty may exclude surface deterioration due to physical damage and corrosive environments.

C. Special Warranty: Installer's standard form in which installer agrees to repair or replace panels that fail due to poor workmanship or faulty installation within the specified warranty period.
1. Warranty Period: 1 Year from date of Substantial Completion.

2. PRODUCTS

2.01 ACCEPTABLE WALL PANEL MANUFACTURER

A. McElroy Metal, Inc.

B. Pac-Clad Peterson Metals

C. MBCI

2.02 METAL WALL PANELS

A. Profile: Major longitudinal ribs 1 1/4" deep, spaced 12" on center; minor longitudinal ribs centered between major ribs, spaced 4" on center panel, normal-run where ribs protrude from panel plane,

viewed from exterior, reverse-run where rubs receded from panel plane, viewed from exteterior.

B. Size: 36" cover width, lengths indicated on drawings.

C. Material: Galvalume steel sheet conforming to ASTM A792, AZ50 coating for painted 24 gauge sheet thickness.

D. Finishes:
1. Two coat coil applied, baked on full strength (70% resin, PVF2) fluorocarbon coating consisting of a nominal 0.25 mil dry film thickness primer, and a nominal dry film thickness of 0.7 -0.8 mil color coat for a total 0.9 to 1.1 mil total system dry film thickness. Finish to be selected from manufacturer's standard color selection. The back side of the material should be 0.25 mil primer and a 0.25 mil polyester wash coat.

2. Metal Panel Color: Color selected from full range of manufacturer's standard colors.

3. Metal Related Trim and Accessories Color: Color selected from full range of manufacturer's standard colors.

2.03 METAL WALL PANEL ACCESSORIES

A. General: Provide complete metal panel assembly incorporating trim and miscellaneous flashing. Provide required fasteners, closure strips, and sealants as indicated in manufacturer's written instructions.

B. Flashing and Trim: Match material, thickness, and finish of metal panel face sheet.

C. Panel Fasteners: Self-tapping screws and other acceptable corrosion-resistant fasteners recommended by metal panel manufacturer. Where exposed fasteners cannot be avoided, supply fasteners with EPDM or neoprene gaskets, with heads matching color of metal panels by means of factory-applied coating.

D. Joint Sealers: Manufacturer's standard or recommended liquid and preformed sealers and tapes, and as follows:
1. Tape Sealers: Manufacturer's standard non-curing butyl tape, AAMA 809.2.
2. Concealed Joint Sealant: Non-curing butyl, AAMA 809.2

E. Steel Sheet Miscellaneous Framing Components: ASTM C645, with ASTM A 653/A 653M, G60 (Z180) hot-dip galvanized zinc coating.

F. Metal Accessories: Approved by metal panel manufacturer.

2.04 ACCEPTABLE SOFFIT MANUFACTURER

A. Rollex

2.05 SOFFIT PANELS:

A. 0.019 gauge thickness, prefinished aluminum non vented panels, similar to Rollex System 3, SYS312 12" wide nominal panels, non-vented (solid), color as selected by A/E.

2.06 SOFFIT PANELS TRIM AND ACCESSORIES.

A. Fascia, trim, and support sections, same manufacturer, material and finish as panels.

2.07 SOFFIT PANELS SEALANT

A. Compatible with aluminum materials, including finish. Color to be selected by the A/E.

3. EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer's product data, recommendations and installation instructions for substrate verification, preparation requirements and installation.

B. Strippable Film: Remove manufacturer's protective film, if any, from surfaces of metal panels.

C. Site Verification of Conditions: Verify substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.
   1. Verification of Conditions:
      a. Panel support systems are ready for construction activities of this section and within specified tolerances.
      b. Rough-in utilities are in correct locations.
   2. Installer's Examination:
      a. Have installer of this section examine conditions under which construction activities of this section are to be performed, then submit written notification if such conditions are unacceptable.
      b. Transmit 2 copies of installer's report to A/E within 24 hours of receipt.
      c. Delay construction activities of this section until unacceptable conditions have been corrected.
      d. Begin construction activities of this section indicates installer's acceptance of conditions.

D. Verify work of other trades has been completed.

3.02 PREPARATION

A. Coordination: Coordinate metal panel work with other trades to provide a noncorrosive and leak free metal installation.
   1. Install substrate boards, hat channels, purlins, or furring channels in accordance with manufacturer's recommendations.
   2. Coordinate work, with installation of other associated work, to ensure quality applications.
   3. Coordinate work with installation of associated metal flashings and building walls.
   4. Coordinate work to minimize foot traffic and construction activity on installed finished surfaces.
   5. Dissimilar metals: Prevent galvanic action of dissimilar metals.

3.03 INSTALLATION

A. General: Install metal panels to profiles, patterns, and drainage indicated and required for leak-free performance. Provide for structural and thermal movement of work. Seal joints for leak-free metal installation.
   1. Shim or otherwise plumb substrates receiving metal panels.
   2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws.
   3. Do not begin installation until air or water resistive barriers and flashings that will be concealed by metal panels are installed.
   4. Locate and space fasteners in uniform vertical and horizontal alighnment.
   5. Install flashing and trim as metal panel work proceeds.
   6. Install continuous length panels if at all possible. If splices are required, locate panel splices over, but not attached to, structural supports and only with prior Architect approval.
   7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws.
   8. Fasten flashings and trim around openings and similar elements with self-tapping screws.
   9. Provide weathertight EPDM Flashing for pipe and conduit penetrating panels.
   10. Fix panels at locations depicted on reviewed shop drawings.
   11. Allow for required panel clearance at penetrations for thermal movement.
   12. Align pipe penetrations to occur in the flat of the metal panel. Report and have corrected improperly placed penetrations before proceeding with panel installation. Remove and replace metal panels which have improperly placed penetration flashings.
   13. Allow for required panel clearance at penetrations for thermal movement.

B. Metal Installation:
   1. Install metal panels plumb, true and in correct alignment with structural framing, in accordance with shop drawings and manufacturer's printed installation instructions.
   2. Install metal panels using manufacturer's concealed fastening system or non-corroding fasteners color matched to trim are permitted on vertical surfaces only.

C. Metal Panel Installation Tolerances:
   1. Variation from Plumb: Max 1/8" in 20 feet.
   2. Variation from Level: Max 1/8" in 20 feet.
   3. Variation from True Plane: Max 1/8" in 20 feet.

D. Accessory Installation: Install accessories using techniques recommended by manufacturer and which will assure positive anchorage to building and weather tight mounting. Provide for thermal movement. Coordinate installation with flashings and other components.

E. Execute metal work in accordance with manufacturer's printed instructions.

F. Provide sealant between metal work and adjacent construction.

3.03 FIELD QUALITY CONTROL

A. Installation shall result in properly aligned seams and joints, free of sagging panels, oil-canning or other visual deficiencies.

3.04 CLEANING

A. Cleaning: Remove temporary coverings and protection of adjacent work areas.

B. Repair or replace damaged installed products.

C. Clean installed products in accordance with manufacturer’s instructions prior to Owner’s acceptance.

D. Remove construction debris from project site and legally dispose of debris.

E. Remove strippable coating and perform dry wipe-down cleaning of panels as erected.

3.05 PROTECTION

A. Protect installed product’s finish surfaces from damage during construction:
   1. Protect installed products from damage by subsequent construction activities.
   2. Replace products having damage other than minor finish damage.
   3. Repair products having minor damage to finish in accordance with panel Manufacturer’s recommendation.
   4. Architect shall be sole judge of acceptability of repair to damaged finishes; replace products having rejected repairs.

END 07 42 00

1. GENERAL

1.01 SUMMARY

A. Base bid: Contractor provide
   1. Factory fabricated and prefinished roof edging and coping's as detailed on drawings and Pre-finished steel sheet metal and as specified herein, including, counterflashing's, scuppers, gutter's and downspout's.

1.02 REFERENCES

A. ANSI/ASTM B32 - Solder Metal.

B. ASTM B370 - Copper Sheet and Strip for Building Construction.

C. NAAMM - Metal Finishes Handbook.

D. NRCA (National Roofing Contractors Association) - Roofing Manual.

E. SMACNA - Architectural Sheet Metal Manual.

F. Factory Mutual Research Corporation (FMRC).

G. SPRI Sheet Membrane and Component Suppliers to the Commercial Roofing Industry

1.03 SYSTEM DESCRIPTION

A. Work of this Section is to physically protect membrane roofing and base flashings from damage that would permit water leakage to building interior.

1.04 QUALITY ASSURANCE.

A. High performance roof edge and coping system shall be certified by the manufacturer to comply with ANSI/SPRI Standard ES-1, for Roof Edge and Coping shall meet the performance design criteria according to the following test standards:
   1. ANSI/SPRI ES-1 Test Method RE-1 Test for Roof Edge Termination of Single Ply Roofing Membranes: the fascia system shall be tested to secure membrane to minimum 100 lbs/ft in accord with this test method.
   2. ANSI/SPRI ES-1 Test Method RE-3 Test for Coping: Wind Design Standard for Egdge Systems used with Low Slope Roofing Systems (current edition). The coping system shall be tested simultaneously on horizontal and vertical surfaces and shall exceed horizontal and vertical design wind pressure as calculated in accord with this test method.

B. Applicator: Company specializing in sheet metal flashing work with FIVE (5) years minimum experience.

1.05 SUBMITTALS

A. Submit shop drawings and product data.

B. Describe material profile, jointing pattern, jointing details, fastening methods, and installation details.

C. Submit manufacturer's installation instructions in accordance with the Standard Documents for Construction.

D. Installation Guide: The product manufacturer shall provide a written installation guide.

1.06 STORAGE AND HANDLING

A. Store products, in manufacturers original sealed, labeled containers in accord with Standard Documents for Construction.

B. Stack pre-formed and pre-finished material to prevent twisting, bending, or abrasion, and to provide ventilation.

C. Prevent contact with materials during storage which may cause discoloration, staining, or damage.

D. Remove protective plastic surface film immediately after installation.

1.07 WARRANTY: General Contractor provide the following minimum warranties.

A. General Contractor's: Two (2) years in accord with General Conditions.

B. Manufacturer's: Provide manufactures Full System warranty for roof edge and Coping system Twenty (20) years on the painted finish, covering color fade, chalk and film integrity.

C. Warranty shall guarantee sheet metal work to be free of leaks and defects in materials and workmanship.

2. PRODUCTS

2.01 SHEET MATERIALS (COUNTER FLASHINGS, GUTTERS & DOWNSPOUTS)

A. Prefinished Steel: G-90 galvanized with a 70% Kynar 500 finish. Color as selected by A/E.

B. See Drawing for sizes and configurations.

2.02 ACCESSORIES

A. Fastener: Stainless steel with soft neoprene washers at exposed fasteners. Exposed fasteners shall not be used except with authorization of the A/E.

B. Sealant: See Section 07 90 00.

2.03 FABRICATION (COUNTER FLASHINGS, SCUPPERS, GUTTERS & DOWNSPOUTS)

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Fabricate cleats and starter strips of same material as sheet, interlockable with sheet.

C. Form pieces in longest practical lengths.

D. Hem exposed edges on underside 1/2 inch; miter and seam corners.

E. Form material with cover plate seam.

F. Fabricate corners from one piece with minimum 18 inch long legs; solder for rigidity, seal with sealant.

G. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

2.04 FACTORY FABRICATED AND FINISHED ROOF EDGING.

Acceptable Manufacture:

A. Firestone Building Products

B. Approved Equal

2.05 ROOF EDGING SYSTEM

A. ANCHORGARD SP: Decorative metal fascia with continuous extruded aluminum bar. To terminate adhered or mechanically attached single ply roofing at perimeter. The system shall be watertight with no exposed fasteners. Model shall be SP-85. The rise above the nailer is 1 1/4" .

B. PERFORMANCE CHARACTERISTICS:
1. Extruded bar shall lock membrane prevent wind pullback.
2. Injection molded EPDM splices to allow thermal expansion of extruded aluminum anchor bar.
3. Fascia shall freely thermal cycle on extruded bar, preventing periodic maintenance.
4. Fascia may be factory modified for true radius applications.

C. Factory metal gauge shall be 24 ga. Galvanized steel with Kynar 500 finish.

D. Fascia: Aluminum, Standard 12'-0" lengths.

E. Extruded bar: Shall be continuous 6063-T6 alloy aluminum at 12'-0" standard lengths. All bar miters are welded.

F. Fasteners: #9X2" stainless steel fasteners provided with drivers. No exposed fastener permitted.

G. Exterior Fascia finish: Kynar 500 standard color from manufacturer’s standard colors.

H. Accessories:
1. Miters shall be fabricated by manufacturer.
2. Welded base assembly shall be used to maintain watertight integrity.

3. EXECUTION

3.01 INSPECTION

A. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.

B. Verify membrane termination and base flashings are in place, sealed, and secure.

C. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION (COUNTER FLASHINGS, GUTTERS AND DOWNSPOUTS)

A. Field measure site conditions prior to fabricating work.

B. Install starter and edge strips, and cleats before starting installation.

C. Install surface mounted reglets true to lines and levels. Seal top of reglets with sealant.

D. Insert flashings into reglets to form tight fit. Secure in place with lead wedges at maximum 8 inches on center. Seal flashings into reglets with sealant.

E. Secure flashings in place using concealed fasteners. Use exposed fasteners only in locations approved by Architect.

F. Cleat and seal all joints.

G. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

H. Seal metal joints watertight.

I. Provide separation between dissimilar metals.

3.03 INSTALLATION (FACTORY FABRICATED ROOF EDGING)

A. Submit product design drawings for review and approval before fabrication.

B. Installing contractor shall check as-built conditions and verify manufacturers roof edging details for accuracy to fit wall assembly prior to fabrications.

C. The installer shall comply with the manufacturer’s installation guide when setting roof edging

D. Installer shall use provided fasteners consistent with manufactures instructions suitable with for the substrate to which is being installed.

E. Install manufacturer’s water block sealant as recommended under the anchor bar at roof edging.

F. Provide separation between dissimilar metals.

3.04 INSTALLATION (Manufactured Expansion Joint)

A. Installation shall conform to manufacturer's written instructions.

3.05 ADJUST AND CLEAN

A. Carefully inspect all completed work. Correct all defects.

B. Remove surplus materials.

C. Provide adequate protection of completed work until substantial completion.

D. Clean up all rubbish, debris, surplus materials, tools and equipment and remove from site.

END 07 60 00

1. GENERAL

1.01 SECTION INCLUDES

A. Base Bid: Contractor provide:
   1. Sealant substrate surfaces.
   2. Sealant and backing

1.02 REFERENCES

A. ANSI/ASTM D1056 - Flexible Cellular Materials - Sponge or Expanded Rubber.

B. ANSI/ASTM D1565 - Flexible Cellular Materials - Vinyl Chloride Polymers and Copolymers (Open-Cell Foam).

C. ASTM C790 - Use of Latex Sealing Compounds.

D. ASTM C804 - Use of Solvent-Release Type Sealants.

E. ASTM C834 - Latex Sealing Compounds.

F. FS TT-S-001657 - Sealing Compound, Single Component, Butyl Rubber Based, solvent Release Type.

G. FS TT-S-00227 - Sealing Compound: Elastomeric Type, Multi-Component.

H. FS TT-S-00230 - Sealing Compound: Elastomeric Type, Single Component.

I. SWI (Sealing and Waterproofers Institute) - Sealant and Caulking Guide Specification.

1.03 SUBMITTALS

A. Submit product data under provisions of Section 01 33 00.

B. Submit product data indicating sealant chemical characteristics, performance criteria, limitations, color availability and application instructions.

1.04 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum 3 years documented experience.

B. Applicator: Company specializing in applying the work of this Section with minimum 3 years documented experience and approved by sealant manufacturer.

C. Conform to Sealant and Waterproofers Institute requirements for materials and installation.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Do not install solvent curing sealants in enclosed building spaces.

B. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.06 SEQUENCING AND SCHEDULING

A. Coordinate the work of this Section with all Sections referencing this Section.

1.07 WARRANTY

A. Provide three year warranty under provisions of Section 01 70 00.

B. Warranty: Include coverage of installed sealants and accessories which fail to achieve air tight and watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

1.08 DELIVERY AND STORAGE

A. Deliver materials in unopened containers as packaged by manufacturer. Store in a manner to protect materials from weather.

2. PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Pecora Chemical Corp.

B. Tremco Manufacturing Co.

C. Sonneborn Division of Contech

D. Republic Powdered Metals, Inc.

2.02 INTERIOR CAULKS

A. Polyurethane Sealant: single-component, chemical curing, non-staining, non-bleeding, capable of continuous water immersion, non-sagging in vertical joints, self-leveling in horizontal joints; color as selected by A/E:

1.	Elongation Capability	1,000 percent
2.	Service Temperature Range	-40 to 180 degrees F
3.	Shore A Hardness Range	20 to 35

2.03 EXTERIOR SEALANTS - BUILDING

A. Polyurethane Sealant: single-component, chemical curing, non-staining, non-bleeding, capable of continuous water immersion, non-sagging in vertical joints, self-leveling in horizontal joints; color as selected by A/E:

1.	Elongation Capability	1,000 percent
2.	Service Temperature Range	-40 to 180 degrees F
3.	Shore A Hardness Range	20 to 35

2.04 EXTERIOR SEALANT - PAVEMENT JOINTS

A. Two-component urethane, for use in parking lot and sidewalk joints. Color as selected by A/E.

2.05 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: ANSI/ASTM D1056 and D1565 round. In vertical joints use closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width. In horizontal joints, use solid neoprene or butyl rubber, Shore A hardness of 70.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

3. EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and joint openings are ready to receive work and field measurements are as shown on Drawings and recommended by the manufacturer.

B. Beginning of installation means installer accepts existing substrate.

3.02 PREPARATION

A. Clean and prime joints in accordance with manufacturer's instructions.

B. Remove loose materials and foreign matter which might impair adhesion of sealant.

C. Verify that joint backing and release tapes are compatible with sealant.

D. Perform preparation in accordance with ASTM C804 for solvent release and C790 for latex base sealants.

E. Protect elements surrounding the work of this Section from damage or disfiguration.

3.03 INSTALLATION

A. Install sealant in accordance with manufacturer's instructions.

B. Measure joint dimensions and size materials to achieve required width/depth ratios.

C. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width.

D. Install bond breaker where joint backing is not used.

E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

G. Tool joints concave. Sealant shall achieve a firm skin before surface coating is applied.

3.04 CLEANING AND REPAIRING

A. Clean adjacent soiled surfaces.

B. Repair or replace defaced or disfigured finishes caused by work of this Section.

3.05 PROTECTION OF FINISHED WORK

A. Protect finished installation.

B. Protect sealants until cured.

3.06 SCHEDULE

A. Interior, where shown on drawings and:

1. Perimeter of door and window frames.
2. Juncture of casework and adjacent walls.
3. Juncture of plumbing fixtures and adjacent construction.
4. Juncture of steel tube members and adjacent contruction.

B. Exterior, where shown on drawings and:
1. Perimeter of door frames and windows.
2. Joints in metal copings counterflashings.
3. Horizontal joints in pavements and sidewalks.

END 07 90 00

1. GENERAL

1.01 WORK INCLUDED

A. Base Bid: Contractor provide non-rated rolled steel doors and frames.

1.02 REFERENCES

A. American National Standards Institute:
   1. ANSI A250.8 - Recommended Specifications for Standard Steel Doors and Frames

B. ASTM International:
   1. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   2. ASTM C1363 - Standard Test Method for the Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus
   3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials
   4. ASTM E152 - Methods of Fire Tests of Door Assemblies.
   5. ASTM E413 - Classification for RATING Sound Insulation

C. Hollow Metal Manufacturer's Association
   1. HMMA 810 - Hollow Metal Doors

D. Door Hardware Institute
   1. DHI -: The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.

E. Steel Door Institute:
   1. SDI-100 - Specifications for Standard Steel Doors and Frames.
   2. SDI-105 - Recommended Erection Instructions for Steel Frames.

1.03 SUBMITTALS

A. Submit shop drawings, and manufacturer's installation instructions, under provisions of Section 01 33 00.

B. Indicate frame configuration, anchor types and spacings, location of cutouts for hardware, reinforcement, and finish.

C. Indicate door elevations, internal reinforcement, closure method, and cut outs for glazing.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.04 QUALITY ASSURANCE

A. Conform to requirements of SDI-100.

B. Perform work in accordance with ANSI A250.8

C. Installed frame and door assembly to conform to UL 10B for fire rated class indicated as scheduled.

D. Surface Burning Characteristics:
   1. Foam Insulation: Maximum 75/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

E. Apply label from agency approved by authority having jurisdiction to identify each foam plastic insulation board.

F. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three year's experience.

1.05 DELIVERY, STORAGE AND PROTECTION

A. Protect products under provisions of Section 01 60 00.

B. Protect doors and frames with resilient packaging.

2. PRODUCTS

2.01 MANUFACTURES

A. Acceptable Manufactures
1. Steel Craft
2. Republic Builders Products
3. Ceco Corporation
4. Curries Manufactures, Corp.
5. Amweld Building Products

2.02 DOORS AND FRAMES

A. Doors: SDI-108, 1-3/4 inch thick,
1. Exterior: Level 3, Model 2, seamless design
2. Interior: Level 2, Model 2, seamless design.

B. Unless scheduled otherwise on drawings:

1. Exterior Frames: 16 gage thick material, Zinc-Iron Alloy-Coated (Galvannealed)
2. Exterior Doors: 18 gage thick material, Heavy Duty.

C. All doors shall have flush seamless face sheets with edges welded and ground smooth. Top and bottom channels shall be 16 gage steel. Hinge reinforcement shall be 7 gauge steel minimum.

2.03 DOOR COMPONENTS

A. Face: Steel sheet in accordance with ANSI A250 and SDI 108.

B. End Closure: Channel, 0.04 inches tick, flush.

C. Exterior doors shall include 20 ga. Steel Top/Bottom Filler Cap Seams to shed water.

D. Core: Insulated Polyurethane at exterior doors.

E. Insulated door, insulation " U" value of 0.10, "R" value of 4, for a polyurethane core.

2.04 ACCESSORIES

A. Rubber Silencers: Resilient rubber.

B. Glazing Stops: Rolled steel channel shape, mitered corners; prepared for countersink style screws.

2.05 PROTECTIVE COATINGS:

A. Primer: Zinc chromate type.

2.06 FRAME FABRICATION

A. Fabricate frames as welded unit type. Knock down frames shall not be acceptable.

B. Fabricate frames and doors with hardware reinforcement plates welded in place.

C. Reinforce frames wider than 48 inches with roll formed steel channels fitted tightly into frame head.

D. Close top edge of exterior door flush with inverted steel channel closure. Seal joints watertight.

2.07 FINISH

A. Steel Sheet: Galvannealed to ASTM A653 A60.

B. Baked on Primer in accordance with ANSI A250.10-1998.

C. Field finish per Section 09 90 00.

3. EXECUTION

3.01 INSTALLATION

A. Install frames in accordance with SDI-105 and ANSI A250.8.

1. Apply bituminous coating to interior side of all hollow metal to be installed in masonry opening, prior to setting frame.

B. Install doors in accordance with DHI and ANSI A250.8.

C. Coordinate with masonry and wallboard construction for anchor placement.

D. Coordinate installation of glass and glazing.

E. Coordinate installation of frames and doors with installation of hardware.

F. Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.

3.02 TOLERANCES:

A. Maximum Diagonal Distortion: 1/8 inch measured with straight edge, corner to corner.

3.03 ADJUSTING AND CLEANING

A. Adjust hardware for smooth, quiet and balanced door movement.

END 08 12 13

1. GENERAL

1.01 WORK INCLUDED

A. Base Bid:

1. General Contractor provide:
   a. Manual operated overhead sectional door.
   b. Steel, insulated panels of flush design.
   c. Operating hardware and supports.

1.02 REFERENCES

A. ANSI A216.1 - Section Overhead Type Door (NAGDM 102).

B. ANSI/ASTM A446 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process, Structural (Physical) Quality.

C. ANSI/ASTM A526 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process, Commercial Quality.

D. ASTM B209 - Aluminum and Aluminum-Alloy Sheet and Plate.

E. ASTM B221 - Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes.

F. NEMA - National Electrical Manufacturer's Association.

1.03 SYSTEM DESCRIPTION

A. Panels: Flush steel; 1 3/8" thick.

B. Normal headroom track and hardware.

C. Manual operation

1.04 QUALITY ASSURANCE

A. Manufacturer: Company specializing in overhead door construction with three years minimum experience.

B. Installer: Company specializing in installing overhead doors with two years documented experience.

C. Door Construction: ANSI A216.1.

D. Single Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

1.05 SUBMITTALS

A. Submit shop drawings, product data and manufacturer’s installation instructions under provisions of Section 01 33 00..

B. Indicate opening dimensions and tolerances, component construction, connections and details, anchorage methods and spacing, hardware and locations and installation details.

1.06 OPERATION AND MAINTENANCE DATA

A. Submit operation and maintenance data under provisions of Section 01 78 23.

B. Include data for motor and transmission, shaft and gearing, lubrication frequency, control adjustments, and spare part sources.

1.07 WARRANTY

A. Warranty: Manufacturer's limited door operators System warranty for 10 year against delamination of polyurethane foam from steel face and all other components for 1 year.

2. PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Overhead Door Corporation - model 195 series Thermacore Insulated Steel Doors.

B. Raynor Manufacturing Company

C. Clopay Door Products

D. CHI Overhead Door Company

2.02 DESCRIPTION

A. 1 3/8" thick sections, roll-formed commercial quality hot-tipped galvanized steel per ASTM A924 & A653.

B. Door sections constructed of 26 ga. Stucco-embossed, exterior & 29 ga. Hot dipped galvanized interior skins, mechanically interlocked and pressure bonded to a 1-7/8" thick expanded polystyrene core.

C. Exterior and interior skins to be separated by a continuous dual durometer vinyl extrusion held in place by a mechanical interlock, to form an effective thermal break and complete weather-tight seal along the entire section joints.

D. Stiles to be 18ga., separated from exterior skin with vinyl thermal break.

E. When tested in accordance with ASTM C177, shall exhibit the following thermal value: R 12 minimum.

F. Finish: Exterior and interior skins shall be pre-coated prior to roll-forming with a two coat process of baked-on polyester finish over epoxy primer. Exterior color will be selected by the A/E from manufacturer's standard colors. Interior skin shall be white.

G. Tracks: Provide track as recommended by manufacturer to suit loading required and clearances available.

H. Hardware. Provide hinges and brackets of galvanized steel. Heavy Duty steel rollers shall have hardened steel balls.

I. Spring counterbalance. Heavy duty oil-tempered torsion springs on a continuous ball bearing cross-header shaft. Galvanized aircraft type lifting cables with minimum safety factor of 5 to 1.

J. Manual Operation: Pull Rope

K. Provide Keyed lockset. Lockset to be keyed from exterior.

L. Provide jamb seals to seal the door when in the closed position.

M. Windload: 12 p.s.f. (70 mph standard) Material U-bar 18 ga.

3. EXECUTION

3.01 INSPECTION

A. Verify that wall openings are ready to receive work and opening dimensions and tolerances are within limits.

B. Beginning of installation means acceptance of existing surfaces.

3.02 PREPARATION

A. Prepare opening to permit correct installation of door unit and air and vapor barrier seal.

B. Apply sealer.

3.03 INSTALLATION

A. Install door unit assembly in accordance with manufacturer's instructions.

B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.

C. Securely brace door tracks suspended from structure. Secure tracks to structural members only.

D. Fit and align door assembly including hardware, level and plumb, to provide smooth operation.

E. Coordinate installation of electrical service. Complete wiring from disconnect to unit components.

F. Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07 92 00.

G. Install perimeter trim and closures.

3.04 TOLERANCES

A. Maintain dimensional tolerances and alignment with adjacent work.

B. Variation from Plumb: 1/16 inch maximum.

C. Variation from Level: 1/16 inch maximum.

D. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch from 10 ft straight edge.

3.05 ADJUSTING AND CLEANING

A. Adjust door assembly.

B. Clean doors, frames and glass.

C. Remove labels and visible markings.

END 08 36 13

1. GENERAL

1.01 WORK INCLUDED

A. Base bid: Contractor provide Fiberglass Windows.

1.02 REFERENCES

A. American Architectural Manufacturers Association (AAMA):

1. AAMA 502: Voluntary Specification for Field Testing of Windows and Sliding Doors.
2. AAMA 624-10: Voluntary Performance Requirements and Test Procedures for Organic Coatings on Fiber Reinforced Thermoset Profiles.

B. ASTM International (ASTM):

1. ASTM C 1036 - Standard Specification for Flat Glass.
2. ASTM C 1048 - Standard Specification for Heat-Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass.
3. ASTM E 283 - Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Difference Across the Specimen.
4. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Uniform Static Air Pressure Difference.
5. ASTM E 547 - Water Penetration of Exterior Windows, Curtain Walls and Doors by Cyclic Static Air Pressure Differential.
6. ASTM E 1105 - Standard Test Method for Field Determination of Water Penetration of Exterior Windows, Doors, Skylights, and Curtain Walls by Uniform Static Air Pressure Difference.
7. ASTM F 2090 - Standard Specification for Window Fall Prevention Devices With Emergency Escape Release Mechanisms.

C. Window and Door Manufacturers Association (WDMA):

1. ANSI/AAMA/NWWDA 101/I.S.2 - Voluntary Specification for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors.

D. Screen Manufacturers Association (SMA):

1. SMA 1201 - Specification for Insect Screens for Windows, Sliding Doors, and Swinging Doors.

E. Window and Door Manufacturers Association (WDMA):

1. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights.

1.03 PERFORMANCE REQUIREMENTS

A. Windows shall meet a rating of LC-PG specifications in accordance with ANSI/AAMA/WWDMA 101/I.S.2/A440-17.

B. Window Air Leakage, ASTM E 283: Window air leakage when tested at 1.57 psf shall be 0.05 cfm/ft2 of frame or less.

C. Window Water Penetration, ASTM E547: No water penetration through window when tested under static pressure of 7.5 psf after 4 cycles of 5 minutes each, with water being applied at a rate of 5

gallons per hour per square foot.

1.04 SUBMITTALS

A. Submit shop drawings, product data and manufacturer's installation instructions under provisions of Section 01 33 00.

B. Product Data: Submit manufacturer’s product data, including installation instructions.

C. Shop Drawings: Submit manufacturer’s shop drawings, indicating dimensions, construction, component connections and locations, anchorage methods and locations, hardware locations, and installation details.

D. Samples: Submit full-size or partial full-size sample of window illustrating glazing system, quality of construction, and color of finish.

E. Manufacturer’s Certification: Submit manufacturer’s certification that materials comply with specified requirements and are suitable for intended application .

F. Cleaning and Maintenance Instructions: Submit manufacturer’s cleaning and maintenance instructions.

G. Warranty Documentation: Submit manufacturer’s standard warranty.

1.04 QUALITY ASSURANCE

A. Installer’s Qualifications:

1. Installer regularly engaged for the past 5 years, in installation of sliding windows of similar type to that specified.
2. Employ persons trained for installation of sliding windows.

B. Manufacturer’s Qualifications:

1. Manufacturer: Company specializing in wood window manufacture with five years experience.

1.05 DELIVERY, STORAGE and HANDLING

A. Delivery:

1. Deliver windows to site undamaged in manufacturer’s or sales branch’s original, unopened containers and packaging, with labels clearly identifying manufacturer and product name.
2. Include installation instructions.

B. Storage and Handling

1. Store and handle windows in accordance with manufacturer’s instructions.
2. Store windows off ground and under cover.
3. Provide full support under framework when storing, handling, and installing windows.
4. Allow sufficient spacing between windows during storage for ventilation.
5. Do not lift windows by head member only.
6. Protect windows from weather, direct sunlight, and construction activities.
7. Protect windows and finish during handling and installation to prevent damage.

1.07 WARRANTY

A. Obtain all windows through one source from a single manufacturer.

B. Provide 10 year manufacturer's warranty.

2. PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Pella Corporation, contact Illini Pella; Ray Brazelton
P.O. Box 1509, 2801 South Banker, Suite 2, Effingham, IL 62401
Office phone: 217-500-0806
Cell phone: 217-822-8381
Email: raybrazelton@illinipella.com

2.02 FIBERGLASS WINDOWS

A. Windows: Pella Impervia.

1. Factory-assembled, fiberglass, sliding window.
2. Frame and Sash Material: 5-layer, pultruded-fiberglass material, reinforced with interlocking mat.

B. Frame:

1. Type: Integral Nail Fin
2. Interior and Exterior Frame: Pultruded, fiberglass composite with foam inserts.
3. Overall Frame Depth: 3 1/4" inches
4. Nominal Wall Thickness of Fiberglass Members: 0.050 inch to 0.090 inch.
5. Frame Corners:
   a. Mitered
6. Jambs: Contain factory-drilled installation screw holes.

C. Sash:

1. Sash Corners:
   a. Mitered

D. Glazing:

1. Tempered Glass: ASTM C 1048
2. Type: Polyurethane reactive (PUR) hot-melt glazed, 11/16 inch thick, insulating glass, clear tempered.

2.03 HARDWARE

A. Balances: Galvanized steel block and tackle balances.

B. Lock:

1. Type: Self-aligning, cam-action lock.
2. Windows 37 inches high or greater: 2 locks.
3. Finish: Match Window Interior Finish.

2.04 SCREENS

A. Compliance

1. ASTM D 3656
2. SMA 1201

B. Screen Cloth: Black, vinyl coated, 18/16 mesh, fiberglass screen cloth.

C. Set in aluminum frame.

D. Complete with necessary hardware

E. Screen Frame Finish: Black.

2.05 TOLERANCES

A. Window shall accommodate the following opening tolerances:

1. Horizontal Dimensions Between High and Low points: Plus 1/4 inch, minus 0 inch.
2. Width Dimensions: Plus 1/4 inch, minus 0 inch.
3. Building Columns or Masonry Openings: Plus or minus 1/4 inch from plumb.

2.06 FINISH

A. Exterior and Interior Finish: Factory applied powder coat paint, comply with AAMA 624-10.

B. Frame Color: Black.

2.07 INSTALLATION ACCESSORIES

A. Flashing/Sealant Tape: Pella SmartFlash.

1. Aluminum-foil-backed butyl window and door flashing tape.
2. Maximum Total Thickness: 0.013 inch.
3. UV resistant.
4. Verify sealant compatibility with sealant manufacturer.

B. Interior Insulating-Foam Sealant: Low expansion, low-pressure polyurethane insulating window and door foam sealant.

C. Exterior Perimeter Sealant: “Pella Window and Door Installation Sealant” or equivalent high quality, multipurpose sealant as specified in the joints sealant section.

D. Block Frame Installation Accessories: Vinyl installation fin with head drip flashing.

3. EXECUTION

3.01 INSPECTION

A. Verify rough openings are correctly sized and located.

B. Notify Architect of conditions that would adversely affect installation or subsequent use.

C. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

A. Install windows in accordance with manufacturer's instructions.

B. Maintain alignment with adjacent work. Secure assembly to frame openings without distortion or stress.

C. Ensure air and vapor barrier is sealed to window frame. Coordinate placement of insulation in shim spaces around unit perimeter as specified in Section 07 21 00.

D. Install sealant and related backing materials at exterior of installed assembly as specified in Section 07 90 00.

E. Install self adhering butyl flashing tape over nailing (Fins) flange.

F. Install perimeter trim and closures.

G. Close and latch operating sash.

3.03 TOLERANCES.

A. Plumb and Level: +/- 1/8 inch from true measurement.

B. Longitudinal or Diagonal Warp: +/- 1/8 inch from 10' straight edge.

3.04 CLEANING

A. Clean window frames and glass in accordance with Division 1 requirements.

B. Do not use harsh cleaning materials or methods that would damage finish.

C. Remove labels and visible markings.

D. Keep window tracks clear of dirt and debris.

E. Keep weep holes open and clear of obstructions.

3.05 PROTECTION

A. Protect installed windows to ensure that, except for normal weathering, windows will be without damage or deterioration at time of substantial completion.

END 08 54 13

1. GENERAL

1.01 WORK INCLUDES

A. Base Bid: Contractor provide finish hardware as indicated on the hardware schedule and specified herein,

B. All finish hardware to meet the requirements of this building the requirements as follows:

1. Quantities
2. Templating
3. Detailing
4. Ordering
5. Installation
6. Keying
7. Servicing

1.02 REFERENCES

A. ANSI A117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
B. ANSI/NFPA 80 - Fire Doors and Windows.
C. AWI - Architectural Woodwork Institute.
D. BHMA - Builders' Hardware Manufacturers Association.
E. DHI - Door and Hardware Institute.
F. NAAMM - National Association of Architectural Metal Manufacturers.
G. NFPA 101 - Life Safety Code.
H. SDI - Steel Door Institute.
I. UL - Underwriters Laboratories, Inc.

1.03 COORDINATION. Coordinate work of this Section with other directly affected Sections involving manufacturer of any internal reinforcement for door hardware.

1.04 QUALITY ASSURANCE

A. Manufacturers: Specializing in manufacturing door hardware with 3 years (min) experience.
B. Hardware Supplier: Company specializing in supplying commercial door hardware with 2 years experience, with AHC designation.
C. Hardware Installer: Employ a qualified carpentry person to perform the work of this Section.
D. Manufacturers: Items of manufacturers other than those scheduled will be acceptable for substitution provided they meet the quality standards of this Specification for finish, function and grade. For the purpose of establishing quality standards and design, only one manufacturer of each type of hardware has been scheduled.

1.05 SUBMITTALS

A. Submit schedule, shop drawings, and product data under provisions of Section 01 30 00.
B. Indicate locations and mounting heights of each type of hardware.
C. Provide product data on specified hardware.

1.06 OPERATION AND MAINTENANCE DATA

A. Submit operation and maintenance data under provisions of Section 01700.
B. Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store and protect products under provisions of Section 01600.
B. Package hardware items individually; label and identify package with door opening code to match hardware schedule.
C. Deliver permanent keys to Owner direct from hardware supplier.
D. Protect hardware from theft by cataloging and storing in secure area.

1.08 MAINTENANCE MATERIALS

A. Provide special wrenches and tools applicable to each different or special hardware component.
B. Provide maintenance tools and accessories supplied by hardware component manufacturer.

2. PRODUCTS

2.01 GENERAL

A. Fasteners: Hardware shall be complete with all necessary screws, bolts, anchors or other fasteners for proper application. Such fasteners shall be of suitable size and type, and shall harmonize with hardware as to materials and finish.
B. Door Closers: Closers shall not be installed on the outside of any exterior door. Whenever it is necessary to install a closer on the side of the door away from the butts, a parallel arm shall be used. Corner of soffit brackets are not permitted unless no other method of installation is possible. All closers shall be fastened with through bolts and grommet nuts.

2.02 KEYING

A. **All locks shall be keyed to the Owner's lock system, coordinate system with owner.**
B. Furnish 2 key blanks for each lock specified + 10 additional blanks to be used as master keys.
C. Cylinders: IC-6 PIN 59B1, 59B2, 59D1, or 60 Keyway, Coordinate with Owner

2.03 FINISHES. US26D (Satin Chromium Plated) unless otherwise noted in the Schedule.

2.04 HINGES

A. Description:
1. Each leaf: 1-1/2 pair on each leaf to 7'-2" high; 2 pair on taller doors.
2. 4-1/2" x 4-1/2" at doors not more than 36" wide
3. 5" x 4-1/2" at doors more than 36" wide.
4. Non-removable pins at exterior locations

B. Acceptable Manufacturers:
1. Type 1 (ball bearing) at doors with closers:
a. Hager BB1279
b. Lawrence BB4101
c. Stanley FBB179

2.05 LOCK/LATCH

A. Description:
1. Handicapped accessible lever design
2. 2-3/4" backset typical.
3. Knurled surface to warn of danger at mechanical/electrical and janitor rooms in accordance with ADA.

B. Acceptable manufacturers:
1. Entrance/Office set Corbin/Russwin CL3351 “Newport” C6

2.06 CLOSER

A. Description: Unless called out to be otherwise, mount on face of door on push side; with hold-open and delayed action features, reversible with removable covers.

B. Acceptable manufacturers
1. Corbin Russwin DC 3210 689

2.07 THRESHOLD

A. Type A: Where interior floor finish is resilient tile, Flat saddle, 6 inch x ½ inch.
1. Reese S206A
2. Pemko 172A
3. National 426

B. Type B: Where interior floor finish is quarry, ceramic, recycled tire or porcelain tile.
1. Reese S245A
2. Pemko 255A
3. National

2.08 STOPS AND BUMPERS

A. Stops shall be the product of one company and shall be the type listed throughout. Provide anchoring screws as required for wall/floor surface to which bumper will be attached.

1. Type A: Convex wall Bumper, Ives #401
2. Type B: Concave wall Bumper, Ives #404
3. Type A: Floor Stop, Ives FS436
4. Type B: Floor Stop, Ives FS438

2.09 WEATHERSTRIPPING

A. Description:
1. Clear anodized aluminum retainer
2. Flexible vinyl bulb
3. Run continuous at both jambs and head (cope at closer).

B. Acceptable manufacturers:
1. Reese DS 78A
2. Pemko 315 CR
3. National 130NA

2.10 DOOR BOTTOM PROTECTION

A. Description:
1. Clear anodized aluminum extrusion
2. Finned cold weather vinyl bulb
3. With integral drip
4. Make continuous along bottom of scheduled doors

B. Acceptable manufacturers:
1. Reese 353A
2. Pemko 216A
3. National 200NA

2.11 EXTENDED RAIN DRIP

A. Designed for overhead installations, mount to head of door frame

1. Reese R201A
2. Pemko 346C
3. National 16AD

2.12 KICKPLATES

A. Construction:
1. 34 inches wide (or 2" less door width) x 8 inches high
2. 0.050 inch thick stainless steel, with beveled edges
3. Place on kick side of scheduled doors

B. Acceptable Manufacturers:
1. Brookline
2. Hager
3. Rockwood

3. EXECUTION

3.01 INSPECTION

A. Verify that doors and frames are ready to receive work and dimensions are as instructed by the manufacturer.
B. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and requirements of SDI, ANSI/NFPA 80, BHMA and DHI.
B. Use the templates provided by hardware item manufacturer.
C. Mount locksets 40-1/4" (from finished floor to center line of lock)
D. Conform to ANSI A117.1 for positioning requirements for the handicapped.
E. All butts, locks, plates, etc., shall be neatly and accurately mortised flush, properly place and accurately aligned for smooth and quiet operation without sticking, binding, hanging, or rattling. All doors shall be hung with equal clearance at jambs and heads. Adjust all hardware properly and leave in smooth operating condition.

3.03 DOOR HARDWARE SCHEDULE. When a door opening has a pair of doors, provide listed hardware for each door leaf unless called out otherwise in the schedule.

A. Hardware Set **A** Door(s) 100A, 200A

Hinges
Latch/Lock Entrance/Office
Closer
Kickplate
Bumper
Threshold
Weatherstripping
Door Bottom Protection
Rain Drip

Hardware by overhead door manufacturer. . . . . See Section 08 36 13.

END 08 71 00

1. GENERAL

1.01 WORK INCLUDES

A. Base Bid: Contractor provide:
1. Wood stud or metal stud framing system (see drawings for wall type).
2. Metal furring and support systems.
3. Gypsum wall board for walls, bulkheads, soffits and ceilings.
4. Drywall accessories as shown on drawings or required for complete installation.
5. Taping and finishing of drywall.
6. Lead lined Gypsum Board, See Section 13 49 00 for requirements

1.02 REFERENCES

A. ASTM A525 - General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.

B. ANSI/ASTM A591 - Steel Sheet, Cold-Rolled, Electrolytic Zinc-Coated.

C. ASTM C645 - Non-Load (Axial) Bearing Steel Studs, Runners (Track) and Rigid Furring Channels for Screw Application of Gypsum Board.

D. ASTM C 754 - Installation of Steel Framing Members to Receive Screw-Attached Gypsum Wallboard, Backing Board, or Water-Resistant Backing Board.

E. FS TT-P-645 - Primer, Paint, Zinc-Chromate, Alkyd Type.

F. GA 203 - Installation of Screw-Type Steel Framing Members to Receive Gypsum Board.

G. ANSI/ASTM C36 - Gypsum Wallboard.

H. ANSI/ASTM C442 - Gypsum Backing Board.

I. ANSI/ASTM C475 - Joint Treatment Materials

J. ANSI/ASTM C630 - Water Resistant Gypsum Backing Board.

K. ANSI/ASTM C754 - Installation of Framing Members to Receive Screw Attached Gypsum Wallboard, Backing Board, or Water Resistant Backing Board.

L. ANSI/ASTM E90 - Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.

M. ANSI/ASTM E119 - Fire Tests of Building Construction and Materials.

N. GA-201 - Gypsum Board for Walls and Ceilings.

O. GA-216 - Recommended Specs. for Application/Finishing of Gypsum Board.

P. U.S.G. - Gypsum Construction Handbook.

1.03 ENVIRONMENTAL REQUIREMENTS

A. Room Temperature: A uniform temperature between 60 and 70 degrees F shall be maintained in cold weather one week prior to application, during application and until completely dry. Temperature shall not be allowed to fluctuate more than 2 degrees in a 24 hour period.

B. Ventilation: Drywall subcontractor shall assure adequate ventilation for drying out of joint compounds without allowing drying to be to rapid.

1.04 SYSTEM DESCRIPTION

A. Wood stud framing system for exterior wall, with exterior sheathing specified in Section 06 10 12, metal stud framing specified in this section, insulation specified in Section 07 21 00 and interior gypsum board specified in this section.

B. Wood stud framing system for interior walls specified in 06 10 00, metal studs specified in this section, with batt type acoustic insulation specified in Section 07 21 00, and gypsum board specified in this section.

C. Maximum Allowable Deflection: 1/270 span.

D. Design system to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

E. Gypsum board finish for walls and ceilings as shown or scheduled on the drawings, including taping and finishing in preparation for painting or receiving other finish materials.

1.05 QUALITY ASSURANCE

A. Perform metal framing work in accordance with GA 203 and ASTM C754.

B. Applicator Qualifications: Company specializing in gypsum board systems work with 3 years experience.

C. All gypsum board and accessories shall be of one manufacturer unless noted otherwise.

1.06 COORDINATION

A. Openings and chases for heating, plumbing and electrical ducts, pipes and conduits shall be built into drywall partitions and ceilings as required. Consult other trades in advance and make provisions for their work to avoid cutting and patching. Coordinate installation of sheathing with cold-formed metal framing erector.

1.07 DELIVERY AND STORAGE

A. Deliver materials to project site with manufacturer's labels intact and legible. Deliver fire-rated materials bearing testing agency label and required fire classification numbers. Store materials under cover in dry area, off floor. Damaged, deteriorated or wet materials shall be rejected and replaced.

2. PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - GYPSUM BOARD SYSTEM

A. U.S. Gypsum

B. National Gypsum

C. Georgia-Pacific

2.02 GYPSUM BOARD MATERIALS.

A. **Provide 5/8" thick gypsum board at all locations, regular or Type "X", see drawings for locations.**

B. Standard Gypsum Board: ANSI/ASTM C36; 48 x 5/8 or 1/2 inch thick, maximum permissible length; ends square cut, tapered edges.

C. Moisture Resistant Gypsum Board: ANSI/ASTM C630; 48 x 5/8 inch thick, otherwise same as standard gypsym board.

D. Exterior Gypsum Sheathing: Fiberglass faced boards with water-resistant gypsum cores; 48 x 5/8 inch thick, maximum permissable length; ends square cut, tapered edges; rated for exterior installation.

E. Gypsum board in horizontal applications (ceilings, soffits, etc.) shall be listed for such use by the manufacturer.

2.03 ACCESSORIES

A. Corner Beads: Metal, Durabead No. 101, galvanized.

B. Casing Beads: No. 200-B, galvanized.

C. Control Joint: No. 093, galvanized.

D. Joint Treatment Materials: ANSI/ASTM C475; perforated reinforcing tape, joint compound, adhesive, water, and fasteners. Materials used on exterior shall be rated for such exposure.

E. Acoustical Sealant and Tape: Non-hardening, non-skinning, for use in conjunction with gypsum board; manufactured by Tremco, Pecora, or USG.

F. Miscellaneous: Provide all necessary trim, anchors, etc, as required to complete installation.

2.04 WOOD STUD FRAMING

A. See Section 06 10 00 - Rough Carpentry

3. EXECUTION

3.01 EXAMINATION

A. Verify that conditions are ready to receive work.

B. Verify field measurements are as shown on Drawings and instructed by the manufacturer of items to be installed in metal stud constructions.

C. Verify that rough-in utilities are in proper location.

D. Beginning of installation means installer accepts existing conditions.

3.02 GYPSUM BOARD INSTALLATION

A. Install gypsum board in accord with GA 201, 216, and USG Gypsum Construction Handbook

B. Erect board with ends and edges occurring over firm bearing. Stagger end joints to occur at different locations on opposite sides of wall.

C. Abut boards without forcing. Neatly fit ends and edges of boards and make cuts and penetrations so that paper facing and gypsum core are not damaged.

D. Use screws to fasten gypsum board. Stagger fasteners opposite each other on adjacent ends and edges. Space fasteners as recommended in U.S.G., "Gypsum Construction Handbook".

E. Install sound attenuation sealant at perimeters of all sound -deadened partitions, and at all openings in walls to prevent sound transmission thru wall.

F. Double Layer Applications: Use gypsum backing board for first layer, placed perpendicular to framing or furring members. Use fire rated gypsum backing board for fire rated partitions. Place second layer parallel to first layer. Offset joints of second layer from joints of first layer.

G. Erect exterior gypsum soffit board perpendicular to supports, with edges butted tight , staggered end joints over supports and ends occurring over firm bearing.

H. Treat cut edges and holes in moisture resistant gypsum board and exterior gypsum ceiling board with sealant.

I. Place control joints at changes in backup material, at maximum 20'-0" o.c. in exterior walls; and at maximum 30'-0" o.c. at interior partitions. In ceilings, install at maximum 30'-0" o.c. each way. Provide fire resistant protections behind control joints in fire rated assemblies. longest practical length. Place edge trim where gypsum board abuts dissimilar materials.

J. On fire rated assemblies, seal all penetrations and make air-tight.

K. Thicken partitions to eliminate wall surface jogs for the full length of the wall within a room to conceal structural members, pipes, panels, specialty items, and accessories.

L. Coordinate door and other frame thicknesses as required.

M. Use Type “S” bugle head screws spaced at 12 inch centers for sidewall and 12 inch centers for ceilings. Verify current spacing recommendations with manufacturer.

3.03 JOINT TREATMENT

A. Tape, fill, and sand exposed joints, edges, and corners to produce surface ready to receive finishes. The intent of this paragraph is to provide the highest quality of joint treatment work consistent with commercial construction. Texturing work prior to painting will be very light. Leave surfaces smooth, uniform, and free of fins, depressions, ridges, cracks, and other imperfections.

B. Feather coats onto adjoining surfaces so that camber is maximum 1/32 inch.

C. Taping, filling, and sanding is not required at surfaces behind adhesive applied ceramic tile.

D. Tape all joints in fire rated partitions and wrapping where concealed from view.

3.04 LEVELS OF GYPSUM BOARD FINISH

Level	Joints	Interior Angles	Accessories	Fasteners	Surface
#1.	Tape set in Joint compound	Tape set in Joint compound			Tool marks Acceptable
Specified in plenum areas above finish ceilings, in areas where assembly would be concealed.					
#2.	Tape embedded in Joint compound and wiped leaving a thin coat of compound over tape	Tape embedded in Joint compound and wiped leaving a thin coat of compound over tape	Shall be covered with one coat of Joint compound	Shall be covered with one coat of	Free of excess Joint compound Joint compound
Specified where water resistant gypsum backing board (ASTM C630) is used as a substrate for tile.					
#3.	Taped as in level #2 then covered with one separate coat of joint compound	Taped as in level #2 then covered with one separate coat of joint compound	Shall be covered with two coats of joint compound	Shall be covered with two coats of joint compound	Joint compound shall be free of tool marks and ridges
Specified in areas to receive heavy or medium texture (spray-knockdown) finish before painting.					
#4.	Taped as in level #2 then covered with two separate coat of joint compound	Taped as in level #2 then covered with one separate coat of joint compound	Shall be covered with three coats of joint compound	Shall be covered with three coats of joint compound	Joint compound shall be free of tool marks and ridges
Specified where light paints, light textures or light wall coverings are to be applied. Flat paints are acceptable					
#5.	Taped as in level #2 then covered with two separate coat of joint compound	Taped as in level #2 then covered with one separate coat of joint compound	Shall be covered with three coats of joint compound	Shall be covered with three coats of joint compound	A thin skim coat of joint compound or a material manufactured for this use
Recommended where gloss, semi-gloss, enamel paints are specified or where severe lighting conditions occur					

3.05 FINISHES

A. All gypsum wallboard surfaces shall be left smooth and uniform, and ready to receive painting and decoration. Sand surfaces as necessary to achieve the desired finish.

3.06 TOLERANCES

A. Maximum Variation from True Flatness: 1/8 inch in 10 feet in any direction.

3.07 CLEAN UP

A. After completion of the gypsum wallboard work, all debris resulting from this work shall be removed from the building and site. All surfaces cleaned of spills and splatters resulting from the work.

END 09 21 16

1. GENERAL

1.01 WORK INCLUDED

A. Base Bid: Contractor provide rubber base where shown or called for on the drawings.

1.02 REFERENCES

A. ASTM E84 - Surface Burning Characteristics of Building Materials.

B. FS L-F-475A - Floor Covering, Vinyl Surface (Tile and Roll), with Backing.

C. FS SS-W-40 - Wall Base: Rubber and Vinyl Plastic.

1.03 REGULATORY REQUIREMENTS

A. Conform to applicable building code for flame/ fuel/smoke rating requirements in accordance with ASTM E84.

1.04 SUBMITTALS in accordance with Section 01 33 00.

A. Submit material samples, manufacturer's installation instructions and product data.

B. Submit two samples 2 x 2 inches (minimum) in size, illustrating color of materials specified.

C. Color as selected by A/E from manufacturer’s full range.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Store materials for three days prior to installation in area of installation to achieve temperature stability.

B. Maintain ambient temperature required by adhesive manufacturer three days prior to, during, and 24 hours after installation of materials.

2. PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - BASE

A. Armstrong World Industries

B. Roppe

C. Flexco

D. Johnsonite

2.02 BASE MATERIALS.

A. Provide 1/8 in. thick, 4 in. high wall base with a matte finish, conforming to ASTM F 1861, Type TP - Rubber, Style B – Cove

2.03 ACCESSORIES

A. Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.

B. Sealer and Wax: Types recommended by flooring manufacturer.

2.04 COLORS:

A. Colors to be selected by Architect/Engineer from manufacturer’s full range of colors.

3. EXECUTION

3.01 EXAMINATION

A. Examine substrates prior to installation to determine that surfaces are smooth and free from cracks, holes, ridges, and other defects that might prevent adhesive bond or impair durability or appearance of the base material. Verify that surfaces are smooth and flat with maximum variation of 1/4 inch in 10 ft.

B. **Beginning of installation means acceptance of existing substrate and site conditions.**

3.02 INSTALLATION

A. Apply top set wall base to walls, columns, casework, and other permanent fixtures in areas where top-set base is required. Install base in lengths as long as practical, with inside corners fabricated from base materials that are mitered or coped. Tightly bond base to vertical substrate with continuous contact at horizontal and vertical surfaces.

B. Scribe and fit to door frames and other interruptions. Install base on cabinets where finished base is not present.

3.03 PROTECTION

A. Protect installed flooring as recommended by the flooring manufacturer against damage from rolling loads, other trades, or the placement of fixtures and furnishings.

3.04 CLEANING AND WAXING

A. Remove excess adhesive from base, and wall surfaces without damage.

B. Clean, and seal base surfaces in accordance with manufacturer's instructions.

END 09 65 13

1. GENERAL

1.01 WORK INCLUDES

A. Base Bid:

1. Contractor provide resilient tile flooring and rubber base where scheduled.

1.02 REFERENCES

A. ASTM E84 - Surface Burning Characteristics of Building Materials.

B. FS L-F-475 - Floor Covering, Vinyl Surface (Tile and Roll), with Backing.

C. FS SS-T-312 - Tile, Floor: Asphalt, Rubber, Vinyl, Vinyl Composition.

D. FS SS-W-40 - Wall Base: Rubber and Vinyl Plastic.

E. ASTM F 710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.

F. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

1.03 REGULATORY REQUIREMENTS

A. Conform to applicable building code for flame/ fuel/smoke rating requirements in accordance with ASTM E84.

1.04 SUBMITTALS

A. Submit shop drawings, samples, manufacturer's installation instructions and product data under provisions of Section 01 33 00.

B. Submit two samples 2 x 2 inches in size, illustrating color and pattern for each floor material specified.

C. Submit two samples of each color base and nosing and material as well reducer strips for each color specified. Color will be selected by Architect during submittal period.

1.05 OPERATION AND MAINTENANCE DATA

A. Submit cleaning and maintenance data under provisions of 01 70 00.

B. Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Store materials for three days prior to installation in area of installation to achieve temperature stability.

B. Maintain ambient temperature required by adhesive manufacturer three days prior to, during, and 24 hours after installation of materials.

C. Concrete internal relative humidity: Concrete floors shall have a maximum internal relative humidity, measured with in-situ probes at 1/4 the slab depth, of 75 percent.

D. Moisture vapor transmission rate: Concrete floors shall have a maximum moisture vapor transmission rate acceptable to the flooring manufacturer prior to installing flooring.

1.07 EXTRA MATERIALS

A. Furnish 20 square feet of flooring for each type and color specified.

2. PRODUCTS

2.01 MANUFACTURERS - TILE FLOORING

A. Armstrong Standard Excelon.

2.02 TILE FLOORING MATERIALS:

A. Vinyl Composition Tile: FS SS-T-312, Type IV, Composition 1;
12 x 12 inch size, 1/8 inch thick; marbleized design.

B. Vinyl Composition tile: Premium Excelon Feature Tile, Strips and Insets, ASTM F1066- Class1, Solid Tile, ISO 10595-Type 1, 1/8" thickness, text design

2.03 Colors

A. Field
1. Colors to be selected by Architect/Engineer from manufacturer's full range of colors

2.04 ACCESSORIES

A. Subfloor Filler: White pre-mix latex; type recommended by flooring material manufacturer.

B. Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.

C. Edge Strips: Flooring material.

D. Sealer and Wax: Types recommended by flooring manufacturer.

E. Vinyl Reducer: Standard 1 inch wide tapered edging, 3/32 inch thick, color as selected by Architect.

3. EXECUTION

3.01 EXAMINATION

A. A building or flooring area that is water tight and fully enclosed from the elements, including roof, windows and doors, that is complete and finished prior to the flooring installation is required.

B. Verify surfaces are smooth and flat with a maximum variation of 1/4" in 10 feet, and are ready to receive work.

C. A concrete substrate that fully conforms to the requirements of ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring is required.

D. Verify concrete floors are dry to a maximum moisture content of seven (7) percent and exhibit negative alkalinity, carbonization, or dusting.

E. An installation area that is maintained permanently or temporarily at service temperature and humidity, or 68°F ± 5° F and 50% ± 10% relative humidity, for at least 48 hours prior to, during and 72 hours after the application of the flooring is required.

F. Areas of the flooring that are subject to direct sunlight through doors or windows shall have the doors or windows covered using blinds, curtains, cardboard or similar for the time of the installation and 72 hours after the installation to allow the adhesive to cure.

G. Beginning of installation means acceptance of existing substrate and site conditions.

3.02 PREPARATION

A. Concrete substrate: Prepare according to ASTM F 710 and Common work results for Floor Preparation. Provide testing according to ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes

B. Acclimate the flooring in the provided secure storage area that is maintained permanently or temporarily at service temperature and humidity, or 68°F ± 5° F and 50% relative humidity, for at least

48 hours prior to and during the application of the flooring.

C. Comply with manufacturer's written recommendations to ensure adhesion of floor coverings.

1. Verify substrates are dry and free of curing compounds, sealers and hardeners.
2. Perform test recommended by manufacturer. Proceed with installation only after substrates pass testing.

D. Provide Epoxy Moisture Mitigation System if floor slab does not meet ASTM F 2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

E. Clean out and fill or repair any saw cuts and cracks following the manufactures written instructions from the smoothing compound manufacturer. For any expansion joints, use a suitable expansion joint cover.

F. If required, use a suitable fully warranted smoothing compound that shall have a minimum compressive strength of 3000 psi (per ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring) at the time the flooring will be used (heavy traffic).

G. Vacuum floors immediately prior to installing the flooring to remove all loose particles. If required, only use water based sweeping compounds. Do not use any wax or oil based compounds that leave behind a residue that may interfere with the adhesive bond.

3.03 INSTALLATION - TILE MATERIAL

A. Install in accordance with manufacturers' instructions.

B. Mix tile from container to ensure shade variations are consistent.

C. Spread only enough adhesive to permit installation of materials before initial set.

D. Set flooring in place, press with heavy roller to attain full adhesion.

E. Lay flooring with joints and seams parallel to building lines to produce minimum number of seams.

F. Install tile to square grid pattern with all joints aligned. with pattern grain parallel for all units and parallel to shortest room dimension. Allow minimum 1/2 full size tile width at room or area perimeter. Lay tile starting at center of room working toward walls, square with room axis. Joints shall be tight butt joints, true to line.

G. Terminate flooring at centerline of door openings where adjacent floor finish is dissimilar.

H. Install edge strips at unprotected or exposed edges, and where flooring terminates.

I. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

3.04 PROTECTION

A. Prohibit traffic on floor finish for 48 hours after installation.

3.05 CLEANING AND WAXING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean, seal, and wax floor surfaces in accordance with manufacturer's instructions. Provide minimum one coat sealer and two coats wax.

END 09 65 19

1. GENERAL

1.01 WORK INCLUDES

A. Base Bid: Contractor provide:
1. Complete interior and exterior surface preparation and finishing, including mechanical and electrical equipment.
2. Examine specifications for various other trades and their provisions regarding their painting. Surfaces that are left unfinished by other sections of specifications, shall be painted or finished as a part of this Section.
3. Colors, including deep tones, will be selected by the Architect. Deep tones or accent colors will not exceed 30% of surfaces to be painted. Number of colors to be used on job will be determined by Architect.
4. **Painting shall also include all exposed conduit.**

1.02 SURFACES NOT TO RECEIVE FIELD FINISHING

A. Copper, bronze, chromium plate, nickel, stainless steel, Monel metal, lead, lead-coated copper weathering steel shall not be painted or finished except as otherwise specified or scheduled. Other surfaces not to be painted include prefinished wall, ceiling, and floor coverings; items with factory applied final finish; plenums above suspended ceilings.

1.03 REFERENCES

A. ASTM International
1. ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.
2. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood Base Materials
3. ASTM D2016 - Test Method for Moisture Content of Wood.
4. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

B. Green Seal:
1. GS-03 Anti-Corrosive Paints
2. GS-11 Paints and Coatings

C. Master Painters Institute:
1. MPI - Approved Products List
2. MPI - Architectural Painting Manual

1.04 DEFINITIONS

A. Conform to ANSI/ASTM D16 for interpretation of terms used in this Section.

1.05 QUALITY ASSURANCE

A. Product Manufacturer: Company specializing in manufacturing quality paint and finish products with 3 years experience.

B. Applicator: Company specializing in commercial painting and finishing with 2 years experience.

C. Product Labels: Include manufacturer's name, type of paint, stock number, color and label analysis on label of containers.

1.06 SUBMITTALS

A. Submit product data, color selection samples and manufacturer's application instructions under provisions of Section 01 33 00.

B. Provide product data including manufacturer’s written application instructions on all finishing products.

C. Samples for color selection.
1. Provide a fan deck or other color display illustrating the full range of colors available from the paint manufacturer for initial color selection.
2. Provide samples illustrating the full range of textures (Flat, Eggshell, Semi-gloss, Glossy, etc.) available from the manufacturer for initial selection.

3. Provide two (2) samples for each color/texture selected of actual paint applied to a stiff card stock of minimum dimensions 5"x8" for verification.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store and protect products under provisions of Section 01 60 00.

B. Deliver products to site in sealed and labeled containers; inspect to verify acceptance.

C. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.

D. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F , in well ventilated area, unless required otherwise by manufacturer's instructions.

E. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.08 ENVIRONMENTAL REQUIREMENTS

A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees F for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.

B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 75 percent, unless required otherwise by manufacturer's instructions.

C. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

D. Minimum Application Temperature for Varnish and Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft. candles measured mid-height at substrate surface.

1.09 SEQUENCING

A. Do not apply finish coats until paintable sealant is applied.

B. Back prime wood trim before installation of trim.

C. All rooms will receive an accent painted wall.

1.10 SCAFFOLDS

A. Provide adequate safe ladders, scaffolds, and stages necessary to complete work.

1.11 PROTECTION

A. Protect completed finish and paint work, and protect adjacent finish surfaces from paint splatter, spills and stains. Use adequate drop cloths and masking procedures during progress of work.

1.12 PRECAUTIONS

A. Paints, oils, thinners and other flammable items shall be stored outside the building if possible, and whenever necessary to store inside they shall be stored in approved containers when not in actual use during the painting job. The fire hazard shall be kept at a minimum.

B. Precaution shall be taken to protect the public and construction workers during the progress of the work.

C. Fire Extinguishers: Contractor shall furnish a temporary fire extinguisher of suitable chemicals and capacity, located near the flammable materials as described.

2. PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Sherwin Williams.

B. Pratt and Lambert

2.02 MATERIALS

A. Coatings: Ready mixed. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.

B. Coatings: Good flow and brushing properties; capable of drying or curing free of streaks or sags.

C. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

2.03 PRODUCTS

A. Gypsum Board & Plaster

1. Primer: Sherwin-Williams ProMar 200 Zero VOC Latex Wall Primer, B28W2600.
2. 1st Coat: Sherwin-Williams ProMar 200 Zero VOC Interior Latex Eg-Shel, B20-2600 Series.
3. 2nd Coat: Sherwin-Williams ProMar 200 Zero VOC Interior Latex Eg-Shel, B20-2600 Series.

B. Exterior Ferrous Metals: Semi-Gloss Finish

1. Primer: Sherwin-Williams Pro Industrial Pro-Cryl Universal Primer, B66-310 Series.
2. 1st Coat: Sherwin-Williams Pro Industrial Acrylic Semi-Gloss, B66-650 Series.
3. 2nd Coat: Sherwin-Williams Pro Industrial Acrylic Semi-Gloss, B66-650 Series.

C. Concrete Floors: For interior concrete floors which are to remain exposed to view (see Room Finish Schedule)

1. Sherwin-Williams ”H&C Clarishield” - Wetlook Concrete Sealer

3. EXECUTION

3.01 INSPECTION

A. Verify that surfaces and substrate conditions are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report to Architect any condition that may potentially affect proper application.

C. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:

1. Plaster and Gypsum Wallboard: 12 percent.
2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
3. Interior Located Wood: 12 percent, measured in accordance with ASTM D2016.
4. Exterior Located Wood: 15 percent, measured in accordance with ASTM D2016.

D. Beginning of installation means acceptance of existing surfaces and substrate.

3.02 PREPARATION

A. Remove electrical plates, hardware, light fixture trim, and fittings prior to preparing surfaces or finishing.

B. Correct minor defects and clean surfaces which affect work of this Section.

C. Shellac and seal marks which may bleed through surface finishes.

D. Aluminum Surfaces Scheduled for Paint Finish: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.

E. Gypsum Board Surfaces: Latex fill minor defects. Spot prime defects after repair.

F. Exterior Wood Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied.

G. Wood and Metal Doors Scheduled for Painting: Seal top and bottom edges with primer.

3.03 PROTECTION

A. Protect elements surrounding the work of this Section from damage or disfigurement.

B. Repair damage to other surfaces caused by work of this Section.

C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.

D. Remove empty paint containers from site.

3.04 APPLICATION

A. The intent of these Specifications is to produce the highest quality appearance of paint and finish surfaces. Employ skilled mechanics only. The proper preparation of all surfaces will be strictly enforced and wherever finished surfaces show any defects due to improper preparation, workmanship, etc., the defects shall be removed and the work refinished at the expense of the Contractor.

B. Apply products in accordance with manufacturer's instructions. Final finish costs shall have visual evidence of solid hiding and uniform appearance, and shall be free and smooth of brush marks, streaks, sags, runs, laps, or skipped areas.

C. Do not apply finishes to surfaces that are not dry.

D. Apply each coat to uniform finish and thickness.

E. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.

F. Sand lightly between coats to achieve required finish.

G. Allow applied coat to dry before next coat is applied.

H. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

I. Prime back surfaces of interior and exterior woodwork scheduled to be painted with primer paint.

J. Prime back surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

K. Edges of paint adjoining other materials or colors shall be sharp and clean with no overlapping.

L. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.

M. Move electrical plates, hardware, light fixture trim, and fittings prior to finishing.

N. Paint exposed roof ventilators, goose necks, exhaust fans and other items on the roof with 2 coats exterior enamel.

3.05 CLEANING/TOUCH-UP

A. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.

B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.

C. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

D. Spot painting will be allowed to correct soiled or damaged paint surfaces only when touch-up spot will blend into surrounding finish and is invisible to normal viewing. Otherwise, re-coat entire section to corners or visible stopping point.

3.06 SCHEDULE OF FINISHES

A. Interior Surfaces:

1. Hollow Metal Doors and Door Frames:
   a. One prime coat if unprimed; if primed, touch up defects or blemished in prime coat.
   b. Two finish coats.

2. Gypsum Board:
   a. One prime coat.
   b. Two finish coats.

3. Electrical Panels which are outside of mechanical/electrical rooms:
   a. Two finish coats.

4. Other Ferrous Metals:
   a. One prime coat if unprimed; if primed, touch up defects or blemished in prime coat.
   b. Two finish coats.

END 09 90 00

1. GENERAL

1.01 WORK INCLUDES

A. Base Bid: Contractor provide fire extinguisher and fire extinguisher cabinet where shown on drawings and wall mounting bracket where shown on drawings.

B. Alternate Bid No. 1: Contractor provide fire extinguisher and fire extinguisher cabinet where shown on drawings.

1.02 REFERENCES: NFPA 10 - Portable Fire Extinguishers.

1.03 QUALITY ASSURANCE: Conform to NFPA 10 requirements for extinguishers.

1.04 SUBMITTALS: in accord with 01 33 00: Provide shop drawings, product data and manufacturer's installation instructions. Information shall include physical dimensions, operational features, color and finish, anchorage details, rough-in measurements, location, and details.

1.05 OPERATION AND MAINTENANCE DATA

A. Submit manufacturer's operation and maintenance data under provisions of Section 01 70 00.

B. Include test, refill or recharge schedules, procedures, and recertification requirements.

2. PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

A. J. L. Industries

2.02 EXTINGUISHER: Dry Chemical Type, 10 pound capacity, with pressure gauge, UL rating: 4A- 80BC

2.03 CABINET: J.L. Industries, Series 1037; Semi recessed, with flat trim. Fired rated tub (size 24" high x 10.5 inches wide x 6 inches deep). Vertical Duo panel door glazed with 1/4" thick gray tempered glass.

A. J.L. Industries “Cosmopolitan” series

3. EXECUTION

3.01 INSPECTION: Verify rough openings for cabinet are correctly sized and located. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION: Install cabinets plumb and level in wall openings 48 inches from finished floor to center line and in accord with the manufacturer's instructions.

END 10 44 00

1. GENERAL

1.01 WORK INCLUDES

A. Base Bid: Contractor provide:
1. Valves.
2. Supports and anchors.

2. PRODUCTS

2.01 VALVES

A. General:

1. Provide valves of same manufacturer throughout where possible.
2. Provide valves with manufacturer's name and pressure rating clearly marked on outside of body.

B. Valve Connections:

1. Provide valves suitable to connect to adjoining piping as specified for pipe joints. Use pipe size valves.
2. Thread pipe sizes 2 inches and smaller.
3. Flange pipe sizes 2-1/2 inches and larger.
4. Solder or screw to solder adaptor for copper tubing.

C. Ball Valves:

1. Up to 2 inches: Bronze body, glass reinforced TFE seats, chrome plated carbon steel ball. solder or threaded.

D. Globe Valves:

1. Up to 2 inches: Bronze body, bronze trim, threaded or union bonnet, Buna-N composition disc, solder or threaded ends.
2. Over 2 inches: Cast iron body, bronze trim, outside screw and yoke, flanged.

E. Check Valves:

1. Up to 2 inches: Bronze body and cap, bronze seat, Buna-N disc, solder or threaded ends.
2. Over 2 inches: Cast iron body, bolted cap, bronze or cast iron disc, renewable disc seal and seat, flanged.

F. Plug Cocks:

1. Up to 2 Inches: Iron body, brass plugs and washers, air tested, solder or screwed ends.
2. Over 2 Inches: Iron body and plug, pressure lubricated type, flanged ends.

G. Pressure Ratings: Unless otherwise indicated, use valves suitable for 125 minimum psig WSP and 450° F and maximum 200 psig and 250° F.

H. Valve Operators:

1. Provide suitable operators for all valves.
   a. Ball valve: Lever handle.
   b. Globe valve: Hand wheel.
   c. Plug cock: Plug cock wrench.

I. Drain Valves:

1. Bronze compression stop with nipple and cap or hose thread.

2.02 PIPE HANGERS AND SUPPORTS

A. Hangers for Pipe Sizes ½ to 1-1/2 Inch: Malleable iron or Carbon steel, adjustable swivel, split ring.

B. Hangers for all Pipe Sizes 2 to 4 Inches, and cold pipe sizes up to 10 inches: Carbon steel, adjustable, clevis.

C. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.

D. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

E. Shield for Insulated Piping 2 Inches and Smaller: 18 gage galvanized steel shield over insulation in 180 degree segments, minimum 12 inches long at pipe support.

2.03 HANGER RODS: Steel Hanger Rods: Threaded both ends, threaded one end, or continuous threaded.

2.04 SLEEVES

A. Sleeves for Pipes Through Walls, and Footings: Form with steel pipe or 18 gage galvanized steel.

B. Stuffing Insulation: Glass fiber type, noncombustible.

C. Caulk: Acrylic sealant.

2.05 FABRICATION

A. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.

B. Design hangers without disengagement of supported pipe.

C. Provide copper plated hangers and supports for copper piping.

2.06 FINISH: Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

3. EXECUTION

3.01 INSTALLATION

A. Install valves with stems upright or horizontal, not inverted.

B. Install ball valves for shut-off and isolating service, to isolate equipment, part of systems, or vertical risers.

C. Use plug cocks for gas service.

D. Provide drain valves at main shut-off valves, and low points of piping and apparatus.

3.02 PIPE HANGERS AND SUPPORTS

A. Support horizontal piping as follows:

PIPE SIZE	MAX. HANGER SPACING	HANGER DIAMETER
½ to 1¼ inch	6'-6"	3/8"
1-1/2 to 2 inch	10'-0"	3/8"
2-1/2 to 3 inch	10'-0"	1/2"
4 to 6 inch	10'-0"	5/8"
PVC (All Sizes)	6'-0"	3/8"

B. Install hangers to provide minimum ½ inch space between finished covering and adjacent work.

C. Place a hanger within 12 inches of each horizontal elbow.

D. Use hangers with 1-1/2 inch minimum vertical adjustment.

E. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.

F. Support riser piping independently of connected horizontal piping.

3.03 SLEEVES

A. Set sleeves in position in formwork. Provide reinforcing around sleeves.

B. Install chrome plated steel escutcheons at finished surfaces.

END 22 05 00

1. GENERAL

1.01 WORK INCLUDES

A. Base Bid: Contractor provide:
1. Plumbing piping.
2. Plumbing fixtures.

1.02 REFERENCES

A. ANSI/ASME B16.3 - Malleable Iron Threaded Fittings Class 150 NS 300.

B. ANSI/ASME Sec. 9 - Welding and Brazing Qualifications.

C. ANSI/ASTM B32 - Solder Metal.

D. ASTM A53 - Pipe, Steel, Black and Hot-Dipped Zinc Coated, Welded and Seamless.

E. ASTM A120 - Pipe, Steel, Black and Hot-Dipped Zinc Coated (Galvanized), Welded and Seamless, for Ordinary Uses.

F. ASTM B88 - Seamless Copper Water Tube.

G. AWWA C601 - Standard Methods for the Examination of Water and Waste Water.

H. ANSI/ASSE 1019 - Wall Hydrants, Frost Proof Automatic Draining Anti-Backflow Types.

1.03 QUALITY ASSURANCE

A. Each length of pipe fitting, trap, fixture or device used shall be stamped or indelibly marked with the weight and quality thereof, and the makers name or mark.

B. Manufacturer: For each product throughout specified, provide by same manufacturer.

1.04 SUBMITTALS: Submit product data to include, but not limited to materials, finishes, load ratings, and dimensional information.

1.05 STORAGE AND HANDLING: Store and protect products on site to avoid damage.

2. PRODUCTS

2.01 PLUMBING PIPING

A. Water Piping:

1. Galvanized Steel Pipe: ASTM A53-2012, schedule 40 . Fittings: Cast Iron. Joints: Threaded couplings.

B. Flanges, Unions, and Couplings:

1. Pipe Size 2 Inches and Under: 150 psig malleable iron unions for threaded ferrous piping; bronze unions for copper pipe, soldered joints.
2. Pipe Size Over 2 Inches: 150 psig forged steel slip-on flanges for ferrous piping; bronze flanges for copper piping; 1/16 inch thick preformed neoprene bonded to non-combustible material.
3. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.02 PLUMBING FIXTURES See Plumbing Fixture Schedule on drawings.

3. EXECUTION

3.01 PLUMBING PIPING

A. Preparation:

1. Ream pipe and tube ends. Remove burrs.
2. Remove scale and dirt, on inside and outside, before assembly.
3. Prepare piping connections to equipment with flanges or unions.

B. Installation:

1. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
2. Route piping in orderly manner and maintain gradient.
3. Install piping to conserve building space and not interfere with use of space.
4. Group piping whenever practical at common elevations.
5. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
6. Provide clearance for installation of insulation and access to valves and fittings.
7. Slope water piping and arrange to drain at low points.
8. Establish elevations of buried piping outside the building to ensure not less than 3 ft. of cover.
9. Establish invert elevations, slopes for drainage to 1/8 inch per foot minimum. Maintain gradients.
10. Bury a tracer wire adjacent to all nonmetallic gas piping. Provide access at valve boxes and terminate above ground at each end.

C. Application:

1. Install unions downstream of valves and at equipment or apparatus connections.
2. Install ball valves for shut-off and to isolate equipment.

D. Testing:

1. Test all piping systems in accordance with Illinois Plumbing Code.
2. Test gas piping for leaks before putting into service.

3.02 PLUMBING FIXTURES

A. Inspection:

1. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.
2. Verify adjacent construction is ready to receive rough-in work of this Section.

B. Installation:

1. Install each fixture with trap, easily removable for servicing and cleaning.
2. Provide chrome plated rigid or flexible supplies to fixtures with stops, reducers, and escutcheons.
3. Install components level and plumb.
4. Install and secure fixtures in place with wall supports, wall carriers (as required) and bolts.
5. Seal fixtures to wall and floor surfaces with sealant.
6. Sink shall be installed using a compression style clip and bolt mount. No snap ring installations will be allowed.
7. Provide offset traps for handicap fixtures in order for piping to fit behind casework.

C. Fixture Rough-In Schedule:

1. Rough-in fixture piping connections in accordance with following table of minimum sizes for particular fixtures.

Fixture	Hot Water	Cold Water	Waste	Vent

Hose Bibb	N/A	3/4"	N/A	N/A

3.03 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

A. Prior to starting work, verify system is complete, flushed and clean.

B. Inject disinfectant, free chlorine in liquid, powder, tablet or gas form, throughout system to obtain 50 to 80 mg/L residual.

C. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.

D. Maintain disinfectant in system for 24 hours.

E. If final disinfectant residual tests less than 25 mg/L, repeat treatment.

F. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.

G. Take samples no sooner than 24 hours after flushing, from 5 percent of outlets and from water entry, and analyze in accordance with AWWA C601.

3.04 SERVICE CONNECTIONS

A. Provide connection to domestic water.

END 22 40 00

1. GENERAL

1.01 WORK INCLUDES

A. Base Bid: Contractor provide raceway and wiring shown including electrical power distribution, and lighting system.

1.02 SYSTEM DESCRIPTION

A. Basic materials include:

1. Raceways.
2. Fittings.
3. Wire and Cables.
4. Boxes.
5. Wiring Devices.
6. Supporting Devices.

B. Provide all new materials, without blemish or defect, in accord with standards specified and listed or labeled by a nationally recognized independent testing lab.

1.03 REFERENCES

A. ANSI C80.1 - Specification for Rigid Steel Conduit, zinc coated.
B. ANSI C80.3 - Specification for Electrical Metallic Tubing, zinc coated.
C. ANSI C80.4 - Specification for Fittings for Rigid Metal Conduit and EMT.
D. ANSI/NEMA FB1 - Fittings and Supports for Conduit and Cable Assemblies.
E. ANSI/NEMA OS-1 - Sheet Steel Outlet Boxes, Device Boxes, Covers and Box Supports.
F. NEMA TC-2 - Electrical Conduit.
G. NEMA WC-3 - Rubber Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.
H. NEMA WC-5 - Thermoplastic insulated wire and cable for the transmission and distribution of electrical energy.
I. UL44 - Rubber-Insulated Wires and Cables.
J. UL83 - Thermoplastic-Insulated Wires and Cables.
K. UL493 - Thermoplastic-Insulated Underground Feeder and Branch Circuit Cables.
L. UL884 - Underfloor Raceways and Fittings
M. NEMA 250 Enclosures for Electrical Equipment.
N. UL50 - Cabinets and Boxes.
O. UL514 - Outlet Boxes.
P. NEMA WD-1, WD-5 - General Purpose Wiring Devices.
Q. NEMA WD-5 - Specific-Purpose Wiring Devices.

1.04 DELIVERY, STORAGE AND HANDLING

A. Material shall be suitably packaged by manufacturer to prevent damage during shipment. Damaged materials will not be acceptable for use.

B. Store materials on site in clean, dry storage area; when outside, elevated above grade and enclosed with durable watertight wrapping.

C. Handle all materials carefully to prevent damage. Minor scratches, marks or blemishes to finish shall be repaired to satisfaction of Architect/Engineer.

2. PRODUCTS

2.01 RACEWAYS

A. Conduit:

1. Steel Rigid Metal. ANSI C80.1.
2. Steel Flexible Metal. UL-1.
3. Steel Liquid-tight Flexible. UL-1.
4. Rigid Nonmetallic, NEMA TC-2, PVC, Schedule 40 and 80 (see 3.02 B).

B. Tubing:

1. Steel Electrical Metallic. Comply with ANSI C80.3.

2.02 FITTINGS

A. Rigid:

1. Locknuts: Steel or malleable iron.
2. Bushings: Insulating or insulated throat type.
3. Couplings: Threaded type.

B. Electrical Metallic Tubing:

1. Couplings and Connectors: Steel Compression type.

C. Flexible:

1. Connectors; malleable iron, threadless, squeeze clamp type for non-jacketed conduit.
2. Connectors; steel or malleable iron compression type with insulated throat and "O" ring assembly for liquid-tight conduit.

2.03 BUILDING WIRE (all copper)

A. Feeders and Branch Circuits: Copper, 98% conductivity, 600 volt insulation, THW, THWN, XHHW, or dual rated THHN/THWN complying with US-83; #8 and larger, stranded conductor; wire thru #10, solid or stranded conductor.

B. Branch Circuit Wiring: Conductors sized in accord with N.E.C. 75°c ampacity tables but not less than No. 12 AWG. Increase size when farthest outlet is greater than 75 feet from panelboard.

C. Wiring for Systems Other Than Power: Comply with system manufacturer's standards. No. 14 AWG unless otherwise specified.

D. Color code conductors to designate neutral and phase.

2.04 BOXES

A. Pull Boxes and Junction Boxes:

1. NEC 2020 - Article 314
2. Surface Mounted Boxes: Screw-on or hinged cover. Provide silicon bronze standard retaining screws where accessible only to authorized personnel; security type in all other locations. Spaced twelve (12) inches maximum.
3. Boxes of 14 gauge steel minimum, galvanized or prime coated in finished areas.
4. Cast Metal Boxes for Outdoor and Wet Locations: NEMA 250; Type 4 and Type 6, flat-

flanged, surface-mounted junction box, UL listed as watertight. Cast aluminum box and cover with ground flange, neoprene gasket, and stainless steel cover screws.

5. Exterior junction boxes: Polymer concrete construction with gasketed lid labeled "ELECTRIC". Interior size to be 8" x 8"x 8" minimum. Lid and box to be rated at 8000 lbs. minimum. Lids to have (2) stainless steel safety screws in cover to prevent unauthorized entry. Open bottom.

B. Outlet Boxes:

1. Hot dipped galvanized, 1.25 oz./sq. ft., sherardized or cadmium plated.
2. Interior Boxes: Sheet steel with conduit knockouts, attached lugs for locating.
3. Exterior Boxes or Exposed Interior in Wet/Damp Locations: Cast aluminum, deep type, corrosion proof fasteners, watertight, gasketed, threaded hubs.
4. For Suspended or Surface Mounted Fixtures:
   a. Four (4) inch octagonal or square according to devices used, minimum of 1½" deep boxes for poured concrete ceilings. Furnished with fixture studs. Installed with ¾" minimum depth plaster rings on suspended ceilings. 4" octagonal or square for all exposed conduit work with fixture extension pan or deep fixture canopy to enclose the box. Use #14 stranded, type AF, 300 volt wire in pipe pendants.
   b. Four (4) inch octagonal or square two-gang box according to devices used, minimum of 2½" deep, 3 ½" deep for 1" conduit, boxes for masonry wall.
5. For Recessed Fixtures:
   a. Four (4) inch octagonal or square. A minimum of 1½" deep. Complete with blank cover. Wire in Greenfield: #12 type THHN, 600 volt.
6. Switch and Receptacle Boxes:
   a. Wall - 4" square for up to two devices. Solid gang boxes for over two devices. Complete with ¾" minimum depth tile ring where used in exposed tile, concrete, block or paneled walls. Complete with ¾" minimum depth plaster ring where used in plastered walls. Install with ½" raised galvanized device covers where used for exposed conduit work.
7. Provide corrosion resistant steel knockout closures for unused openings.

2.05 WIRING DEVICES

A. Wall Switches:

1. 120 v., quiet, slow make, slow break design, toggle handle, totally enclosed case, rated 20 a., specification grade. Equivalent 2 pole, 3-way and 4-way switches.
2. Switch and Pilot Light: Toggle type with integral long-life pilot, rated 20 a., 120v.
3. Color: White.
4. All switches shall be specification grade and shall be manufactured by Arrow-Hart, Pass & Seymour, Leviton, or Hubbell.
5. Color: White.

B. Receptacles:

1. Standard Duplex: Full gauge size, polarized, parallel blade, U-grounding slat, spec. grade, rated 20 a., 125 v., NEMA line 5, designed for split feed service.
   a. Color: White.
2. 208 & 240 V receptacles: Full gauge size, spec. grade. Verify NEMA type and rating with equipment to be installed.
3. **All non-locking type receptacles shall be tamper resistant**.

C. Ground Fault Circuit Interrupter:

1. General duty feed thru type capable of protecting downstream receptacles on single circuit, grounding type, UL Class A, Group 1, 20 a., rating, 125 v.
2. Solid state ground fault sensing and signaling, 5 ma. ground fault trip level.
3. Wallplate compatible with receptacle configuration.
4. Seal all connections with seal coat compound and wrap two layers tape.
5. Color: White.

D. Covers:

1. Materials: Nylon, smooth, high abuse, color to match device.
2. Plates:
   a. Flush Mounting: Bevelled type with smooth rolled outer edge.
   b. Surface: Bevelled, steel, pressure formed for smooth edge to fit box.
   c. Weatherproof: Weatherproof covers to be listed as “weatherproof while in use”. Cast metal, gasketed.

2.06 SUPPORTING DEVICES

A. Suspended Conduits Less than 1":

1. For exposed construction, provide strap type hangers supported from beam clamps or threaded rods.
2. For conduits suspended above ceilings, anchor to building structural steel. When span exceeds NEC limits, provide channel steel between framing members. Tie wiring of conduit to air ducts, or other piping not permitted. Plumber's perforated strap not permitted.

B. Suspended Conduit 1" or larger.

1. Provide threaded rod with "U" type hangers for single conduit.
2. Anchor threaded rod to inserts in concrete or beam clamp on steel structure.
3. Provide trapeze hanger assemblies and threaded rod for two or more conduits.

C. Surface Mounted Conduit:

1. Provide one-hole galvanized steel straps for conduits 1" or less.
2. For conduit larger than 1", use malleable iron pipe straps.
3. For multiple conduits, provide channel anchored to wall with conduit attached to channel with split pipe clamps.

D. Anchoring:

1. Hollow Masonry: Toggle bolts or spider type expansion anchors.
2. Solid Masonry: Lead expansion anchors or preset anchors.
3. Concrete: Self-drilling anchor or power driven studs.
4. Metal: Machine screws, bolts or welded studs.
5. Wood: Wood screws.

3. EXECUTION

3.01 INSTALLATION

A. Cooperate with other contractors engaged in project. Execute work in a manner not to interfere with other contractors.

B. Coordinate work with other contractors regarding location and size of pipes, raceways, ducts, openings, switches, outlets, so there is no interference between installation or of progress of any contractor.

C. Install all equipment with ample space allowed for removal, repair, or changes to equipment. Provide ready accessibility to removable parts of equipment and to all wiring without moving equipment installed or already in place.

D. Where cutting is required to facilitate construction, patch and repair, cut items to original state. Do not cut structural work without prior written approval of Architect/Engineer.

E. Cut holes through concrete and masonry with a diamond core drill or concrete saw. Pneumatic hammer, impact, electric, hand or manual hammer type drills not allowed, except where permitted by Architect/Engineer because of limited working space.

F. Make floor, exterior wall and roof seals watertight. Sleeve walls and floors which are cored for installation of conduit with steel tubing, grouted and space between the conduit and sleeve fill as specified herein.

G. At project completion, clean all equipment to the original finish. Remove all shipping labels.

H. Install metal cable tray in accordance with NEMA VE 2, install warning signs at 50 foot centers.

3.02 CONDUIT

A. Conduit Schedule. Minimum Conduit Size: 3/4" unless otherwise specified. Install switch legs in ½" conduit where in accordance with NEC.

B. Install conduit as follows:

1. Use EMT conduit for branch circuits in partitions and drop ceiling areas and telephone and data systems.
2. Use flexible conduit as herein specified.
3. Use Sch. 40 and Sch. 80 PVC conduit for underground applications. Sch. 80 PVC under roadways and parking lots, Sch. 40 may be used for 1" and smaller.
4. Use rigid steel for all conduit larger than 2" trade size in floor slab, rigid schedule 40 PVC may be used under slabs. Sch. 40 PVC conduit may be used for conduit smaller than 2" trade size in floor slabs.
5. EMT with steel compression fittings is acceptable in masonry walls.
6. Sch. 40 PVC conduit may be used for conduit below floor slabs.

C. Conduit Runs:

1. Size all conduit as indicated on Drawings; where not shown, in accordance with National Electrical Code. Make all conduit systems mechanically and electrically continuous from source of current to all outlets, and ground in accordance with the National Electric Code.
2. Conceal conduit wherever possible, or expose as shown or noted on the drawings and as specified herein. Run all exposed conduit parallel to building walls using right angle bends. Exposed diagonal runs of conduit will not be permitted. Do not install conduit on roof surfaces unless specifically indicated on drawings.
3. Ream conduit after threads are cut. Cut ends square and butt solidly into couplings.
4. Prevent the accumulation of water, foreign matter or concrete in the conduits during execution of work. Temporarily plug conduit, blowout and swab before wires are pulled.
5. Fasten conduits to all sheet metal boxes and cabinets with two (2) locknuts, in accord with NEC, where insulated bushings are used and where bushings cannot be brought into firm contact with the metal enclosures; otherwise, use at least a single locknut and bushing.

6. Seal each underground joint and make watertight.
7. Where building construction or other conditions make it impossible to use standard threaded couplings, install watertight threaded unions.
8. Make changes in direction of runs with symmetrical bends or cast-metal fittings. Make field-made bends and offsets with conduit bending machine to avoid changing the internal diameter of the conduit and not damage its protective coating either inside or outside. Individual bends shall not exceed 90◦ and not more than 270◦ total bends will be allowed in any one conduit run. Where more bends are necessary and conduit runs exceed 150 lin. ft., install a suitable pull box or junction box.
9. Provide empty conduits installed with a pull-line. Use pull-line of plastic having not less than 200 lb. tensile strength. Leave not less than 12" of slack at each end of pull-line.
10. Use flexible conduit for final connection to motors, portable equipment and for equipment subject to vibration and noise transmission. For conduit sizes up to 1" trade size, use minimum length of 12" and maximum length of 36"; for conduit sizes above 1" trade size, use minimum length of 20" and maximum length of 48".
11. Use flexible metal conduit to connect light fixture to adjacent junction boxes where not an integral part of the light fixture. Flexible conduit shall be a minimum 3/8" trade size, minimum 4 ft. long and maximum 6 ft. long.

3.03 WIRE AND CABLE

A. Make conductors continuous from outlet to outlet. Do not make splices except in outlet or junction boxes. Make all feeder cables continuous from origin to panel or equipment terminations without running splices in intermediate pull or boxes, unless specifically indicated on the Drawings or approved in writing by Architect/Engineer.

B. Do not exceed conduit fill established by the National Electrical Code for number of conductors installed in a raceway.

C. Use minimum wire sizes in no case less than shown on the drawings or specified herein:

1. Control and Signal: #14 AWG.
2. Branch Circuits:
   a. Where the farthest outlet of a single 120 v. or 208 v. branch circuit is less than 75 ft. from panelboard, use #12 AWG wire between all outlets and for home run of that circuit.
   b. Where the farthest outlet of a circuit is more than 75 ft. from panelboard, use #10 AWG wire for home run of that circuit and #12 AWG wire between all other outlets, except where larger sizes are indicated.

D. Do not pull any cable or wire in a raceway until conduit system is complete and internal raceway has been cleaned. Strain on cables shall not exceed manufacturer's recommendations during pulling. Use pulling lubricant, compatible with insulation and covering, that will not cause deterioration of insulation or jacket covers of cables or conductors. Use pulling lubricant recommended by wire manufacturer.

E. Provide each cable or conductor in panels, pullboxes or troughs with a permanent pressure-sensitive label with suitable numbers or letter for identification.

F. Provide wires and cables entering equipment or panels with enough slack to eliminate stretched, angular connection. Neatly arrange wiring, bundle and fan out to termination panels. Make minimum bending radius for conductors in accord with National Electrical Code.

G. Support all conductors in vertical raceways in accord with National Electrical Code.

H. Leave at least 6" loops or ends at each outlet for installation of devices or fixtures. Roll up all

wires in outlet boxes not for connection to fixture or device at that outlet, connect together and tape.

I. Upon completion of wire installation, but before termination to equipment, test each wire for grounds and short circuits. Replace or correct defective wiring.

3.04 BOXES

A. Location of proposed outlets shown on the drawings is diagrammatic only. Coordinate exact location of outlets in field with architectural details, equipment connection requirements and work of other contractors. Architect/Engineer may alter the location of outlets shown within a six feet radius prior to installation.

B. Protect all outlet boxes from entry of foreign materials.

C. Independently support all boxes. No parts of the weight or stress thereof shall be borne by conduits terminating therein.

D. Install suitable pull boxes in convenient intermediate locations in all conduits runs requiring more than three-90◦ bends.

E. Plug all unused openings. Use snap-in metal plugs for sheet metal boxes.

F. In all common boxes used for gang installation with switches, receptacles and low voltage devices, include barriers between the devices, switches or receptacles.

G. Provide permanent barriers in common boxes to limit voltage between adjacent switches to 300 v. or less.

H. Height of outlets and devices is indicated on the drawings. Use the following as a guide for mounting of outlet boxes:

	Device	Height Above Finished Floor to Bottom of Box (unless otherwise noted)
1.	Receptacles	16"
2.	Switches	44"
3.	Communication Outlet	16"
4.	Telephone	44"

I. Coordinate height of outlets with drawings and equipment installations drawings and properly locate height of all outlets.

3.05 DEVICES

A. Flush mount all switches and receptacles where possible. Fit all flush type outlets with device plate that completely conceals opening. Use multiple gang plates where several devices are grouped.

B. Connect wiring device grounds in accordance with NEC.

C. Locations shown are approximate. Determine exact locations at site by reference to building drawings and in conjunction with work by other crafts.

3.06 RACEWAY SUPPORTS AND HANGERS

A. Securely fasten raceways in place and support from ceiling or walls at spacings not exceeding:

	Material	Max. Spacing of Supports
1.	½" thru 1" Trade Size Conduit	6 ft.
2.	1¼" thru 1½" Trade Size Conduit	8 ft.
3.	2" thru 4" Trade Size Conduit	10 ft.
4.	Flexible Metal Conduit	4½ ft.

B. Support rigid or EMT conduits within 3 ft. of every outlet box, junction box, pull box, cabinet or termination. Support flexible conduit within 12" of every outlet box or fitting.

C. Support conduits by pipe straps, wall brackets, hangers, or ceiling trapeze. The use of perforated iron or wire for supporting conduits is prohibited. Fasten with wood screws or screw nails to wood; use toggle bolts or hollow wall fasteners in hollow masonry, plaster or gypsum board partitions and walls; self-drilling anchors or expansion anchors on concrete surfaces; sheet metal screws in sheet metal studs.

D. Do not fasten supports to piping, ductwork, mechanical equipment or conduit.

E. The load applied to fasteners or hangers shall not exceed one-third the proof test load of the fasteners or hangers.

F. For fasteners attached to concrete, use vibration and shock resistant type.

G. Where two or more conduits 1" trade size or larger run parallel, trapeze hangers may be used consisting of threaded solid rods, washers, nuts and galvanized "L" angle or channel iron. Individually fasten conduits to the cross member of every other trapeze hanger with one hole straps or clamp backs with proper size bolts, washers and nuts. When adjustable trapeze hangers are used, use U-bolt type clamps at end of conduit runs, at each elbow and at each third intermediate hanger to fasten each conduit.

H. Make hangers of durable materials suitable for the application involved.

I. All screws, bolts, washers and miscellaneous hardware used for conduit supports shall be fabricated from rust-resisting metal. Trapeze hangers shall have hanger assemblies protected with galvanized finish.

END 26 05 00

1. GENERAL

1.01 WORK INCLUDES

A. Base Bid: Contractor provide nameplates, tape labels, wire and cable markers, and panel schedules.

2. PRODUCTS

2.01 MATERIALS

A. General:

1. Nameplates and Labels:
   a. Type: Laminated engraved plastic identification labels.
   b. Colors: White with black recessed letters, attached with adhesive or screws.
   c. Labels shall include complete identification of equipment including area served, identifying numbers and names used on drawings (i.e., "Lighting Panel", "Power Panel", "Main Distribution Panel MDP-1").
   d. Labels on electrical panels shall include voltage characteristics.
2. Electrical wire marker tape:
   a. Listed: UL 510.
   b. Type: 5.5 mil epoxy film type.
   c. Acrylic pressure sensitive.
   d. High tack adhesive.

3. EXECUTION

3.01 INSTALLATION

A. Degrease and clean surfaces to receive nameplates.

B. Install nameplates parallel to equipment lines.

C. Secure nameplates to equipment fronts using screws, rivets or adhesive.

D. Install labels on TT switches and panelboard.

E. Provide a typed card directory for each panel. Directory shall designate breaker number and load served and shall be mounted inside front cover doors under glass or plastic. Panel shall have all breakers individually numbered and panel shall have an interior nameplate provided by manufacturer with voltage, amperage, phase and hertz listed.

F. Embossed tape will not be permitted for any application.

3.02 WIRE IDENTIFICATION: Provide wire markers on each conductor in panelboard and load center gutters, pull boxes, outlet and junction boxes, and at load connection. Identify with branch circuit and feeder number for power and lighting circuits.

3.03 NAMEPLATE ENGRAVING SCHEDULE: Provide nameplates to identify all electrical distribution and control equipment. Letter Height: 1/4" for distribution and control equipment identification.

END 26 05 53

1. GENERAL

1.01 WORK INCLUDES

A. Base Bid: Contractor provide:
1. Lighting and appliance branch circuit panelboards.
2. Breaker(s) for panelboards.
3. New breaker in existing Crouse Hinds Type F panelboard.

1.02 REFERENCES

A. FS W-C-375 - Circuit Breakers, Molded Case, Branch Circuit and Service.

B. FS W-P-115 - Power Distribution Panel.

C. NEMA AB 1 - Molded Case Circuit Breakers.

D. NEMA PB 1 - Panelboards.

E. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.

F. NEMA PB 2.

1.03 SUBMITTALS

A. Submit shop drawings for equipment and component devices including front view elevation, nameplate schedule, component list, outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker arrangement and sizes of switchboard and new panels.

2. PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Panelboards and Circuit Breakers

1. Cutler Hammer
2. General Electric
3. Siemens
4. Square D

2.02 BRANCH CIRCUIT PANELBOARDS

A. Lighting and appliance branch circuit panelboards: NEMA PB1; circuit breaker type.

B. Enclosure: NEMA PB1; type 1.

C. Provide flush mounted cabinet front with concealed trim clamps, concealed hinge and flush lock all keyed alike. Finish in manufacturer's standard gray enamel.

D. Provide panelboards with copper bus, ratings as shown on drawings.

E. Minimum Integrated Short Circuit Rating:

1. 10,000 amperes RMS symmetrical.

2.04 CIRCUIT BREAKERS

A. Molded Case Circuit Breakers: NEMA AB 1; push-on type thermal magnetic trip circuit breakers, with common trip handle for all poles. Provide circuit breakers listed as Type SWD for lighting circuits. Provide Class A ground fault interrupter circuit breakers where scheduled on Drawings.

B. Circuit breakers to have minimum integrated short circuit rating matching the panel in which they

reside.

C. Circuit breakers in existing the Panelboard shall have 30 cycle short-time withstand ratings equal to their symmetrical interrupting ratings regardless of whether equipped with instantaneous trip protection or not. **Existing Crouse Hinds Panel has a 10 KAIC rating.**

D. All circuit breakers shall be constructed and tested in accordance with UL 489 and NEMA AB1-1975 standards. The circuit breaker shall carry a label from an independent testing lab.

E. An indicator shall be located on the faceplate of the breaker to provide a color indication of the breaker position.

F. Do not use tandem circuit breakers.

3. EXECUTION

3.01 INSTALLATION

A. For panels listed on plans as recessed mounted, install panelboard plumb and flush with wall finishes in conformance with NEMA PB 1.1.
B. For panels listed on plans as surface mounted, install panelboard plumb with wall.
C. Height: 5 ft.
D. Provide filler plates for unused spaces in panelboards.

3.02 FIELD QUALITY CONTROL

A. Measure steady state load currents at each panelboard feeder. Should the difference at any panelboard between phases exceed 20 percent, rearrange circuits in the panelboard to balance the phase loads within 20 percent. Take care to maintain proper phasing for multi-wire branch circuits.
B. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers.

END 26 24 16

1. GENERAL

1.01 WORK INCLUDES

A. Base Bid: Contractor provide:
1. Luminaires and accessories.

1.02 SUBMITTALS

A. Submit product data and manufacturer's installation instructions including outline drawings, lamp and ballast data, support points, weights, and accessory information for each luminaire type.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Store in a warm, dry location with uniform temperature. Keep in packaging until ready to install.

1.04 WARRANTY: Provide 5 year parts and labor warranty on LED Drivers, and occupancy sensors.

2. PRODUCTS

2.01 GENERAL

A. Provide lighting fixtures, drivers, and lamps as indicated on the Drawings or required for the Project. Lighting fixtures shall be of the types indicated on the LIGHTING FIXTURE SCHEDULE. The fixtures manufacturers catalog numbers are not to be construed as all inclusive.

B. Equal light fixtures by other manufacturers may be submitted for approval by the Engineer a minimum of ten (10) days before bids are due.

C. The Electrical Contractor shall furnish and install all accessories or hardware required for a complete installation.

D. Lighting fixtures shall bear a label listed by a nationally recognized testing lab and such labels shall apply to the entire fixture as installed.

E. Exit signs: Spec. grade fixtures, single and double faced, diffused red LED light source. Provide with universal mounting for wall or ceiling mounting. 2 Knock out arrows on each face. Arrows activated as required by code. Nickel cadmium battery for emergency power.

3. EXECUTION

3.01 INSTALLATION

A. Install recessed luminaires to permit removal from below. Use plaster frames or grid clips when appropriate.

B. Support surface-mounted luminaires directly.

C. Do not support fixtures from conduit.

3.02 ADJUSTING AND CLEANING

A. Align luminaires and clean lenses and diffusers at completion of Work. Clean paint splatters, dirt, and debris from installed luminaires.

B. Touch up luminaries finish at completion of work.

END 26 50 00