

**WAGONER COUNTY HEALTH DEPARTMENT
2011 RENOVATION PROJECT**

OWNER: Wagoner County Health Department
212 North Pierce Avenue
Wagoner, Oklahoma 74467

PROJECT LOCATION: 212 North Pierce Avenue
Wagoner, Oklahoma 74467

ARCHITECT: PROPERTY ARTS INC.
DARRELL R. BYRD, A.I.A.
3220 West Lansing Street
Broken Arrow, Oklahoma 74012
918-893-5560

CONSULTANTS: MECHANICAL/ELECTRICAL ENGINEER:
MARTIN ENGINEERING DESIGN INC.
6216 SOUTH LEWIS AVENUE - SUITE 115
TULSA, OKLAHOMA 74136
918-493-2712

STRUCTURAL ENGINEER:
BEBEE ENGINEERING
8937 S. 45th WEST AVENUE
TULSA, OKLAHOMA 74132
918-587-9544

ISSUE DATE: February, 2012

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SECTION 00010 INDEX TO WAGONER COUNTY HEALTH DEPARTMENT 2011 RENOVATION PROJECT

Page No.

Title Page	3
Notice to Bidders	4
Information For Bidders	6
Bid Form Proposal	8
Affidavit of Non-Collusion	9
Business Relationships Affidavit	10
Affidavit of Bidder	11
Contract Agreement	12
Contract Affidavit of Non-Payment	13
Invoice Affidavit	14
Bond Requirements	15
Insurance Requirements	18
Sales Tax Agency Agreement	20
General Conditions	
DIVISION 1 GENERAL REQUIREMENTS	21
DIVISION 2 SITEWORK	44
DIVISION 3 CONCRETE	66
DIVISION 4 MASONRY	73
DIVISION 5 METALS	84
DIVISION 6 WOOD AND PLASTIC	99
DIVISION 7 THERMAL AND MOISTURE PROTECTION	107
DIVISION 8 DOORS AND METAL FRAMES	125
DIVISION 9 FINISHES	147
DIVISION 10 SPECIALTIES	167
DIVISION 11 EQUIPMENT	--
DIVISION 12 FURNISHINGS	--
DIVISION 13 SPECIAL CONSTRUCTION	184
DIVISION 14 CONVEYING SYSTEMS	--
DIVISION 15 MECHANICAL/PLUMBING	193
DIVISION 16 ELECTRICAL	218



DIVISION A - BIDDING

SECTION 00100 NOTICE TO BIDDERS:

NOTICE TO BIDDERS SHALL BE ISSUED PER
ADDENDUM NUMBER - 1
ITEM #1

END OF SECTION

DIVISION A - BIDDING

SECTION 00115 INFORMATION FOR BIDDERS

A one lump sum proposal will be received from each Contractor bidder covering all phases of trades relative to his bid. The proposal shall state all portions of the project covered in his bid, and shall be consistent with the related Construction Documents.

PROPOSAL: Proposals must be authoritatively executed. Proposals carrying riders, alterations of construction time or qualifications that modify the amount of the bid as submitted, will be rejected as irregular. In case of a difference between written words and figures in a proposal, the amount stated in written words shall govern. The bid shall be submitted on the proposal form furnished herein and the bidder shall complete all blanks on the form using an ink pen or other permanent marker. Proposals shall be submitted in a sealed envelope addressed to the Owner (Wagoner County Clerk) and plainly showing on the outside of the envelope the name and address of the bidder, the project name and the contents of the envelope. Certified check, cashiers check or Bid Bond as required and acceptable shall accompany each proposal to the Owner in the amount equal to five percent (5%) of the total amount of the proposal submitted. Said security shall be payable without condition to the Owner as a guarantee that the bidder, if awarded the contract, will enter into a contract agreement in accordance with the specified requirements and within ten days of notification of award. Securities will be returned to unsuccessful bidders upon awarding the project to others, and to the successful bidder upon execution of the Contract.

BONDS:

- A. Bid Bonds: As required in the NOTICE TO BIDDERS.
- B. Performance Bonds: To insure the proper and prompt completion of the work in accordance with the provisions of the Contract and bidding Documents; bond to be in a sum equal to the Contract price as bid.
- C. Statutory Bond: To assure payment of all obligations for materials or labor arising under the construction contract, in a sum equal to the contract price as bid.
- D. One Year Maintenance Bond: To protect against defective workmanship and materials for a period of one (1) year after the acceptance of the project; bond to be in a sum equal to the contract price.

- E. In lieu of bonds, and for contracts less than \$100,000, Contractor may furnish a Performance Irrevocable Letter of Credit, a Payment Irrevocable Letter of Credit, and a Warranty Irrevocable Letter of Credit. For contracts not exceeding \$25,000, Contractor may furnish an Affidavit of the Payment of All Indebtedness by said Contractor and his Credit.
- F. Public Liability and Worker's Compensation Insurance: Coverage is to be in amounts reasonably satisfactory to the Owner, with certificates of coverage being provided to the Owner naming the Owner additional insured thereunder.
1. Statutory workmen's compensation as required by the Labor Laws of the State of Oklahoma.
 2. Comprehensive General Liability \$1,000,000/each person and \$1,000,000/each occurrence, with completed operations coverage.
 3. Property damage \$1,000,000/each occurrence and \$1,000,000 aggregate.
 4. Contractor's protective liability \$1,000,000/each person and \$1,000,000/each occurrence, including property damage of \$2,000,000/each occurrence and \$1,000,000 aggregate.
- G. Builders Risk Insurance: Coverage is to be in the amount of the final construction amount, with certificates of Coverage being provided to the Owner naming the Owner as additional insured thereunder.

CONDITIONS RELATING TO CONSTRUCTION:

Bidders are required to inform themselves fully of all conditions relating to construction and labor under which the work will be performed. Contractors must employ such methods and means in carrying out the work as will not cause any interruption or interference with any other Contractor, or the use of the existing facilities.

EXAMINATION OF THE PREMISES:

Before submitting proposals for the work, each bidder must examine the premises prior to submitting a proposal, to satisfy himself as to existing conditions under which he will be obligated to operate.

END OF SECTION

DIVISION A - BIDDING

SECTION 00130 BID FORM PROPOSALS

PROPOSAL FOR: Wagoner County Health Department Renovation 2011 project

OWNER: Wagoner County Health Department
212 North Pierce Avenue
Wagoner, Oklahoma 74467

ARCHITECT: Property Arts Inc.
Darrell R. Byrd, A.I.A.
3220 W. Lansing St.
Broken Arrow, Oklahoma 74012
918-893-5560

BIDDER: _____

(Company Name)

(Address)

(City, State)

(Type of Entity)

NOTE: Give the full name and address of every bidder, if partnership, full name and address of every partner. Give legal name if a corporation and State in which incorporated, together with name and address of President and Treasurer.

The bidder named above hereby tenders his bid and declares that the only person or persons interested in this proposal is or are named above, that the bid is made without collusion with any other bidder and is in all respects without collusion or fraud. The bidder further declares he has examined the annexed form of contract and bond, the specifications and the contract drawings herein referred to, and has read the "NOTICE TO BIDDERS AND INFORMATION FOR BIDDERS" hereto attached; and that all necessary and proper machinery, equipment, facilities and means to do all the work and furnish all the materials necessary or proper to carry out such contract in the manner, on the terms, and under the conditions set forth therein and in the specifications, and to accept in full payment therefore the following sums, to-wit:

Bidder understands the urgency of completing the project as quickly as possible. With this understanding, Bidder proposes to complete the work in _____ calendar days from receipt of a formal notice to proceed. Single general bid shall be for the following: Furnish labor and materials to complete the WAGONER COUNTY HEALTH DEPARTMENT RENOVATION 2011 project, Wagoner, Oklahoma, as shown on drawings and specifications. Bidder agrees to perform this work for the sum of:

BASE BID:

_____ Dollars
(Written)
(\$ _____)
(Figures)

ADDENDA:

The undersigned acknowledges receipt of the following Addenda.
(Give number and date of each):

NOTE: If an individual makes the bid, it shall be signed with his usual business signature, with his business address and place of residence; if by a firm, co-partnership name shall be signed by a member of the firm and the name and address of each member shall be given; if by a corporation, it shall be signed by a duly authorized officer, with the corporate name attested by the corporate seal, and the business address of the corporation shall be given.

Bidder Signature and title
Seal: (If bid is by a Corporation)

Date

By: _____

END OF SECTION

DIVISION A - BIDDING

SECTIONS 00140 AFFIDAVIT OF NON-COLLUSION

(To Accompany Bid Proposal)

STATE OF: _____)
) SS.
COUNTY OF: _____)

_____, of lawful age, being first duly sworn, on oath says that (s) he is the agency authorized by the bidder to submit the attached bid. Affiant further states that the bidder has not been a party to any collusion among bidders in restraint of freedom of competition by quantity, quality, or price in the prospective contract or any other terms of said prospective contract; or in any discussions between bidders and any state official concerning exchange of money or other things of value for special consideration in the letting of a contract.

Agent Authorized by Bidder

Complete Legal Name of Bidder

Subscribed and sworn to before me this _____ day of _____, 201_.

Notary Public (SEAL)

My Commission Expires: _____
Date

END OF SECTION

DIVISION A - BIDDING

SECTION 00150 BUSINESS RELATIONSHIPS AFFIDAVIT

(To accompany Bid Proposal)

STATE OF: _____)
) SS.
COUNTY OF: _____)

_____, of lawful age, being first duly sworn, on oath says that (s) he is the agent authorized by the bidder to submit the attached bid. Affiant further states that the nature of any partnership, joint venture, or other business relationship presently in effect or which existed within one (1) year prior to the date of this statement with the architect, engineer, or other party to the project is as follows:

Affiant further states that any such business relationship presently in effect or which existed within one (1) year prior to the date of this statement between any officer or director of the bidding company and any officer or director of the architectural or engineering firm or other party to the project is as follows:

If none of the business relationships herein mentioned exist, affiant should so state.)

Agent Authorized by Bidder

Complete Legal Name of Bidder

SUBSCRIBED AND SWORN to before me this _____ day of _____, 201__.

Notary Public (Seal)

My Commission Expires: _____
(Date)

END OF SECTION

DIVISION B - CONTRACT FORMS

SECTION 00210 CONTRACT AGREEMENT FORM

1.01 CONTRACT AGREEMENT FORM

American Institute of Architects Document A101, Standard Form of Agreement Between Owner and Contractor where the Basis of Payment is a Stipulated Sum, 1997 Edition shall be the basis of Agreement for this Project. Reference copies are on file and may be examined by any interested party at the Office of the Architect during normal business hours.

END OF SECTION

DIVISION B - CONTRACT FORMS

SECTION 00230 INVOICE AFFIDAVIT

State of _____ P.O. No. _____

ss.

County of _____ Invoice No. _____

Project: _____ Amount _____

The undersigned Contractor, of lawful age, being duly sworn, an oath affirms that this invoice is true and correct and that (s) he is authorized to submit the invoice pursuant to the approved Contract. Affiant further states that the Work as shown by the invoice has been completed in accordance with the Contract Documents. Affiant further states that (s) he has made no payment, given or donated or agreed to pay, give or donate, either directly or indirectly, to any elected or appointed government or school district official or employee or representative, money or any other thing of value to obtain payment of the invoice or procure award of this Contract pursuant to which the invoice is submitted.

Company Name

By

Title

Subscribed and sworn to before this _____ day of _____, 201__.

Notary Public
My Commission Expires: _____

This form must be completed and submitted before any invoice can be processed for payment.

END OF SECTION

DIVISION B - CONTRACT FORMS

SECTIONS 00240 BOND REQUIREMENTS

1.01 BONDS REQUIRED

- A. Performance Bond shall be written in the amount required in the Supplements to the A.I.A. General Conditions. The form of this bond shall be A.I.A. Document A311, Performance Bond, February 1970 Edition. Submit three (3) fully executed copies.
- B. Labor and Material Payment (Statutory) Bond shall be written in the amount required in the Supplements to the A.I.A. General Conditions. The form of this bond shall be A.I.A. Document A311, Labor and Material Payment Bond, February 1970 Edition. Submit three (3) fully executed copies.
- C. Defect Bond shall be written in the amount required in the Supplements to the A.I.A. General Conditions. The form of this bond is attached to this section. Submit three (3) fully executed copies.

1.02 POWER OF ATTORNEY

- A. All bonds shall have an original copy of the Power of Attorney attached thereto upon submittal.

1.03 ADDRESSES REQUIRED

- A. All Bonds shall clearly indicate the home office address and telephone number of the Surety as well as the address and telephone number of their Agent and their Attorney with Power of Attorney.

1.04 FINANCIAL STRENGTH OF SURETY COMPANY

- A. Surety Company shall be subject to the Owners approval for financing rating and resources. The minimum requirements for the Surety Company shall be:
 - 1. A.M. Best of A- or better; or
 - 2. Listed in the Federal Registry, Department Circular 570, And Current Edition.
- B. Submit affidavit of compliance with Bonds.

END OF SECTION

DIVISION B – CONTRACT FORMS

SECTION 00244 INSURANCE REQUIREMENTS

1.01 GENERAL

The Contractor shall purchase and maintain insurance as required in the Standard Form of Agreement Between Owner and Contractor where the Basis of Payment is a Stipulated Sum, 1997 Edition, AIA Document A101 and the General Condition of the Contract for Construction, 1997 Edition, AIA Document A201 as modified in Section 00300, AIA General Conditions and Supplements to the AIA General Conditions, Article 11.

- A. All of the above documents shall be thoroughly studied prior to purchases of an insurance policy to cover the Project.
- B. While not limited to the following requirements, the requirements listed below are brought to the Contractors Specific attention.
 - 1. Both the Owner and the Architect shall be named as additional insured on the Commercial General Liability Policy.
 - 2. Waivers of Subrogation are required for both Property Insurance and for Liability Insurance.

1.02 ADDITIONAL LIABILITY INSURANCE REQUIREMENTS

- A. In addition to the liability insurance requirements noted in Paragraph 1.01 above, the following requirements also apply:
- B. The Contractor shall purchase and maintain a Commercial General Liability Policy which shall include the following coverage areas:
 - 1. Operations of the Contractor-direct liability coverage for the Contractors activities at a permanent location and the Project Site;
 - 2. Operations of Subcontractors-Liability coverage for those entities for which the Contractor has a duty to supervise and stand legally responsible for their conduct;
 - 3. Completed Operations-Liability for property damage and bodily injury and death that occurs after Substantial Completion;
 - 4. Personal Injury- Including but not limited to, libel, slander, defamation of character, wrongful ejection, right of private occupancy, false arrest and detention and other similar personal injuries;
 - 5. Employees as Additional Insured- Include employees and their acts into the coverage;

6. *Explosion, Collapse, Underground-Liability coverage for the property of others to include, but not limited to, unknown utilities; and*
 7. *Contractual Liability coverage for the assumption of others by Contract.*
- C. *The Commercial General Liability Policy shall name the Owner and the Architects, their agents and employees, and the Architect's Consultants as additional insured.*
 - D. *The Contractor shall purchase and maintain Workers Compensation and Employees Liability Insurance.*
 - E. *The Contractor shall purchase and maintain commercial Automobile Liability Insurance. This policy shall cover Owned, Non-owned and Hired vehicles.*
 - F. *The Contractor shall purchase and maintain Umbrella Liability Coverage to provide higher limits of liability above those required for General Liability, Employers Liability and Automobile Liability.*
 - G. *The Umbrella Liability Policy shall name the Owner and Architect, their agents and employees, and the Architect's Consultants as additional insured.*
 - H. *Liability limits shall be as specified herein or the maximum exposure as stated in the Government Tort Claims Acts as most recently amended, whichever is higher.*
 - I. *The minimum amount of coverage and the limits of liability shall be as specified below:*
 1. *Claims under workers' or workmens' compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed:*
 - a. *As required by law.*
 2. *Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees:*
 - a. *\$1,000,000.00*
 3. *Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees:*
 - a. *\$500,000.00*
 4. *Claims for damages insured by usual personal injury liability coverage which are sustained (1) by a person as a result of an offense directly or indirectly related to employment of such person by the Contractor, or (2) by another person:*
 - a. *\$1,000,000.00*
 5. *Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom:*
 - a. *\$500,000.00*

6. Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle:
 - a. \$ 1,000,000.00
7. Claims involving contractual liability insurance applicable to the Contractor's obligations under Paragraph 3.18 of the General Conditions for the Contractor for Construction as modified:
 - a. \$ 500,000.00

1.03 ADDITIONAL PROPERTY INSURANCE REQUIREMENTS

In addition to the property insurance requirements noted in Paragraph 1.01 above, the following requirements also apply:

- A. The Contractor shall purchase and maintain property Insurance (BUILDERS RISK).

1.04 LOSS OF USE INSURANCE

The Owner, at the Owner's option, may purchase and maintain such insurance that will protect the Owner against the loss of use of his property.

END OF SECTION

DIVISION B - CONTRACT FORMS

SECTION 00250 SALES TAX AGENCY AGREEMENT

This is an Agency Agreement made and entered into as of the _____ day of _____, 201_, between _____ of _____ COUNTY, OKLAHOMA, a political subdivision of the State of Oklahoma (hereinafter referred to as "Owner"), and _____ (hereinafter referred to as "Contractor")

RECITALS:

1. Owner has solicited bids for the construction of _____ the "Project") in _____ County, Oklahoma; and such facilities as are necessary and appropriate for the operation thereof; which Project, on or before completion shall be owned by the Owner.
2. Contractor has been awarded the contract for the construction of the Project.
3. Owner desires to purchase all materials, supplies and equipment for the Project in its own name and to take immediate title to all materials, supplies and equipment, and to have Contractor, as general contractor for the Project, perform portions of such purchasing duties.

NOW THEREFORE, in consideration of the premises and in order to constitute and appoint Contractor as agent of Owner for the purchase of equipment and materials for the Project, IT IS AGREED AS FOLLOWS:

1. Owner, as Principal, hereby constitutes and appoints Contractor as Owner's agent, for it and in its name, to acquire materials and equipment for use in constructing the Project.
2. Title to all materials and equipment purchased by Contractor as agent for Owner will pass directly from the seller thereof to Owner.
3. Contractor acknowledges that it is an agent for Owner and agrees to act as agent for Owner in connection with the acquisition of materials and equipment for the Project in the manner above described.
4. The relationship of principal and agent created by this Agreement shall continue until terminated by either party by notice in writing to the other. The parties hereto agree that all sellers or vendors of materials and equipment for the Project shall be entitled to rely upon the existence of the Agreement until they have received written notice of its revocation.
5. Contractor agrees that it will not purchase any material or equipment pursuant to this Agreement except that authorized and intended for inclusion of the Project.

6. In executing purchase orders for equipment and materials for the Project, Contractor shall include in each purchase order a statement, to be approved as to form by Owner, that Contractor is acting as Owner's agent, individually and without power of redesignation, for the purchase of the equipment and materials covered by the purchase order.
7. All equipment and materials purchased by Contractor under this Agreement shall be delivered to owner at the Project job-site.
8. Only equipment and materials to be incorporated in the Project shall be purchased by Contractor as Owner's agent under this Agreement and no equipment and materials will be purchased except the items required by the plans and specifications for the Project. Contractor will not purchase, as agent hereunder, any equipment or materials to be used only incidentally in connection with the Project. Nothing contained herein shall alter the obligation and responsibility of Contractor under the contract between Owner and Contractor for the construction of the Project.
9. All reimbursement by Owner to Contractor for materials and equipment purchased by Contractor as Owner's agent hereunder shall be deemed to be a part payment on the Project contract price.
10. Contractor shall not be entitled to any compensation for its services as Owner's agent hereunder.

IN WITNESS WHEREOF, The parties have executed this Agency Agreement as of the date first above written.

WAGONER COUNTY HEALTH DEPARTMENT
OF WAGONER COUNTY, OKLAHOMA

ATTEST:

_____ BY _____

Clerk

President

(SEAL)

ATTEST: _____

Construction Company

BY: _____

President

END OF SECTION

DIVISION C - CONDITION OF CONTRACT

SECTION 00300 A.I.A. GENERAL CONDITIONS

THESE DOCUMENTS, DRAWINGS AND SPECIFICATIONS AND ALL INFORMATION CONTAINED THEREIN, ARE INSTRUMENTS OF SERVICE AND SHALL REMAIN THE PROPERTY OF THE ARCHITECT. THEY ARE GIVEN FOR USE ONLY IN CONJUNCTION WITH THIS PROJECT AND MAY NOT BE COPIED, REPRODUCED OR USED IN ANY CONTEXT WITHOUT THE WRITTEN CONSENT OF THE ARCHITECT, DARRELL R. BYRD.

THE TERM "CONTRACT DOCUMENTS" AS USED HEREIN SHALL MEAN THE CONSTRUCTION CONTRACT, GENERAL CONDITIONS, GENERAL REQUIREMENTS, SUPPLEMENTARY GENERAL CONDITIONS, IF ANY, THE DRAWINGS AND SPECIFICATIONS, INCLUDING ALL MODIFICATIONS THEREOF, INCORPORATED IN THESE DOCUMENTS BEFORE THEIR EXECUTION. THE USE OF ANY ONE OF THESE ITEMS CONSTITUTES THE USE OF ALL, AS EACH IS A PART OF THE DISTRIBUTION OF FULL SETS OF THESE DOCUMENTS TO ALL TRADES AND SUB-CONTRACTORS UNDER THIS PROJECT.

GENERAL CONDITIONS:

General Conditions of this contract shall be A.I.A. document A201 "General Conditions of the Contract for Construction, latest edition", and shall be considered a part of these specifications, in full, as if they were printed here in length.

END OF SECTION

DIVISION 1

SECTION 01010 GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 WORK COVERED BY THE CONTRACT DOCUMENTS

- A. Construct Addition to the existing Health Department building and associated site work.

1.02 THE WORK IS LOCATED AT:

- A. 212 North Pierce Avenue, Wagoner, Oklahoma 74467

1.03 CONDITION OF THE SITE

- A. The drawings are intended to indicate with reasonable accuracy the conditions of the site where work is to be completed. It shall be the responsibility of the Contractor to carefully and thoroughly examine the site and fully acquaint himself with all existing conditions.
- B. No claim for extra work due to discrepancy between the drawings and the actual conditions at the site will be considered unless the architect is notified in writing five (5) days prior to the bid opening.

1.04 FUTURE WORK

- A. Should the Work be designed for future expansion, ensure that the Work does not encroach into the areas shown on the drawings.

1.05 DIMENSIONS

- A. Contractor and each subcontractor shall verify dimensions at site for built-in work, and for work adjoining that of other trades and for dimensions shown to existing structures or installations. Notify Architect of any discrepancies.

1.06 POSSESSION, USE AND RESPONSIBILITY FOR SITE:

- A. Contractor shall accept the site as he finds it at the timework is to commence. Contractor shall be deemed to have visited the site before placing his bid and have thoroughly acquainted himself with the conditions at said site.

- B. After occupying the site, Contractor shall be responsible for the management, care and maintenance of the site. Contractor shall be solely responsible for damage to all existing properties, and shall adjust all claims or suits accruing there from without loss or expense to the Architect or to the Owner.
- C. The limits to the construction site shall be as defined by the Owner. Contractor shall confine his activities to the construction site, except as required to traverse adjacent property, to install utility services, relocate services, construct manholes, and to do other work as required by the contract. No work or storage of materials shall be performed off the construction site of the property without the prior notification to and consent of the Owner and Architect.
- D. The Contractor shall: Where necessary to excavate, block off, or do other work on or adjacent to existing streets, walks, platforms, entries, exits, and other traffic facilities, Contractor shall provide, maintain and promptly remove as their necessity ceases to exist, suitable and adequate temporary lighting, enclosures, railings, sidewalks, and other items necessary to permit the safe and unimpeded flow of traffic, both vehicular and pedestrian, to and from the building, as approved by the Architect. Keep the building site, and any adjacent areas worked in, free of rubbish at all times. Remove all debris from the premises upon completion of work, as well as all equipment and materials.
- E. The Owner will move out of the building . The Contractor will have the entire building to work in at all times.

1.07 WORK UNDER THIS CONTRACT

- A. The work under the Contract between the Owner and Contractor shall include all materials, equipment, labor and construction support facilities necessary to complete the project to the extent indicated on the drawings, described in the specifications, or reasonably inferred there from. Unless specifically noted otherwise, all systems shall be left fully operational upon completion of the work.
- B. The drawings and specifications referred to in the contract documents have been prepared by: PROPERTY ARTS INC, DARRELL R. BYRD, ARCHITECT, 3220 West Lansing Street, Broken Arrow, Oklahoma 74012, (918) 893-5560, Fax (918) 893-5562 and are identified by this:

SPECIFICATIONS FOR THE WAGONER COUNTY HEALTH DEPARTMENT RENOVATION
2011 PROJECT - WAGONER, OKLAHOMA.

and are further identified by the table of contents appearing at the front of each Specifications Book.

1.08 OPERATION & MAINTENANCE INSTRUCTIONS

- A. Instruct Owner's operating personnel in proper operation, lubrication and maintenance of equipment.
- B. At job completion, contractor shall provide two (2) copies of a brochure-containing manufacturer's operating, lubricating and maintenance instructions and parts manual for each item of equipment furnished under his contract. Each copy shall be assembled and bound under a substantial hardboard cover with title and index. Provide a complete set of approved manufacturer's and contractor's shop and equipment drawings for major systems and equipment.

1.09 OWNER'S EQUIPMENT

- A. Certain items and equipment shown on drawings will be furnished by the Owner and installed by Owner. Such items and equipment are indicated on Drawings and in Specifications as being Not In Contract (NIC).
- B. Contractor and each subcontractor shall cooperate with persons installing owner's equipment. Where such equipment adjoins or attaches to work of such subcontractor or Contractor.

1.10 BRAND NAMES

- A. All brand names and/or manufacturers names specified herein and/or on the related construction drawings are intended to establish standards of quality, etc., suppliers or manufacturers of equal type and quality products will be considered in all cases.

1.11 CODES AND ORDINANCES

- A. Nothing contained in these Specifications or on the Drawings shall be construed as authority for violation by any party to this project of any applicable codes or ordinances in effect at the site. All parties shall comply with all applicable codes and ordinances. Such codes and ordinances shall take full and complete precedence over anything herein contained to the contrary except that where the Specifications or the Drawings call for work or materials of higher standard than those required by codes or ordinances. In such cases, the Specifications and plans shall govern.

B. *Inspection Certificates*

1. *The Contractor shall at the Notice to proceed, obtain and pay for all permits and fees required by state or local government bodies having jurisdiction. This includes, but not limited to the inspection fees, sewer tap, temporary meter fees and installation of those meters, and other fees pertaining to the construction of this project but not including utility deposit fees for permanent service. These fees will be paid by the Owner.*
2. *The Contractor shall upon completion of the work, secure and deliver to the Owner, certificates from any state or local government bodies having jurisdiction indicating that the work is in strict accordance with the applicable codes.*

END OF SECTION

SECTION 01015 SPECIAL INSPECTIONS

PART 1 – GENERAL

1.01 SUMMARY

- A. *Special inspections by regulatory agencies will be required for this Project. It is the responsibility of the Contractor to insure that all required regulatory inspections are properly scheduled whether or not specifically listed in this Section. Refer to Division C- Conditions of the Contract for requirements.*
- B. *Contractor is responsible for the filing and payment of all fees associated with issuance of building permit from WAGONER COUNTY as well as all inspection fees as required by WAGONER COUNTY (485-8123). County initially estimates the building permit costs to be around \$884.00 - Bidders are instructed to obtain actual permit and inspection costs from the authority having jurisdiction and include these amounts in their BASE BID building permit and inspections costs.*

PART 2- PRODUCTS – NOT USED

PART 3 – EXECUTION

3.01 WAGONER COUNTY INSPECTIONS

- A. *The Office of Wagoner County shall inspect the Work. Contractor shall schedule each inspection at the appropriate time and shall notify Architect of the date and time of the scheduled inspection. Inspections will be scheduled through the Code Enforcement Office at (918) 485-8123.*
- B. *Contractor shall record all deficiencies noted during the inspection and shall submit a written report to the Architect.*
- C. *The final Completion inspection shall be completed after the status of Substantial Completion is achieved and prior to Owner occupancy of the facility.*

END OF SECTION

SECTION 01040 COORDINATION

PART 1 - GENERAL

1.01 ORGANIZATION OF DOCUMENTS:

- A. *The organization of specifications into divisions, sections, etc., and the distribution of information on drawings does not control or limit the Contractor in dividing the extent of work to be performed by any trade.*

1.02 COORDINATION OF WORK:

- A. *It is not possible to show on a single drawing or specify in a single section all information pertaining to construction of any one area of the building. Compare all of the drawings and specifications and be responsible for coordinating work of various subcontractors and trades, and avoiding interferences between inter-related portions of the work.*
- B. *Report to the Architect any inconsistency, interference, error or omission discovered in Contract Documents. Do not proceed with work without first obtaining instructions or revised drawings or specifications from the Architect.*
- C. *The Owner shall designate a representative(s) to act on its behalf relative to this project, and may from time to time add to, or delete from, the list of representatives as situations may require. The Owner shall at all times keep the Contractor informed as to who is authorized to act on its behalf and in what ways.*

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01300 SUBMITTALS

PART 1 - GENERAL

1.01 SHOP DRAWINGS AND SAMPLES

- A. Promptly after execution of the Contract, the Contractor shall assemble and deliver to the Architect a complete collection of samples covering all materials where colors, textures or finish is subject to selection by the Owner. Upon receipt of such a complete collection of samples, the Architect will, with reasonable promptness, make the selections and prepare and deliver to the Contractor, a schedule covering all items subject to selection by him.

Color selections for individual EXTERIOR materials will not be made until ALL related exterior submittals are provided and ALL related color selections can be reviewed and approved by the Owner.

Color selections for individual INTERIOR materials will not be made until ALL related interior submittals are provided and all related color selections can be reviewed and approved by the Owner.

1.02 REFERENCE STANDARDS AND INDUSTRY SPECIFICATIONS

- A. Any material or operation specified by reference to published specifications or a manufacturer, a society, an association, a code, or other published standard, shall comply with requirements of the listed document, which is current. In case of a conflict between referenced documents, the one having more stringent requirements shall govern.
- B. The Contractor, if requested, shall furnish an affidavit from manufacturer certifying that materials or products delivered to the job do meet the requirements specified.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01400 REFERENCED SPECIFICATIONS AND STANDARDS

PART 1 - GENERAL

- 1.01 *Materials or operations specified by reference to published specifications of a manufacturer, trade association, American Society for Testing Materials, Underwriters' Laboratories, Inc., National Fire Protection Association or the United American National Standards Institute shall conform to the latest edition of the referenced specifications or standards.*

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01410 QUALITY CONTROL

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED:

- A. *General Quality Control.*
- B. *Workmanship.*
- C. *Manufacturer's Certificates.*
- D. *Manufacturer's Field Services.*
- E. *Testing Laboratory Services.*

1.02 RELATED REQUIREMENTS:

- A. *General Conditions: Inspection and testing required by governing authorities.*
- B. *Section 01300 - Submittals: Manufacturer's Instructions.*
- C. *Section 02050 - Compaction tests required for earthwork.*
- D. *Section 02075 - Base for paving.*
- E. *Section 03300 - Concrete: Tests required for concrete. (see concrete specifications.)*

1.03 QUALITY CONTROL, GENERAL

- A. *Maintain quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.*

1.04 WORKMANSHIP

- A. *Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.*
- B. *Perform work by persons qualified to produce workmanship of specified quality.*
- C. *Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibrations, and racking.*

1.05 MANUFACTURER'S INSTRUCTIONS

- A. Comply with instructions in full detail, including each step in sequence. Should instructions conflict with Contract Documents, request clarification from Architect before proceeding.

1.06 MANUFACTURER'S CERTIFICATES

- A. When required by individual Specifications Section, submit manufacturer's certificate, in duplicate, that products meet or exceed specified requirements.

1.07 MANUFACTURER'S FIELD SERVICES

- A. When specified in respective Specifications Sections, require supplier of manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to make appropriate recommendations.

1.08 TESTING LABORATORY SERVICES

- A. Contractor will employ and pay for services of an Independent Testing Laboratory to perform inspections, tests, and other services required by individual Specification Sections.
- B. Services will be performed in accordance with requirements of governing authorities and with specified standards.
- C. Reports will be submitted to Architect in duplicate giving observations and results of tests, indicating compliance or non-compliance with specified standards and with Contract Documents.
- D. When initial tests indicate noncompliance with the Contract Documents, subsequent re-testing occasioned by the noncompliance shall be performed by the same testing agency, and the contractor thereof will pay for costs.
- E. Contractor shall cooperate with Testing Laboratory personnel; furnish tools, samples of materials, design mix, equipment, storage and assistance as requested.
 - 1. Notify Architect and testing Laboratory 24 hours prior to expected time for operations requiring testing and services.
 - 2. Make arrangements with Testing Laboratory and pay for additional samples and tests for Contractor's convenience.

- F. Inspections and tests required by codes or ordinances, or by a plan approval authority, and which are made by a legally constituted authority, shall be the responsibility of and shall be paid for by the Contractor, unless otherwise provided in the Contract Documents.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01500 SITE PROJECT SIGN

PART 1 – GENERAL

1.01 WORK REQUIRED

- A. Contractor shall furnish and install within 14 days at the location(s) shown, maintain and remove at the completion of the job a Project Sign(s) as described herein.

PART 2 – PRODUCTS

2.01 WOOD PRODUCTS

- A. Plywood for sign(s) shall be marine MDO grade of sufficient quality and free of knots to adequately accept the painted finish. Posts shall be of cedar, wolmanized pine or redwood.

2.02 PAINT MATERIALS AND COLORS

- A. All paint shall be exterior latex enamel equal to Pittsburg Paints. Colors shall be as indicated on Details.

PART 3 - EXECUTION

3.01 PAINTING

- A. Sign shall be painted by a professional sign painter, skilled in this type of work.
- B. Sign shall receive two coats of background color all over before applying other colors.
- C. Sign shall be single faced with copy on one side only unless otherwise noted.
- D. Lettering size and style shall conform to Details. In general, the sign shall convey the following information:
 - 1. The Project Name.
 - 2. The Architect name and address.
 - 3. The Consultants names and addresses.
 - 4. The General Contactor, name and address.
 - 5. Other information as shown on the above referenced Details.

3.02 CONSTRUCTION

- A. Construct and erect project sign(s) in compliance with Detail. Sign(s) shall be removed from the site at Substantial Completion.

END OF SECTION

SECTION 01501 CONSTRUCTION FACILITIES & TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 TEMPORARY UTILITIES

A. Water

1. The Contractor may use the water available at the site. Upon completion of the contract work, the Contractor shall remove all temporary water access.

NOTE: DIRT WORK CONTRACTOR MUST OBTAIN HIS OWN WATER.

B. Electricity

1. The electrical contractor shall provide a temporary source of electrical power from existing electric service. This temporary source of power is to provide, in full compliance with local codes, adequately protected outlets for the use of all contractors on the project.

C. Job Telephone

1. Telephone service will be provided for use by all trades.

1.02 CONSTRUCTION ELEVATORS, HOISTS, SCAFFOLDING

A. Lifting and Hoisting Facilities

1. Each trade, for their work shall; provide, operate and maintain their hoisting equipment necessary to hoist and or move their work or materials at the project. Such apparatus and equipment shall meet requirements of all labor laws and other state or local laws applicable.

B. Scaffolding

1. Interior: Each trade, for their work shall provide and maintain interior scaffolding as may be required for proper execution of their work. Scaffolding shall not be built into the walls. The sub-contractor promptly upon completion of the work requiring said scaffolding shall remove scaffolding.
2. Exterior: The Contractor shall provide and maintain exterior scaffolding as may be required for proper execution of work.

1.03 SECURITY

- A. The Contractor shall be solely responsible for the safety of his work, materials, equipment, tools, etc., on the site.

1.04 SPECIAL CONTROLS

A. Water Control

1. If water is encountered in any form, it shall be the responsibility of the sub-contractor to take all measures and furnish all equipment and labor necessary to control the flow and accumulation of water as required permitting completion of his work, at no additional cost to the Owner.

B. Environmental Controls: The Contractor shall be responsible for the performance of his work in such a manner as to minimize pollution to air, water and land, and shall, within reasonable limits, control noise. Environmental protection shall be performed as the work proceeds, whenever a nuisance or a hazard occurs. Open burning of waste material is not permitted. General Contractor will provide for combustible materials to be disposed of by hauling from the site.

1.05 TRAFFIC REGULATION

A. Whenever the Contractor's operations affect public vehicular or pedestrian traffic, the sub-contractor shall be responsible for the installation and maintenance of any and all traffic control devices as are deemed necessary by the authorities having jurisdiction.

B. The Contractor shall contrive to keep temporary work from blocking access to completed work. If, however, conflict with normal traffic access occurs, he shall provide temporary bypass routing until such temporary work is completed.

C. The Contractor shall provide and maintain adequate warning signs and danger lights for the protection of the public. Danger lights shall be kept lighted each night from sundown to sunrise.

1.06 STORAGE AND PROTECTION

A. The Contractor shall properly store and protect all materials, equipment, and supplies, at his own expense, at the site and in an orderly manner.

B. Items that might be damaged by weather shall be stored under cover.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01720 PROJECT CLOSEOUT

PART 1 - GENERAL

- 1.01 All work shall be constructed in compliance with standard construction codes and the contractors shall remedy any defects due to faulty materials or workmanship, and shall do the same for any damage due to other work resulting there from, which shall appear within a period of one year from the date of final payment, or an earlier date agreed to in writing by the Owner, and in accordance with the terms of special guarantees provided in the Contract. The Owner shall give notice of observed defects with reasonable promptness.
- 1.02 In placing orders for equipment, the Contractor shall purchase it only under a written guarantee from the respective manufacturer that the equipment supplied will function satisfactorily as an integral part of the complete project in accordance with the Drawings and Specifications. Furthermore, the Contractor shall require that the manufacturer agree in writing, at the time the order for the equipment is placed, that he will be responsible for the proper functioning of the equipment in cooperation with the Owner and that whenever necessary during the installation period or tuning up period following construction the manufacturer will supply, without additional cost to the Owner, such superintendence and mechanical labor and any adjustments and additional parts and labor needed to make the equipment function satisfactorily, even if same was not shown on approved shop drawings.
- 1.03 Guarantee
- A. Upon completion of the work, the contractor shall deliver to the Owner, in duplicate, a written guarantee based on the provisions of this article property signed by the contractor and notarized.

PART 2 - FINAL INSPECTION

- A. Upon receipt of written notice that the work is substantially completed or ready for final inspection and acceptance, the Owner will promptly make such inspection, and when he finds the work acceptable under the Contract fully performed or substantially complete and work is accepted by him under the terms and conditions thereof, and the entire balance found to be due the Contractor, including the retained percentage, less a retention based on the Owner's estimate of the fair value of the claims against the Contractor and the cost of completing the incomplete or defective items of work, is due and payable. The date of substantial completion of a project or specified area of a project is the date when the construction is sufficiently complete in accordance with the contract documents as modified by any change orders agreed by the parties for use for which it was intended.

- B. The Contractor shall promptly remove from the premises all material and work condemned by the Owner as failing to meet contract requirements, whether incorporated in the work or not, and the contractor shall promptly replace and re-execute his own work in accordance with the Contract and without expense to the Owner and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement.
- C. At the completion of the project, adjustment keys and wrenches for door closers and panic hardware, keys for electrical switches, panels, etc., shall be accounted for and turned over to the Owner.
- D. The Owner reserves the exclusive right to modify or void any and all formalities stated herein, as conditions may require throughout the progress of this project, in an effort to speed completion of this project.

END OF SECTION

SECTION 01800 ASBESTOS PROHIBITION

PART 1 – GENERAL

1.01 COMPLIANCE WITH APPLICABLE LAW

- A. The Contractor shall fully comply with the requirements of Public Law 99-519 the Asbestos Hazard Emergency Response Act of 1986 and the United States Environmental Protection Agency Regulations promulgated October 30, 1987, Federal Register Volume 52, No. 210.
- B. The Contractor shall enforce compliance with this law and these regulations to all Subcontractors, Sub-subcontractors and Material Suppliers on this project. Each subcontract, sub-subcontract and purchase order applicable to this project shall contain Subparagraph A directly above.

1.02 INTENT

- A. It is the specific intent of this Section of the Specification to prohibit the use or installation of any product, material, component of any product or material assembled from two or more separate products or materials, or any other item into the Work which contains more than one (1) percent asbestos by weight, and, thus, would be classified by law as an Asbestos Containing Building Material.

1.03 STATEMENT

- A. The Contractor shall execute, and shall cause each and every Subcontractor, Sub-subcontractor and Material Supplier on this project to execute the Federal General Contractors Certification of Compliance with Asbestos Restrictions as applicable.
- B. The Contractor shall deliver the required certifications as defined above to the Owner before final payment will be made.
- C. Copies of the applicable certifications are attached to this Section.

FEDERAL ASBESTOS "STATEMENT" ALTERNATIVE TO INSPECTION

DATE:

TO:

RE:

Sirs,

As the Architect of Record for the above referenced project and having prepared the Contract Documents, Construction Drawings and Specifications, PROPERTY ARTS INC. issued a Certificate of Substantial Completion on _____.

In the performance of our professional services for the preparation of Contract Documents, Construction Drawings and Specifications for the above referenced project, no materials or products were knowingly specified, or called for, in any Construction Document that contained more than one percent (1%) asbestos by weight, within the meaning of Public Law 99-519 together with the United States Environmental Protection Agency Regulations, Section 763.83 promulgated October 30, 1987, Federal Register, Volume 52, No. 210 defining Asbestos Containing Building Material (ACBM).

We are enclosing a Federal General Contractors Certificate of Compliance with Asbestos Restrictions from _____ which completes the requirements for the Exclusion as allowed in Section 763.99 (a) (7) of the United States Environmental Protection Agency Regulations, promulgated October 30, 1987, Federal Register, Volume 52, No. 210.

PROPERTY ARTS INC.

By: _____

Title: _____

Date: _____

Attest and Seal: _____

Subscribed and Sworn to Before Me This _____ day of _____, 201__.

Notary Public My commission expires _____.

FEDERAL SUBCONTRACTORS OR MATERIAL SUPPLIERS CERTIFICATION OF COMPLIANCE WITH ASBESTOS RESTRICTIONS

DATE:

TO: _____ (NAME OF GENERAL CONTRACTOR)

RE:

Sirs,

As a Subcontractor or Material Supplier for the above referenced project, we do certify and attest that no building materials or products were knowingly incorporated or installed in this project that contained more than one percent (1%) asbestos by weight, within the meaning of Public Law 99-519 together with the United States Environmental Protection Agency Regulations, Section 763.83 promulgated October 30, 1987, Federal Register, Volume 52, No. 210 defining Asbestos Containing Building Material (ACBM).

We also certify and attest that this Certification of Compliance with Asbestos Restrictions was included in each and every Sub-subcontractor and purchase order connected with the performance of Work for this Project, with a copy signed by the Sub-subcontractor or Material Supplier remaining in our Project File for inspection.

Respectfully,

(NAME OF SUBCONTRACTOR)

(ADDRESS OF SUBCONTRACTOR)

BY: _____
TITLE

DATE: _____

Attest and Seal: _____

Subscribed and Sworn to Before Me This ____ day of _____, 201__.

Notary Public My commission expires _____

FEDERAL GENERAL CONTRACTORS CERTIFICATION OF COMPLIANCE WITH ASBESTOS RESTRICTIONS

DATE:

TO:

RE:

Sirs,

As a General Contractor for the above referenced project, we do certify and attest that no building materials or products were knowingly incorporated or installed in this project that contained more than one percent (1%) asbestos by weight, within the meaning of Public Law 99-519 together with the United States Environmental Protection Agency Regulations, Section 763.83 promulgated October 30, 1987, Federal Register, Volume 52, No. 210 defining Asbestos Containing Building Material (ACBM).

We also certify and attest that this Certification of Compliance with Asbestos Restrictions was included in each and every subcontractor and purchase order connected with the performance of Work for this Project, with a copy signed by the subcontractor or Material Supplier remaining in our Project File for inspection.

Respectfully,

_____ (NAME OF CONTRACTOR)

_____ (ADDRESS OF CONTRACTOR)

BY: _____
TITLE

DATE: _____

Attest and Seal: _____

Subscribed and Sworn to Before Me This _____ day of _____, 201__.

_____ My commission expires _____
Notary Public

SECTION 01810 LEAD CONTAMINATION CONTROL ACT

PART 1 – GENERAL

1.01 COMPLIANCE WITH APPLICABLE LAW AND REGULATION

- A. Fully comply with the requirements of the Lead Contamination Control Act, and other applicable regulations and laws controlling the use of lead in buildings.
- B. The Contractor shall enforce compliance with applicable laws and regulations to all Subcontractors, Sub-contractors and Material Suppliers on this Project. Each subcontract, sub-subcontract and purchase order applicable to this Project shall contain Subparagraph A directly above.

1.02 INTENT

- A. It is the specific intent of this Section of the Specification to require the use of lead-free solder for all water distribution systems; to include the internal plumbing of all factory assembled products such as water heaters, drinking fountains, electric water coolers and faucets.

END OF SECTION

SECTION 01900 CLEAN-UP & DISPOSAL

PART 1 - GENERAL

1.01 CLEAN UP

- A. Each sub-contractor shall at all time keep the work and premises free from accumulation of waste, material, or rubbish caused by his employees or work. At the completion of the work, each sub-contractor shall remove all rubbish from his operations about the site (place in dumpster provided) and all his tools, surplus materials, etc.

- B. Final Clean Up: Completion - The entire work and the entire premises shall be in first-class clean condition upon completion before being accepted by the Owner.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

DIVISION 2 SITE WORK

SECTION 02020 DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish labor, materials and equipment necessary for all wrecking, demolition and removal of materials, debris and structures as shown on the Drawings and specified herein.
- B. Furnish labor, materials and equipment necessary and required to protect existing work not to be demolished, occupants, vehicles, the public, adjacent property, utilities or any other item against damage.

1.02 Work Staging

- A. Demolition inside the existing building facility shall not begin until all materials required for renovation work are immediately available ("on-hand"). Renovation and/or reconstruction work shall begin as soon as possible after demolition work has been undertaken and proceed continuously until completion.

1.03 Job Conditions

- A. Removal of Debris: All debris resulting from demolition operations shall be promptly removed from the job site and deposited at an offsite location secured by the Contractor or the Demolition Subcontractor. Debris shall not be stored on the project site.
- B. Protection of Persons and Property: Contractor or Demolition Subcontractor shall take all measures necessary and required for the protection of property which is to remain undisturbed, adjacent property, utilities, equipment, persons, occupants or any other item or person against damage or injury.
- C. Electrical Service: All electrical service into, through, or out of structures to be demolished shall be rerouted or disconnected before commencing demolition. Insure that absolutely no "live" electrical wiring is located in areas to be demolished before beginning demolition operations.

D. Utility Work Notification Requirements:

1. The Contractor shall give the Owner a minimum of forty-eight (48) hours notice and obtain approval before starting any work relating to existing utilities that will temporarily disrupt or discontinue service to the existing building.

E. Salvage Material:

1. Owners Right to Salvage: Owner retains full rights to salvage any and all materials in structures to be demolished. Prior to the start of any demolition work, Contractor shall give notice to the Owner and verify with the Owner that all materials and equipment to be salvaged have been removed.
2. Contractor's Right to Salvage: After the Owner has completed his salvage, all materials and equipment in buildings to be demolished shall become property of the Contractor, and shall be promptly removed from the project site.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 Demolition

- A. Demolition operations shall be conducted in the safest possible manner in the best practices of the trade and all applicable codes, laws ordinances and lawful orders of all regulatory agencies shall be dutifully followed.
- B. Take all measures adequate and necessary to protect structures to be demolished from premature collapse.
- C. Take all measures adequate and necessary to protect structures to remain. Provide temporary bracing as required. Repair any and all damages to structures or Work or items to remain without additional cost to the Owner.
- D. Take all measures adequate and necessary to protect all persons, vehicles, property, utilities or other items from damage or harm during demolition operations.
- E. Footing, foundations and other ancillary subsurface structures of structures to be demolished shall also be removed.
- F. Disconnect, cap, remove or otherwise incapacitate utilities serving structures to be demolished as shown on Drawings or as Directed by Architect. No "open" utilities or "live" electrical service shall be left in place.

3.02 Clean-Up

- A. All materials and debris resulting from demolition operations shall be removed from site and promptly and properly disposed of.
- B. Demolished materials shall NOT be stored on site.
- C. Absolutely no burning of materials or debris shall be permitted on this job.
- D. Take adequate and sufficient measures to prevent wind from scattering debris over other areas or adjacent property. Promptly clean-up all windblown debris

END OF SECTION

SECTION 02050 EXCAVATION, BACKFILLING, AND COMPACTION

PART 1 – GENERAL

1.01 SUMMARY

- A. *Section includes: Site work, rough grading and finish grading. Contractor will provide as part of this contract the building excavation, finish grading, and utility trenching.*
- B. *Provide labor and materials to complete the operation as outlined on drawings.*

1.02 PROTECTION

- A. *Keep trenches and excavated areas free from water by pumping or draining. Grade to drain surface water away from excavations.*
- B. *Notify Architect of running water or springs found in excavations and provide temporary drainage.*

1.03 JOB CONDITIONS

- A. *Seasonal Limits: No fill material shall be placed, spread or rolled while frozen, thawing or during unfavorable weather conditions.*

1.04 TESTING

- A. *Testing shall be the responsibility of the Contractor. A commercial testing laboratory, approved by the Architect, shall perform tests. Field in-place density shall be determined in accordance with the most recent site standards of ASTM, ASTM Tentative Specifications, or AASHTO 238, which are current on the Bid Date. Within 24 hours of conclusion of physical test, copies of test results shall be furnished to the Architect.*
- B. *It is the responsibility of the Contractor to notify the Architect and testing laboratory when lifts will be ready for testing. Work on subsequent layers of fill material shall not be started until testing on each layer is completed and notice is given to proceed. Any unapproved fill material will be removed. When test results are not as specified, the material shall be removed, replaced and recompact to meet specification requirement at no additional expense to the Owner. Test on recompact areas shall be performed to determine conformance with specification requirements.*

- C. A professional engineer who holds a current registration in the state in which the building project is to be constructed shall certify inspections and test results. These certifications shall state that the tests and observations were performed by or under the direct supervision of the engineer and that the results are representative of the materials or conditions being certified by the tests.
- D. Frequency of Testing:
1. In-place Moisture Density Tests: One per 2,000 square feet per six-inch maximum lift of compacted material or fraction thereof, but not less than three tests per lift.
 2. Compaction Test Over Native Sub grade and Fill Material: Make at least one density test of sub grade for every 2,000 square feet of building slab, but no case less than three tests per lift.
 3. Compaction Test Over Backfill Layers: Make at least one density test in each compacted backfill lift for every 2,500 square feet of surface area overlayed by building slab but in no case less than three tests per lift.

1.05 BLASTING

- A. Blasting will not be permitted on this Project

PART 2 - PRODUCTS

2.01 FILL AND BACKFILL MATERIALS

- A. Structural Fill: All structural fill placed within the building pad should consist of a non plastic to lower plasticity soil with a maximum Plastic Index (PI) of 22 percent, as determined by the Atterberg limits test ASTM D 4318, wet preparation procedure.
- B. Imported Fill: NO BORROW MATERIAL WILL BE AVAILABLE ON SITE. Imported fill shall meet requirements of paragraph above and must be tested and approved prior to use on this project.

PART 3 - EXECUTION

3.01 UTILITIES

- A. Report encounter of active utilities, not indicated by documents, to Architect. Disposition shall be as directed, with adjustment to contract amount. Extra payment will not be authorized for work that could have been foreseen by a careful examination of site.
- B. Protect active utilities pending instruction for disposition.

3.02 FOUNDATION EXCAVATION

- A. Excavate for footing and foundations to depth indicated or as necessary to obtain firm, suitable bearing.

3.03 TRENCH EXCAVATION AND BACKFILL

- A. Trench excavation and backfill to be performed by Mechanical and Electrical Contractor as required, both inside and outside the building, for all piping, utility services, foundations and equipment under respective contract. Trenches and other excavations shall be run to accurate grades and all disturbed earth to be removed. Sand backfill to a depth of 6" above piping shall be used outside building. Remaining backfill to be firmly tamped and puddled in place, in 6" layers, with earth free of rubble and rock, same as specified for backfill in General Work Specifications.
- B. Contractor shall install an "Earth Plug" to be compacted structural fill material having a plasticity index range of 6 to 15 specifically to prevent ground water seepage under building through trenches.

3.04 FINISH GRADING

- A. Reuse brown silt previously stockpiled and/or bring in topsoil to complete finish grading outside building and paving areas, a minimum of 4" of topsoil over controlled fill. Additional topsoil may have to be imported to complete this operation.
- B. Fill topsoil to grade of new concrete paving, sidewalks, and along building 4" below finish floor ready for Bermuda sod to limits disturb by the new construction work by the Contractor and to limits of sod shown on drawings.

3.05 CLEAN UP

- A. Keep excavated areas free from debris and stored materials that could damage surface or interfere with progress of work.
- B. Remove excess materials, which will not be reused to the area designated to prevent large accumulations.
- C. Store materials for reuse neatly in designated location.

END OF SECTION

SECTION 02075 BASE FOR PAVING

PART I - GENERAL

1.01 SUMMARY

- A. Furnish all labor, materials and equipment necessary and required to construct the base for paving.

1.02 Referenced Specification

- A. The Oklahoma Department of Transportation, Standard Specification for Highway Construction, complete with all Supplements, edition in effect on the Bid Date, is incorporated into the Contract Documents by reference and all Work shall be completed in full compliance with the referenced specification.

1.03 Testing

- A. Testing shall be the responsibility of the Contractor. A commercial testing laboratory, approved by the Architect, shall perform test. Field in-place density shall be determined in accordance with ASSHO T-238, latest edition as of Bid Date. Within 24 hours of conclusion of physical test, copies of test results shall be furnished to the Architect.
- B. It is the responsibility of the Contractor to notify the Architect and testing laboratory when lifts will be ready for testing. Work on subsequent layers of fill material will not be started until testing on each layer is completed and authorization is given to proceed. Any unapproved fill material will be removed. When test results are not as specified, the material shall be removed, replaced and recompact to meet specification requirement at no additional expense to the Owner. Test on recompact areas shall be performed to determine conformance with specification requirements.
- C. A professional engineer who holds a current registration in the state in which the building project is to be constructed shall certify inspections and test results. These certifications shall state that the tests and observations were performed by or under the direct supervision of the engineer and that the results are representative of the materials or conditions being certified by the tests.
- D. Frequency of Testing:
 - 1. In-Place Moisture Density Tests: One per 1,000 square yards per six-inch maximum lift of compacted material or fraction thereof, but not less than three tests per lift.

2. *Compaction Test Over fill Layers: Make at least one density test in each compacted backfill lift for every 1,000 square yards of paved area in each lift, but in no case less than three tests per lift.*

1.04 Submittals

- A. *Submit certified test reports on the proposed fill material from an approved testing laboratory showing, at a minimum, soil classification, liquid limit and plasticity index.*

PART 2 - PRODUCTS

2.01 Select Borrow

- A. *Select Borrow is not available on-site and must be procured from an off-site location secured by the Contractor.*
- B. *Select Borrow shall fully comply with the requirements of Section 02050.*

PART 3 - EXECUTION

3.01 Fill

- A. *Lay select borrow in lifts not to exceed 6 inches in depth. Material shall be compacted to 95 percent of the materials Standard Proctor Density. Width and thickness of select borrow shall be as shown on the Drawings.*

3.02 Tolerances

- A. *The Contractor shall use equipment and methods to enable the following tolerances to be achieved in the base:*
- B. *Smoothness: ½" in 10 feet, tested with a 10 foot straightedge.*
- C. *Thickness: Variance in thickness from specified shall not exceed one inch and average variance shall not be in excess of ½ inch.*
- D. *All variations from the specified tolerances shall be corrected before beginning paving operations.*

3.03 Protection of Base

- A. During construction, base shall be kept shaped to proper profile and drained. Should water damage occurs, such damage shall be repaired before the application of paving. The finished base shall not be disturbed by traffic or other operations of the Contractor and the base shall not be used as a construction roadway. Do not store or stockpile materials on the finished base. Pavement shall not be laid until the base has been checked for tolerance and pavement shall not be placed on muddy or frozen base.

END OF SECTION

SECTION 02281 TERMITE CONTROL

PART 1 - GENERAL

1.01 SUMMARY

- A. *Section includes: The pre-treatment of the under slab fill before placement of concrete and the treatment under the entire existing building concrete slab.*
- B. *Furnish labor and materials to complete the termite protection of the structure.*

1.02 REFERENCES

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

1.03 QUALITY ASSURANCE

- A. *Applicator: Company specializing in soil treatment for termite control with 3 years experience.*
- B. *Material Packaging: Manufacturer's label and seals identifying content.*

1.04 REGULATORY REQUIREMENTS

- A. *Conform to State of Oklahoma requirements for application, licensing and authority to use toxicant chemicals.*

1.05 WARRANTY

- A. *Provide five-year warranty for material and installation to cover against invasion or propagation of subterranean termites, repairs to building or building contents so caused.*
- B. *Inspect work annually and report in writing to Owner. Owner reserves right to renew warranty.*

PART 2 - PRODUCTS

2.01 MATERIALS

- A. *Toxicant Chemical: Conforming to the chemicals approved by the EPA for use to control termites. Contact State Department of Agriculture for approved termite control chemicals.*

- B. Dilute toxicant chemical to manufacturer's instructions.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify the soil surfaces are unfrozen, sufficiently dry to absorb toxicant and ready for treatment.
- B. Beginning of application means acceptance of soil conditions.

3.02 APPLICATION

- A. Apply toxicant within 12 hours before installation of vapor barrier under slab-on-grade.
- B. Apply at manufacturer's recommended rates.

3.03 CLEAN UP

- A. At completion, remove all excess materials and debris resultant from operations of work for this section and place in dumpster provided.

END OF SECTION

SECTION 02510 CONCRETE WALKS AND MISC. CONCRETE SLABS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes: The placement of concrete for sidewalks and concrete slabs outside the building.
- B. Furnish complete labor, materials and equipment for concrete walks, and exterior concrete pads or slabs.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Refer to Division 3, "Concrete" for specifications for cement, aggregates, reinforcing steel, proportioning, testing, depositing, protecting and curing, patching and concrete specialties, except as specified herein.
- B. Concrete for all exterior sidewalks and paved areas shall be proportioned to produce strength of 3,500 PSI at 28 days and 5%, plus or minus 1% entrained air. Thickness of concrete slabs, sidewalks as shown except in no case less than 4" maximum, aggregate size 3/4". Maximum slump 4".

PART 3 - EXECUTION

3.01 PREPARATION

- A. Walks: Form edges with straight wood forms. Set grade-using instrument. Line accurately without variations.
- B. Set form for miscellaneous concrete pads next to buildings with minimum slope of 1/8" per foot.

3.02 INSTALLATION

- A. Expansion joint: Install 1/2" pre-molded expansion joint material specified full depth of walks, at intersection of walks, building, and vertical surfaces.
- B. Control Joints: Tool joints or saw cut joints in walks as shown on drawings (4'-0" o.c.) with jointing tool to depth of 1" or 1/4 the total depth of the concrete.

- C. *Top Surfaces: Crowned or sloped at rate of 1/8" per foot minimum to drain water. Walks holding puddles of water shall be removed and reinstalled.*
- D. *Surfaces: Rough screed concrete to form crown if required. Use steel trowel and edge tool to give slight radius. Give broom finish to make uniform non-slip wearing surface. Avoid excessive roughness.*

3.03 CLEAN UP

- A. *At completion of the work, remove forms from site and clean up any remaining debris from this operation.*
- B. *Place debris in dumpster provided.*

END OF SECTION

SECTION 02520 ASPHALTIC CONCRETE PAVING

PART 1 – GENERAL

1.01 SUMMARY

- A. *Section Includes: Asphalt concrete paving surface for the roadway.*
- B. *Provided labor and materials to complete the operation as outlined on drawings.*
- C. *The Work includes the preparing and placing of Hot Mix-Hot Laid Asphalt concrete complete, including:*
 - 1. *Asphalt Base Course*
 - 2. *Asphalt Prime Coat*
 - 3. *Asphalt Tack Coat*
 - 4. *Asphalt-Aggregate, Surface course.*

1.02 QUALITY ASSURANCE

- A. *Materials and methods of construction shall comply with the following standards:*
 - 1. *American Society for Testing and Materials (ASTM).*
 - 2. *American Association of State Highway and Transportation Officials (AASHTO).*
 - 3. *Asphalt Institute (AI).*
 - 4. *National Crushed Stone Association (NCSA).*
 - 5. *Standard Specifications for Highway Construction by Oklahoma Department of Highways.*
- B. *Provide material furnished by a bulk asphaltic concrete producer regularly engaged in the production of hot-mix, hot-laid asphaltic concrete paving materials.*

1.03 PROJECT CONDITIONS

- A. *Weather limitations:*
 - 1. *Do not install surface course materials over wet or frozen sub-grade surfaces.*
 - 2. *Install asphalt surface materials only when base is dry air temperature is 40°F or above.*
- B. *Grade control: Establish and maintain the required lines and grades, including crown, inverted crown and cross slopes, for each course during paving operations.*
- C. *Protect adjacent work from damage, soiling, and staining during paving operations.*

PART 2 – PRODUCTS

2.01 MATERIALS

- A. *Weed killer: Weed killer shall be of a major manufacturer and at less 25% sodium chlorate and shall be "Poly-Bor-Chlorate".*
- B. *Standard Duty Pavement Area: Use 4.0" AC Surface type "C" over 6" crushed limestone base (ODOT type A) with a separator fabric, and 8" thick minimum recompacted sub-grade for the parking lot area and drives as shown on drawings. Refer to Standard Specifications for Highways by Oklahoma Department of Highways Section 703.01 and Section 708.*
- C. *Overlay Pavement Area: Use 2.0" AC Surface type "C" with a separator fabric (petromat) over existing asphalt paving as shown on drawings. Refer to Standard Specifications for Highways by Oklahoma Department of Highways Section 703.01 and Section 708.*
- D. *Prime coat: Use prime coat @ 0.25 gals per sq. yard, prior to dilution.*

PART 3 – EXECUTION

3.01 INSPECTION

- A. *Examine sub-grades and installation conditions. Do not start asphaltic concrete paving work until unsatisfactory conditions are corrected.*

3.02 PERPARATION

- A. *Proof roll the sub-grade and do all necessary rolling and compacting to obtain firm, even sub-grade surface. Fill and consolidate all depressed areas.*
- B. *Poison soil and base gravel under asphalt prior to placing asphalt. Use products approved of this purpose and approved by the State of Oklahoma.*

3.03 EQUIPMENT

- A. *Paving equipment: Spreading, self-propelled asphalt paving machines capable of maintaining line, grade, and thickness shown.*
- B. *Compacting equipment: Self-propelled rollers, minimum 5-ton weight.*

3.04 Base Course

- A. The asphaltic sand base course shall be uniformly spread to the amount required for a compacted minimum section as shown on Drawings in compliance with Reference Specification.

3.05 Prime Coat

- A. Apply a prime coat at the rate of a minimum of 0.15 and a maximum of 0.40 gallon per square yard of surfaced area to completely seal the base course in compliance with Reference Specification.

3.06 TACK COAT

- A. Apply a tack coat to all vertical surfaces of existing paving, curbs, gutters, and construction joints against which bituminous paving is to be placed in compliance with Reference Specifications. If interruption occurs during paving operations, clean all surfaces and reapply tack coat prior to resuming paving operations.

3.07 SURFACE COURSE

- A. The asphalt-aggregate surface course shall be spread over the primed base course to provide a uniform minimum compacted surface course of thickness as shown on Drawings in compliance with Reference Specification. All dirt, packed soil, and debris shall be removed before applying the final course.

3.08 COMPACTING

- A. Compact to within 95% of that obtained by a testing laboratory for an identical mix by means of an initial, intermediate and a final rolling in compliance with Reference Specification. Rolling shall start at the lowest edge and work toward the highest portion.

3.09 FINISH SURFACE

- A. The completed surface shall be thoroughly compacted, smooth, and true to grade and cross-section. Surface shall be free of humps or depressions and shall be contoured to allow proper drainage and eliminate ponding. Maintain surface tolerance to within 1/4" measured in any direction with 10'-0" straight edge.

3.10 INSTALLATION

- A. Gravel base to be installed over compacted sub-grade. Compact gravel base before installing asphalt.

- B. Comply with Asphalt Institute (AI) MS-3 Asphalt Plant Manual for material storage, control and mixing, and for plant equipment and operation.
- C. Transport asphaltic concrete mixtures from the mixing plant to the project site in trucks with tight, clean compartments.
- D. Pavement butt type joints: Install prime or tack coat as applicable.
- E. Install asphalt surface materials in single course, total compacted depth as scheduled.
- F. Place, spread, and strike off the asphalt concrete mixture on a properly prepared and conditioned surface. Inaccessible and small areas may be placed by hand.
- G. Place materials in strips not less than 10'-0" wide. After the first strip has been placed and rolled, place all succeeding strips and extend rolling to overlap previous strips.
- H. Begin rolling operations when the asphalt concrete mixture will bear the weight of the roller without excessive displacement.
- I. Perform breakdown, second and finish rolling until the asphalt concrete mixture has been compacted to the required surface density and smoothness. Continue rolling until all roller marks are eliminated. Provide a smooth compacted surface true to thickness and elevations required.

3.11 CLEANING

- A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, debris and equipment. Repair damage resulting from paving operations.

3.12 PROTECTION

- A. After final rolling, the paving shall be allowed to set a minimum of 12 hours before allowing vehicular traffic. Erect sufficient barriers to prevent traffic from utilizing pavement during this time period.

3.13 VERIFICATION

- A. Furnish a signed statement to Owner supported by weight tickets containing following data:
 - 1. Total Paved Area
 - 2. Calculations showing the minimum amount of each material required
 - 3. Amount of each material incorporated into the Work

The Owner may elect to core the completed paving to verify compliance with Drawings and Specifications. Coring shall be performed at locations selected by the Owner or his representative. The Contractor shall repair, restore or replace as directed without additional charge any portion of the paving proven in noncompliance with the Drawings and Specifications or showing creeping, cracking, raveling, softening, or other defects. The Contractor will be responsible for the costs of coring, testing and filing on all tests showing noncompliance

END OF SECTION

SECTION 02529 PAVEMENT MARKING

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all materials, labor, equipment and incidentals necessary for the complete installation of all pavement marking.
- B. Requirements of the General Provisions apply to all work under this section.
- C. Throughout the specifications, types of materials maybe specified by manufacturer's name and catalogue number in order to establish standards of quality and performance and not for the purpose of limiting competition. Alternate methods and/or materials may be submitted to the Architect for consideration. Those judged to be equal to that specified would receive written approval.

1.02 SUBMITTALS

- A. Submit manufacturer's literature fully describing the paint to be used.

PART 2 - PRODUCTS

2.01 TRAFFIC CONTROLS

- A. Suitable warning signs shall be placed near the beginning of the work-site and well ahead of the work-site for alerting approaching traffic from both directions. Erect temporary traffic barriers of the "Saw Horse" type made of two-inch thick nominal wood material before beginning striping operations. Barriers shall remain in place a minimum of 48 hours after pavement marking is complete. Contractor is responsible for maintaining the striped area totally traffic free until the paint is completely dry. Remove temporary traffic barriers from the site after drying is complete.

2.02 EQUIPMENT

- A. Machines, tools, and equipment used in performance of the Work shall be approved and maintained in satisfactory operating condition. Hand-operated machines of a type commonly used for application of paint to pavement surfaces shall be acceptable for marking small street and parking areas.

2.03 PAINT

- A. Paint shall be sealed containers that plainly show the designated name, formula or specification number, batch number, color, date of manufacture, manufacturer's name, formulation number and directions, all of which shall be plainly legible at time of use. The paint shall be homogeneous, easily stirred to smoother consistency, and shall show no hard settlement or other objectionable characteristics during a storage period of six months.
- B. Paints for pavement marking shall conform to Federal Specification TT-P-115D, color shall be "Yellow" for all standard markings and "Safety Blue" for all handicapped markings and/or symbols.
 - 1. Traffic Marking Paint #442XX, as manufactured by Devoe Paint.
 - 2. Pro-Mar Traffic Marking Paint, as manufactured by Sherwin Williams.

PART 3 - EXECUTION

3.01 SURFACE PREPARATION

- A. New pavement surfaces shall be allowed to cure for a period of not less than 30 days before application of painting materials. All surfaces to be painted shall be thoroughly cleaned before application of the paint. Dust, dirt, and other granular surface deposits shall be removed by sweeping, blowing with compressed air, rinsing with water or a combination of these methods as required. Rubber deposits, surface grime, existing paint markings, and other coatings adhering to the pavement shall be completely removed with scrapers, wire brushes, sandblasting, approved chemicals, or mechanical abrasion as directed, where oil or grease are present on old pavements to be marked, affected area shall be scrubbed with several applications of trisodium phosphate solution or other approved detergent or degreaser, and rinsed thoroughly after each application. After cleaning, oil-soaked areas shall be sealed with cut shellac to prevent bleeding through the new paint.

3.02 RATE OF APPLICATION

- A. Paint shall applied evenly to the pavement surface to be coated at a rate of 105, plus or minus five, square feet per gallon.

3.03 APPLICATION

- A. Paint shall be applied to clean dry surfaces, and unless otherwise approved, only when air and pavement temperatures are above 40 degrees Fahrenheit and less than 95 degrees Fahrenheit. Paint temperature shall be maintained within these same limits. Paint shall be applied pneumatically with approved equipment at rate of coverage specified herein. The Contractor shall provide guidelines and templates as necessary to control paint application. Special precautions shall be taken in marking numbers, letters, and symbols. All edges of markings shall be sharply outlined. The maximum drying time requirements of the paint specifications will be strictly enforced, to prevent undue softening of bitumen, and pickup, displacement or discoloration by tires of traffic. If there is a deficiency in drying of the markings, painting operations shall be discontinued until cause of the slow drying is determined and corrected.

END OF SECTION

SECTION 02950 LANDSCAPE BERMUDA GRASS SOD

PART 1 - GENERAL

1.01 SUMMARY

- A. *Section includes: The section includes Bermuda sod.*

1.02 QUALITY ASSURANCE

- A. *Applicator: Company specializing in landscape installation with 3 years experience.*

PART 2 - PRODUCTS

2.01 MATERIALS

- A. *Bermuda Grass Sod: Sod shall be U3 Bermuda grass sod cut in 30"/42" wide, and rolled with net.*
- B. *Fertilizer: Use 10/20/10 fertilizer*

PART 3 - EXECUTION

3.01 FINISH GRADING

- A. *Complete all finish grading of topsoil ready to accept sod and landscape plants.*

3.02 INSTALLATION

- A. *Prior to laying the Bermuda grass sod fertilize the area with 10/20/10 fertilizer at the rate of 50# per 3,000 sq. ft., roll out sod and water to a depth of 2" before rolling with 100 lb. Roller.*

3.03 CLEAN UP

- A. *At completion, remove all excess materials and debris resultant from operations of work for this section and place in dumpster provided.*

END OF SECTION

DIVISION 3 CONCRETE

SECTION 03200 CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 SUMMARY

- A. *Section includes: Fabrication and placement of reinforcement for cast-in-place concrete, reinforcing steel bars, post-tension cables if used, welded wire fabric, ties and supports.*

1.02 REFERENCE STANDARDS

- A. *The following codes and manual form a part of this specification.*
 - 1. *Building Code Requirements For Reinforced Concrete (ACI 318-83).*
 - 2. *Details and Detailing of Concrete Reinforcement (ACI 315-80).*

PART 2 - PRODUCTS

2.01 MATERIALS

- A. *Reinforcing steel: Domestic manufacture, rolled from new billet stock. Stirrups and ties ASTM A-615, Grade 40, all other ASTM specification A-615, Grade 60, unless noted.*
- B. *Welded wire fabric: Steel reinforcing 6x6 10/10 W.W.M., ASTM-185, for sidewalks.*
- C. *Post-tension Cables: See drawings if used.*
- D. *Reinforcement accessory materials:*
 - 1. *Tie Wire, Minimum 16 gauge annealed type.*
 - 2. *Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during installation and placement of concrete, including load bearing pad on bottom to prevent vapor barrier puncture.*

PART 3 - EXECUTION

3.01 FABRICATION AND PLACING

- A. *Reinforcing Bar and Fabric:*
 - 1. *Reinforcing steel shall be cut, bent cold to dimensions and lengths required to comply with details and intent of design arrangement.*

2. Necessary splices, not shown on Drawings, shall be lapped 36 diameters. Splices in adjacent bars shall be staggered. Adjacent sheets of wire fabric shall be lapped at least 6" and securely wired. Hooks in accordance with ACI 318-77.
3. Clearances: Reinforcing in slabs on grade, 2" from top of slab unless otherwise noted.
4. Reinforcing shall be free from rust, scale or other coatings that will destroy or reduce bond and shall be accurately placed and adequately secured in position.

END OF SECTION

SECTION 03300 CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

- A. *Section Includes: The extent of cast-in-place concrete for concrete slabs, floor slabs, and footings as shown on Drawings.*

1.02 REFERENCES

- A. *ACI 301 - Specifications for Structural Concrete for Buildings.*
- B. *CRSI - Manual of Practice.*

1.03 TESTING

- A. *Testing and analysis of concrete will be performed under provisions of this section. Notify testing laboratory 24 hours prior to proposed concrete pour.*
- B. *Testing firm will take cylinders and perform slump and air entrainment test in accordance with ACI 301.*
- C. *Three concrete test cylinders will be taken for every 100 or less cu. yds. of each class of concrete placed each day.*
- D. *One slump test will be taken for each set of test cylinders taken.*
- E. *For air-entrained concrete one air content test will be made when slump test is taken.*

1.04 ENVIRONMENTAL REQUIREMENTS

- A. *Cold Weather: Perform work in accordance with ACI 306.*
 - 1. *Comply with the following for minimum temperature of concrete delivered to job site:*
 - a. *Air temperature 30 to 45 degrees F: Concrete temperature 55-90 degrees F.*
- B. *Combine water heated to above 100 degrees F with aggregate before cement is added. Do not add cement to water or aggregates having temperatures greater than 100 degrees F.*

C. When outdoor temperature is less than 40 degrees F, maintain temperature of concrete at not less than 50 degrees F for required curing time.

1. Make arrangements before placement to maintain required temperature without damage from excessive heat.

D. Hot Weather: Perform work in accordance with ACI 305.

1. Do not deliver concrete to job site above 90 degrees F. Cool ingredients before mixing to prevent concrete temperature in excess of 95 degrees F.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Form Work: Engineer forms, shores, bracing, and other temporary supports to support loads imposed during construction.

1. Plywood: Sound, undamaged sheet with straight edges.
2. Lumber: Construction grade.
3. Steel: Minimum 16 gauge sheet, well matched, tight-fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.
4. Form Ties: Removable or snap-off metal, fixed or adjustable length as applicable, with cone ends.

B. Concrete: 3,000 p.s.i. strength.

1. Cement: ASTM C150, normal - type 1.
2. Accelerating Admixtures: ASTM C494: Type C. Use in cold weather only when approved by the Owner. The use of admixtures will not relax cold weather placement requirements.
3. Set-Retarding Admixtures: ASTM C494, Type B. Use during hot weather only when approved by the Owner.
4. Air Entraining Admixtures: ASTM C260. Add to concrete mix for concrete work subject to freeze-thaw cycling.
5. Water Reducing Admixtures: ASTM C494, Type A. Use at interior slabs on grade.
6. Fly Ash: May NOT be used.

C. Perimeter Insulation: 1" perimeter insulation location as shown on drawings.

D. Curing Compound: Liquid Membrane Curing and Sealing Compound, ASTM C-309, Type I, Class A and B. The compound shall be a clear, acrylate type "Comspec #1-21% Solids". When finish schedule calls for "sealed concrete" as the final finish on floors, clean floors and seal with one additional coat of "Comspec #1-21% Solids" prior to final completion.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that anchors, seats, plates, reinforcement, and other items to be cast into concrete are accurately placed, held securely, and will not cause hardship in placing concrete.

3.02 PREPARATION

- A. Install 1" perimeter insulation on stemwall and on sand fill. Install specified vapor retarder under interior slabs on fill. Lap joints minimum 6" and seal. Do not disturb or damage vapor retarder while placing concrete. Repair damaged vapor retarder.

3.03 PLACING REINFORCEMENT

- A. Perform concrete reinforcement work in accordance with CRSI Manual of Standard Practice, and Documents 63 and 65.
 - 1. Accurately place and secure saddle ties at every other intersection with 16 gauge black annealed wire: held rigidly in place with metal chairs or spacers during placing of concrete.
 - 2. Hold bars in beams and slabs to exact location during concrete placement. Use spacers, chairs, or other necessary supports with the following tolerances:
 - a. Bars in slabs and beams:
 - 1) Members 8" deep or less: +/-1/4 inch
 - 2) Members 8" to 2'-0" deep: +/-1/2 inch
 - 3) Members more than 2'-0" deep: +/-1 inch
 - b. Lengthwise of Member: +/-2 inches
 - c. Concrete cover to formed surfaces: +/-1/4 inch
 - d. Minimum spacing between bars: 1/4 inch

3.04 PLACING CONCRETE

- A. Notify the Owner a minimum of 24 hours prior to commencement of concreting operations.
- B. Place concrete in accordance with ACI 301; including hot and cold weather placement procedures.
- C. Ensure reinforcement, inserts, embedded parts and formed joints are not disturbed during concrete placement.

- D. Do not deposit concrete that has partially set or hardened; concrete that has accumulated on forms or reinforcement. Do not place concrete on previously deposited concrete that has hardened sufficiently to cause formation of seams or planes of weakness within respective member or section except as specified.
- E. Deposit concrete as nearly in final position as practical to avoid rehandling. Do not permit concrete to drop freely a distance greater than 3 feet. Where longer drops are necessary, use chute, tremie, or other conveyance to assist concrete into place without separation.
- F. Do not deposit concrete into excavation where water is standing. If place of deposit cannot be successfully pumped dry, pour through tremie with outlet end near bottom of place of deposit.
- G. Vibration: As soon as concrete is deposited, thoroughly agitate by means of mechanical vibrators and suitable hand tools to work mixture into all parts and corners of forms and around reinforcing and embedded items. Use mechanical vibrators with minimum frequency of 7000 revolutions/minute. Do not over vibrate or use vibrators to transport concrete within forms. Insert and withdraw vibrators at many points, 10 to 30 inches apart. At each insertion, vibrate generally 5-15 seconds, sufficient to consolidate concrete but not long enough to cause segregation. Keep spare vibrator on job site during concrete placement operations.
- H. Excessive honeycomb or embedded debris in concrete is not acceptable.

3.05 FORM REMOVAL

- A. Do not remove forms until concrete has attained sufficient strength. Clamps or tie rods may be loosened 24 hours after concrete is placed. Ties, except for sufficient number to hold forms in place, may be removed at that time.

NOTE: When temperature below 40 degrees F prevails, leave forms in place additional period equal to time structure has been exposed to such lower temperature.

3.06 FINISHING

- A. Give smooth rubbed finish to formed, interior, vertical, exposed concrete surfaces using thoro seal with acryl 60 as manufactured by Thoro consumer products. Install as recommended by manufacturer to a smooth sand texture finish (no circular swirl).
- B. Give machine trowel finish to floor slabs.
- C. Provide ACI Class B tolerance; 1/4-inch variation in 10 feet, measured with straight edge.

3.07 CURING

- A. Apply one application of Comspec. #1-21% curing compound at manufacturer's recommended rate.
- B. When finish schedule calls for "sealed concrete" as the final finish on floors, clean floors and seal with one additional coat of "Comspec #1-21% Solids".
- C. Use of curing compound does not relieve Contractor of responsibility for protecting concrete when work is being done over or above finished concrete.

3.08 PROTECTION

- A. Protect finished work.
- B. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

3.09 CLEANING

- A. Remove forms, equipment, protective covering, and rubbish resulting from concreting operations. Leave finished concrete surfaces in clean condition. After sweeping with ordinary broom and removing mortar, concrete droppings, loose dirt and mud; wash concrete floor with soapy water, mopping, and rinsing to keep excessive or injurious amount of water off floors.

END OF SECTION

DIVISION 4 MASONRY

SECTION 04150 MASONRY REINFORCING AND ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all labor, materials, equipment and incidentals necessary for the installation of all masonry accessories.

1.02 SUBMITTALS

- A. Submit manufacturer's literature for each type of accessory to be incorporated in the Work.

1.03 REFERENCE STANDARDS

Secure a copy and comply with following, Edition in effect on Bid Date:

- A. ASTM A-82, "Cold-drawn Steel Wire".
- B. ASTM A-116, "Zinc-coated (Galvanized) Wire".
- C. ASTM A-153, "Zinc-coated (Hot-dip) or Iron and Steel".
- D. ASTM A-615, "Deformed Billet-Steel Bars".

PART 2 - PRODUCTS

2.01 MASONRY ACCESSORIES

- A. Horizontal joint reinforcement for, concrete masonry unit and clay masonry unit, cavity wall shall be prefabricated welded wire truss tab (adjustable hook and eye) design units, with 9 ga. Galvanized deformed longitudinal wire, 6 9 ga. Galvanized cross rods and rectangular tabs, and 9 ga. Rectangular pintle section hook. Wire shall conform to ASTM A-82. Out-to-out spacing of longitudinal wires shall be two inches less than normal thickness of concrete masonry wythe of wall. Contractor shall have the option to use welded wire truss fixed rectangular tab design units (without tab drips) where there is no offset coursing required.

- B. Horizontal joint reinforcement for load bearing concrete masonry walls (single wythe) shall be prefabricated welded wire truss design units, with 9 ga. Galvanized deformed longitudinal wires and 9 ga. Galvanized cross rods. Wire shall conform to ASTM A-82.
- C. Horizontal joint reinforcement for non-loading bearing concrete masonry wall (single wythe) shall be prefabricated welded wire ladder design units, with 9 ga. Galvanized longitudinal wires and 9 ga. Galvanized cross rods, welded perpendicular to longitudinal wires at 16" o.c. maximum spacing. Wire shall conform to ASTM A-81.
- D. Hardware cloth shall be 1/4: mesh X 23 ga. Galvanized steel wire.
- E. Brick ties for masonry backed by metal stud framing shall be Anchor Strap, Cat. No. 315-B, 12 gauge galvanized steel X 3/4" X 9", with Triangular Tie, Cat. No. 316, 3/16" mill-galvanized cold drawn steel wire, ASTM A82, as manufactured by Heckmann Building Products or equal.

2.02 OTHER MATERIALS

- A. All other accessories, not specifically described but required for a complete and proper installation of unit masonry, shall be as furnished by the Contractor subject to approval of the Architect.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Joint Reinforcement: Install reinforcement for all masonry walls at 16" o.c., vertically laid in the mortar bed with full width laps at splices at corners to assure continuity. Reinforcement shall extend to, but not through, control and expansion joints.
- B. Brick Ties (Masonry cavity walls): Install rectangular pintle hooks in wire tabs of prefabricated welded wire truss type joint reinforcing at 16" o.c. vertically and at a maximum of 24" o.c. horizontally (unless noted otherwise on the drawings).
- C. Ties (general): Brick ties shall be sized so that they are embedded in a minimum of 2" in the mortar joint, however, they shall not be closer than 3/4" of the finished face of the brick.
- D. Weep Holes: Provide weep holes in veneer of walls in base course by omitting mortar at head joint at 24" o.c.

- E. Brick Ties (Brick Masonry backed by metal stud framing): Install Anchor Straps with self-drilling/Self tapping screws, minimum of one each end of strap, placed horizontally at same spacing as metal stud framing and vertically at 18" on center for king size brick and 24" on for modular brick and concrete unit masonry unless otherwise noted on the drawings. Place Triangular ties on Anchor Straps.

END OF SECTION

SECTION 04210 BRICK MASONRY- MODULAR

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all labor, materials, equipment, and incidentals required to complete all brick masonry work.

1.02 SUBMITTALS

- A. Submit samples of the brick masonry.
- B. Submit manufacturers literature for Brick Cleaner.
- C. Submit manufacturer's literature for flashing and flashing cement.
- D. Brick Sample Panel erected on Project Site.

1.03 COORDINATION

- A. Openings and chases for heating ducts, plumbing pipes and electrical conduit shall be built into masonry walls as required. Provide for installation of bolts, toggles, flashings, beams, anchors, hangers, nailing strips, wall plugs, frames and other items as required for support of the structure and/or miscellaneous appliances. Consult other trades in advance and make provisions for the installation of their work to avoid cutting and patching.

PART 2 - PRODUCTS

2.01 MORTAR MATERIALS

- A. Mortar:
 - 1. Masonry Cement: Shall conform to ASTM Specifications C-91.
 - 2. Portland Cement: Shall conform to ASTM Specification C-150, Type I, natural color.
 - 3. Hydrated Lime: Shall conform to ASTM Specification C-207 (Type S).
 - 4. Sand: Clean natural colored sand conforming to ASTM Specification C-144.
 - 5. Mixing Water: Water shall be clean and potable.
 - 6. Aggregate: Pea gravel shall conform to ASTM Specification C-404.

2.02 MASONRY MATERIALS

- A. Brick Masonry Units: Two (2) colors required – one field brick matching existing brick veneer and one accent brick of contrasting color to be selected by Owner. All brick units shall be per the following quality standards:
1. Quality: ASTM C-216, Type FBS.
 2. Size: 2 1/4" X 3 5/8" X 7 5/8", Modular Brick.
 3. The face brick selected shall be provided with core holes and quantity of solid brick, without core holes. The solid brick shall be used where the width face is exposed to view or weather or as called for on the Drawings.

2.03 CLEANER

- A. "Deox" Chemical Cleaner as made by National Chemsearch Corp., or "Sure Klean" as made by Process Solvent Co., Inc., or approved equal.

2.04 SCAFFOLDING

- A. Provide, erect, maintain, move and finally remove scaffolding and staging required for masonry installation.
- B. Scaffolding shall be sufficiently substantial to safely support workmen and necessary materials and equipment and shall be in compliance with all laws and regulations.
- C. Construct and maintain scaffolding in compliance with ordinances, laws, rules and regulations. Provide adequate guardrails for protection of property, workmen, and passersby.

2.05 FLASHING

- A. Synthetic flashing shall be heavy duty, flexible, 20 mil elastomeric modified sheet vinyl, as per one of the following or an approved equal: Nervastral H-D or Sela-Purf H-D, by Rubber and Plastics Compound Co., Inc.
- B. Flashing cement shall be "Asphalt Roofing Cement" conforming to ASTM Specification D2822, as manufactured by Manville, Hoopers, GAF, or approved equal.

PART 3 - EXECUTION

3.01 SAMPLE PANEL

- A. Erect 3'-4" X 3'-4" minimum Sample Panel at Project Site using preliminary brick selection for approval by Owner. Rebuild Sample Panel if necessary using different bricks to obtain Owners approval. Brick panel shall be cleaned using the submitted cleaner.

3.02 MORTAR MIX

- A. Mortar shall be Type N, conforming to ASTM Specification C-270, "Mortar for Unit Masonry", and consisting of 1 part Portland cement, 1 part hydrated lime or lime putty and 6 parts sand by volume; or 1 part masonry cement and 3 parts sand by volume.
- B. Mix cementitious material and sand for a minimum of 5 minutes in a mechanical batch mixer. Add water in amounts compatible with convenience in using mortar. If mortar begins to stiffen from evaporation or absorption, retemper by adding water and thoroughly remixing. Use mortar within 2-1/2 hours of initial mixing. Do not use mortar that has stiffening because of hydration hardening.

3.03 INSTALLATION AND WORKMANSHIP

- A. Do not lay masonry when temperature of outside air is below 40 degrees F., unless suitable means, as approved by Architect, are provided to heat materials, protect work from cold and frost and insure that mortar will harden without freezing. NO anti-freeze or accelerator ingredients shall be used in mortar.
- B. Protect facing material against staining and keep top of walls covered with non-staining water proof coverings when work is not in progress. When work is resumed, top surface of shall be cleaned of all loose mortar.
- C. Before closing up any pipe, duct or similar inaccessible spaces or shafts with masonry, remove all rubbish and sweep out area to be enclosed.
- D. Provide level and solid bearing in masonry walls directly under poured concrete slabs, structural steel beams, trusses and steel joists. Solid bearing shall be of sizes and thickness indicated.
- E. Open space at expansion joints shall be kept free of mortar by using a continuous wood or metal strip temporarily set in wall.

- F. Where fresh masonry joins masonry that is partially set or totally set, clean exposed surface of set masonry and wet lightly so as to obtain best possible bond with new work. Remove all loose brick and mortar.
- G. Consult other trades and make provisions that will permit installation of their work in a manner to avoid cutting and patching. Build in work specified under other sections as necessary and as work progresses.
- H. Fill spaces around jambs and heads of metal door bucks and frames solidly with mortar.
- I. Do not use chipped, broken or cracked masonry units. If any such units are discovered in the finished work, they shall be removed and replaced with new units. Do not use units with less than 4" horizontal face dimension at corners, jambs, or wing wall and conditions. Cutting of masonry shall be done with motor-driven masonry saws.

3.04 LAYING BRICK

- A. Set units plumb and true to line. All units shall be layed with level horizontal joints. Except otherwise on the Drawings, brick masonry units shall be laid in a ½ running bond pattern for modular brick.
- B. Construct soldier courses, sloped rowlock sills and other special details in face brick construction as shown on Drawings. Where more than one (1) color brick is indicated, install proper color brick in accurate locations. All special pattern work shall be carefully installed and accurately located.
- C. Where electric conduit, outlet and switch boxes occur, grind and cut units before building in services. Coordinate work with electrical sub-contractors. Cutting of all units exposed in finished work shall be done with approved type of power masonry saw.
- D. Joints shall have a thickness equal to the difference between the actual dimension and the nominal dimension of the unit (typically 3/8"). After the mortar is thumbprint hard, it shall be compressed with concaved jointing tool and not cut from the joint, to produce continuous and complete contact between mortar and brick masonry units.
- E. Install brick ties in compliance with manufacturer's directions, not to exceed spacings shown on Drawings or specified herein.
- F. Face brick shall be "blended" when laid so that there is an even random distribution of colors in the finished work.
- G. Dry-brush completed masonry work at the end of each day's work.

3.05 POINTING AND CLEANING BRICK

- A. Point-up all joints in brick masonry, carefully filling holes.
- B. All exposed masonry shall be cleaned thoroughly, using chemical cleaner and stiff, clean fiber brushes. Pointing and cleaning shall start at the top of the wall and continue downward until the surfaces have been cleaned.
- C. Brick shall have all loose mortar cleaned off and all stains removed, be in good condition with tight mortar joints throughout.

3.06 INSTALLATION OF FLASHING

- A. Surfaces shall be smooth, dry and free from dirt and dust. Sheets shall be installed in soled traveled layers of flashing cement. Laps shall be a minimum of 6" solidly trowled with flashing cement. Where penetrations occur, seal same with flashing cement.
- B. Flashing shall extend from the first brick course, below the floor level, up a minimum of 8", unless shown otherwise on the Drawings. Flashing shall also be installed at header conditions over opening in the exterior walls. Install flashing continuously at all exterior walls.

END OF SECTION

SECTION 04220 CONCRETE MASONRY UNITS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes: The CMU's for the interior and exterior walls of the building.
- B. Furnish complete labor, materials, equipment for anchors, and wall reinforcing.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Masonry Cement: ASTM C98. Concrete Masonry Units shall be lightweight grade N units with unit strengths of 1900 PSI.
- B. Portland Cement: Type S, ASTM C 150. Mortar shall be type S with 28-day compressive strength of 2000 PSI.
- C. Aggregate: ASTM C144.
- D. Water: Clean and potable.
- E. Proportions:
 - 1. 1/2-part portland cement and 1 part masonry cement, Type II.
 - 2. Aggregate: Not less than 2 1/4 and NOT more than 3 times the sum of cements used.
- F. Concrete Masonry Units: ASTM C 90, hollow, shape and size as shown or required, #1 grade, in locations as shown on drawings. CMU'S shall be fire rated as noted on drawings and finish schedule.
- G. CMU Wall Insulation: Fill all exterior cmu walls with masonry fill insulation (vermiculite) in accordance with manufacturer (except grouted cells).
- H. Horizontal Joint Reinforcement: Truss Design, 9 ga. welded steel wire, hot-dip galvanized after fabrication, 24" o.c. vertical, and width as required by wall.
- I. Vertical Reinforcement: Vertical reinforcement shall be #4 rebar, full 8'-0" height of wall as shown on drawings. Lap 48 diameters typical.
- J. CMU bond beam lintels on all opening and continuous at the top of all 8'-0" walls with 2-#5 rebar and grout fill.

- K. Concrete fill (grout) shall have maximum aggregate size of 3/8-inch and compressive strength of 2000 PSI at 28 days. Grout only cells with vertical reinforcing unless noted otherwise.
- L. Construction materials and methods shall meet IBC 2003. Structural design is based on $f'm = 1500$ PSI inspected masonry.
- M. Lap all rebar 48 diameters unless otherwise noted. Stagger horizontal laps. Extend horizontal bars around corners and through control joints per details.
- N. Piping or conduit embedded in masonry shall not exceed 1" diameter and exact layout shall be subject to approval by the architect.
- O. Unless otherwise noted or detailed, all openings in masonry shall have minimum #5 bars extending 2'-0" past each edge – Lintels may be 8" x 8" w/ 2 #5 to 6'-4" clear, use 8" x 16" w/ 2 #5 top and bottom at new openings over 6'-4" clear. Bear 8" min. each end.
- P. Furnish reinforce cells at all jambs and corners. Furnish lintels at all new construction.
- Q. Unless noted otherwise, space vertical control joints in exterior walls at each building frame or 24' o.c. interior masonry partitions shall have vertical control joints at 16' o.c., spaced to align with openings (except lintels shall extend 8" past opening). Extend rebar 6" past joints (not full laps as noted above).

PART 3 - EXECUTION

3.01 PREPARATION

- A. Verify items provided by other sections of work are properly sized and located.
- B. Provided temporary bracing during erection of masonry work. Maintain in place until building structure provides permanent bracing.

3.02 COURSING

- A. Lay masonry units to running bond.
- B. Furnish vertical control joints at 24' o.c. maximum (outside walls), 16' o.c. maximum at interior partitions. (See additional notes on plans.)

3.03 LINTELS

- A. Install lintels over all openings.

3.04 MORTAR MIXING

- A. *Mixing: Mortar shall be mixed in power mixer for not less than 5 minutes after all materials have been placed in mixer. After the initial mixing, the mortar shall be kept tempered; add water as required, so that the mortar will contain the maximum amount of water consistent with good workability. Mortar not used in these time limits shall be discarded: Temperature 80 degrees F or higher, 2 1/2 hours, 80 degrees F or lower, 3 1/2 hours.*

3.05 WORKMANSHIP

- A. *Workmanship: Lay masonry plumb, true to line, with level, accurately spaced courses.*
- B. *Finish joints with concave tool.*
- C. *Lay masonry in full bed of mortar with head and edge joints completely filled.*
- D. *Cut masonry units, where necessary for fitting of bonding with a masonry saw.*

3.06 CLEANING

- A. *Progress work in as clean a manner as possible; remove excess materials and mortar droppings daily. Remove mortar droppings on connecting or adjoining work before its final set.*
- B. *Remove and replace defective materials; correct defective workmanship. Leave masonry clean.*

END OF SECTION

DIVISION 5 METALS

SECTION 05100 STRUCTURAL AND MISCELLANEOUS STEEL

PART 1- GENERAL

1.01 SUMMARY

- A. Furnish all materials, labor, equipment and incidentals necessary for the installation of all structural and miscellaneous steel.

1.02 SHOP DRAWINGS

- A. Submit complete shop and erection drawings showing dimensions, connections, sizes, methods of painting, thickness of metal, full, and complete instructions regarding concealed joints and fasteners. Necessary erection details, reinforcing, rough framing and structural supports shall also be shown.
- B. The General Contractor is responsible to coordinate and approve all materials and installations by various trades/subcontractors.

1.03 CODES AND SPECIFICATIONS

- A. All items of work under this Section shall be furnished, constructed and installed in strict conformance with latest editions of the following publications in effect on the Bid Date.
- B. "Specifications for Design, Fabrication and Erection of Structural Steel for Buildings", including "Commentary" adopted by the American Institute of Steel Construction, Inc. (AISC)
- C. "Code of Standard Practice for Steel Buildings and Bridges", adopted by AISC.
- D. "Code for Welding in Building Construction", as adopted by the American Welding Society. (AWS)

1.04 STRUCTURAL NOTES

- A. Notes on the Structural Drawings may seriously impact the Work required by this Section. Where conflicts occur between this Section and the Structural Notes, the Structural Notes shall govern.

PART 2 - PRODUCTS

2.01 STRUCTURAL STEEL

- A. All structural steel shall receive a standard shop coat of rust inhibitive paint in compliance with FS TT-P-86, Type II or SSPC-Paint 14.
- B. Furnish all structural steel, as indicated on the Drawings, including all bolts, plates, anchors, fitting, attachments and devices necessary for a complete job.
- C. Unless noted otherwise on the Drawings, comply with the following Standards:
 - 1. ASTM A-36: Steel shapes, plates, bars
 - 2. ASTM A-501: Square and rectangular tubular steel items
 - 3. ASTM A-500: Cold-formed steel items
 - 4. ASTM A 53, Type E or S, Grade B: Steel Pipe

2.02 MISCELLANEOUS STEEL

- A. Furnish all angles, plates, and other items of miscellaneous steel, as shown on the Drawings or required for a complete job, including all anchors and fittings required.

2.03 OTHER MATERIALS

- A. Arc welding electrodes: Heavily coated types conforming to the provisions for classification numbers "E70" of the joint AWS and ASTM, tentative specifications for Iron and Steel Arc-Welding.
- B. High strength bolts: In compliance with ASTM A325 with hardened washers.
- C. Standard bolts: In compliance with ASTM A307.
- D. Nuts: Hexagon.
- E. Grout: equal to Embco by Master Builders or Five Star Grout U.S. Grout Corp.

PART 3 - EXECUTION

3.01 FABRICATION

- A. Materials shall be fabricated and assembled in the shop to the greatest extent possible. Shearing, flame cutting, and chipping shall be done carefully and accurately. Connections not indicated shall be made to conform to the AISC Specification for the "Design, Fabrication, and Erection of Structural Steel for Buildings". Shop connections shall be welded or bolted to the extent practicable. Supplementary parts necessary to complete each item, though work is not definitely shown or specified, shall be included. All anchors, sockets or fastenings required for securing work to the other construction shall be furnished to the appropriate trades. Holes shall be cut, drilled or punched at right angles to the surfaces of the metal and shall not be made or enlarged by burning.
- B. Verify all measurements and make all field measurements necessary before fabrication.
- C. Miscellaneous bolts and anchors, supports, braces, and connections necessary for completion of the miscellaneous metal work shall be provided. The necessary rebates; lugs and brackets shall be provided so that the work can be assembled in a neat and substantial manner. Fastenings shall be concealed where practicable. Thickness of metal and details of assembly and supports shall give ample strength and stiffness. Where dissimilar metals are in contact, the surfaces shall be protected with a coat of bituminous paint to prevent galvanic or corrosive action.

3.02 SHOP PAINTING

- A. After inspection and approval and before leaving the shop, all steel work shall be thoroughly cleaned, by effective means, of all loose scale, rust, spatter, slag or flux deposit, oil, dirt, and other foreign matter.
- B. All steel work shall be given one shop coat of primer paint.
- C. Apply paint thoroughly and evenly and well worked into the joints and other open spaces. Surfaces shall be dry when paint is applied.
- D. All machine-finished surfaces shall be protected against corrosion by an approved coating.

3.03 ERECTION

- A. The frame of the steel construction shall be erected plumb and true. Temporary bracing shall be introduced as necessary to take care of all loads to which the structure may be subjected while being erected, including erection equipment. Such bracing shall be left in place as long as may be required for safety.

- B. All work shall be surely anchored and bolted as the erection work progresses in order to take care of all dead, live, wind and erection stresses.
- C. Wherever piles of materials or other concentrated heavy loads are carried during erection, proper provision shall be made to carry safely such load.
- D. All field connections may be welded or bolted unless otherwise shown on the Drawings.
- E. Columns shall be plumbed and maintained in a true vertical position.
- F. Twist drill shall be used to enlarge holes as necessary to make connection. Reaming that weakens the members or makes it impossible to fill the holes properly or to adjust accurately after drilling will not be allowed.
- G. Light drifting as necessary to draw holes together will be permitted but drifting to match unfair holes will not be allowed.
- H. No cutting of sections, flanges, webs, or angles shall be done without the approval of the Architect. Where so indicated on the drawings, required cutting holes, etc., shall be provided for the installation of the work of others. No additional holes or cutting of steel work shall be done except by permission of the Architect.

3.04 WELDING

- A. Shall be done in accordance with the Code of Fusion, Welding, and Gas Cutting in Building Construction, Code 1, Part A, Structural Steel, latest edition as formulated by the American Welding Society and all welders to be certified by independent testing laboratory.

3.05 FIELD PAINTING

- A. Field weld, bolts and serious abrasions to the shop coat shall be spot painted with the same material used for the shop coat. Mud, scale, rust and other objectionable foreign materials shall be removed before touch-up and general field painting. Touch-up and cleaning shall be done by this Contractor. All surfaces shall be clean, dry and the temperature above 50 degrees Fahrenheit when touch-up coat is applied.

3.06 GROUTING

- A. Provide ¼" leveling plates an/or double-nutting nuts as indicated on the Drawings for leveling columns. Non-shrink Grout shall be installed only in accordance with manufacturer's instructions. All bearing plates and/or column base plates shall be set to proper grade and level by the Contractor and made ready for grouting.

END OF SECTION

SECTION 05150 OPEN WEB STEEL JOISTS

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all labor, materials, equipment, and incidentals necessary for the manufacture and erection of all open web steel bar joists.

1.02 QUALIFICATIONS AND REFERENCE SPECIFICATION

- A. An approved manufacturer who is a member of the Steel Joist Institute shall manufacture open web joist.
- B. The "Standard Specifications and Load Tables" of the Steel Joist Institute are hereby made a part of this Specification. In case of conflict between SJI Specifications and these Specifications, the most restrictive requirements shall apply.

1.03 SHOP DRAWINGS

- A. Submit detailed shop and installation drawings of all open web joists.

1.04 STRUCTURAL NOTES

- A. Notes on the Structural Drawings may seriously impact the work required by this Section. Where conflicts occur between this Section and the Structural Notes, the Structural Notes shall govern.

PART 2 - PRODUCTS

2.01 STEEL

- A. Steel, bridging, wall anchors, etc. shall be steel conforming to the current edition of ASTM A-36.

2.02 BOLTS

- A. Bridging bolts shall conform to ASTM A-307, Grade A.

2.03 WELDING ELECTRODES

- A. Welding Electrodes shall conform to the requirements of the latest edition of ASTM A-233 for Series #E70 of AWS5.5 electrodes or submerged Arc Grade AWS-2.

2.04 STEEL JOISTS

- A. Sizes and types as shown on the Drawings.

2.05 PAINT

- A. Shall meet the performance requirements of Federal Specification TT-P-636 (red oxide) Joists, which shall receive sprayed fireproofing, shall not be prime painted.

PART 3 - EXECUTION

3.01 FABRICATION

- A. Fabricate joists and bridging in compliance with Reference Specification.
- B. Contractor alone shall be responsible for errors in fabrication and correct fitting of joists.
- C. Joists: Join members by welding in manner that will produce finished connection of strength required. Principal tension members of joist shall extend full length of joist without splicing or jointing.
- D. Holes shall not be made or enlarged by burning, nor will burning of unfair holes in shop or field be permitted.
- E. Scale, rust or other deleterious material shall be removed from fabricated joists before shop coat of paint is applied.
- F. Accessories: Provide all necessary sag rods, bridging, extended bottom chords, and sidewall anchors.
- G. Shop Paint: After fabrication, clean joists, bridging, anchors, etc. of rust, all mill scale, dirt or other foreign material by approved methods. Remove grease or oil with Benzene or similar volatile cleaner. After cleaning joists, bridging, etc., give one dip of airless pressure spray coat of specified paint. (Note: Joists, which are to receive sprayed fireproofing, shall not be shop painted)

3.02 ERECTION

- A. Provide anchorage at bearing ends to resist the net uplift pressure and provide bridging as required to brace bottom chords against lateral movement under the net uplift pressure.

- B. Bridging shall conform to SJI Specifications and/or information contained on the Drawings.
- C. Minimum bearings and anchorage shall conform to SJI Specifications and/or the Drawings as related to particular type of support.
- D. Set joists to lines, levels, and spacing as indicated. Execute general handling and erection in accordance with SJI Specifications.
- E. Joists shall be permanently fastened to supports and all bridging and anchorage completely installed before any construction loads, other than workmen, are placed on joists.
- F. Execute welding in accordance with "Code for Arc and Gas Welding in Building Construction" of American Welding Society as amended to date, and only by welding operators who have been previously qualified to perform type of work required.
- G. After erection, field connections and all abraded places of shop paint shall be touched up with same kind of paint as shop coat.
- H. Damaged joists may not be re-used, except with Architect's permission and approval of repairs.

END OF SECTION

SECTION 05310 METAL DECK

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all labor, materials, equipment and incidentals necessary for the installation of all metal deck.

1.02 SHOP DRAWINGS

- A. Submit detailed shop and installation drawings.

1.03 REFERENCE SPECIFICATIONS

Comply with the following reference specifications, Edition in effect as of the Bid Date:

- A. "Specification for the Design of Cold-Formed Steel Structural Members", AISI
- B. "Code for Welding in Building Construction", AWS
- C. "Steel Deck Manual", Steel Deck Institute
- D. "Basic Design Specifications", Steel Deck Institute

1.04 STRUCTURAL NOTES

- A. Notes on the Structural Drawings may seriously impact the work required by this Section. Where conflicts occur between this Section and the Structural Notes shall govern.

PART 2 - PRODUCTS

2.01 STEEL DECK

- A. Deck shall be shop painted with one coat of rust-inhibiting primer paint or have a galvanized finish conforming to ASTM A-525, G90 coating. Deck shall be of the size and type as shown on the Drawings. Provide deck units with interlocking side lap. Provide and install 20 gauge steel plates at vents and other openings in decks to deck units. Welding rods shall conform to American Welding Society "Specification for Iron and Steel Arc-Welding Electrodes."

- B. Provide metal deck units listed in UL "Fire Resistive Index", bearing appropriate UL Label and markings.

2.02 FASTENERS

- A. Fasteners shall be via puddle welds with welding washers

PART 3 - EXECUTION

3.01 PRODUCT HANDLING

- A. Deliver, store, handle, and install steel deck and accessories so as not to damage or deform. Stack deck, stored at site before erection, on platforms or pallets and cover with tarpaulins or other suitable covering to provide weather-tight enclosure while affording proper air circulation. Do not use deck for storage or as a working platform until sheets have been securely fastened in position and do not damage or overload during entire construction period.

3.02 FABRICATION

- A. Fabricate deck units to span at least 3 supports unless noted otherwise on Drawings.

3.03 INSTALLATION

- A. General: Do not undertake laying of deck units until supporting members are completely in place. Lay and align units so as to maintain required number of units shown on shop drawings and to prevent stretching or contracting of side-laps. Weld deck units to structural supports. End laps shall be a minimum of 2" and shall occur over supports.
- B. Welding: Spacing of welds shall not exceed 6" o.c. at discontinuous ends and end laps and 12" o.c. at intermediate supports. Edge welds at perimeter of deck parallel to sheets, welds, in the deck field shall be ½" effective diameter puddle welds at 24" o.c. with welding washers. Welds shall be ½" minimum effective diameter puddle welds. Blowholes will be cause for rejection. Welding sequence and procedure shall be coordinated with the placing of units, and shall be shown on shop drawings and approved before proceeding with work. Weld metal fillers and closure pieces.
- C. Intermediate Fastenings: Clips, button punching, or welding shall be required to lock units together mid-way between supporting members for spans exceeding 5'-0" center-to-center, unless the side laps are self-locking type.

- D. Field Painting: After erection, scarred areas on both sides of the deck, including welds, weld scars, bruises and rust spots, shall be wire-brushed and touch-up painted. Touch up deck with same type of paint as used for shop coat.

END OF SECTION

SECTION 05400 LIGHT GAUGE METAL FRAMING

PART 1 - GENERAL

1.01 SUMMARY

- A. This specification includes the furnishing of all materials, labor and equipment for the installation of all light gauge metal framing.

1.02 REFERENCE SPECIFICATION

- A. Comply with "Specification for the Design of Cold-Formed Steel Structural Members", AISC.

1.03 STRUCTURAL NOTES

- A. Notes on the Structural Drawings may seriously impact the work required by this Section. Where conflicts occur between this Section and the Structural Notes, the Structural Notes shall govern.

1.04 SHOP DRAWINGS

- A. Submit complete Shop Drawings showing dimensions, connections, sizes, methods of painting, thickness of metal and full and complete instructions regarding concealed joints and screws and erection details. Necessary reinforcing, rough framing and structural supports shall also be shown.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. All stud and/or joist framing members shall be of the type, size and gage as shown on the Drawings. Supply all required accessories.
- B. All galvanized studs and/or joists, 12, 14 and 16 gage, shall be formed from steel that corresponds to the requirements of ASTM A446, Grade D, with a minimum yield of 50,000 psi.
- C. All galvanized 18 and 20 gage studs, track and/or joists, and all galvanized track, bridging and accessories shall be formed from steel that corresponds to the requirements of ASTM A446, Grade A, with a minimum yield of 33,000 psi.

- D. Galvanized materials shall have a minimum G60 coating in compliance with ASTM A 525.

2.02 Fire Rated Assemblies

- A. Where fire rated assemblies are shown on the Drawings, all materials incorporated into the Work shall have the approval of the applicable Authority Having Jurisdiction.

2.03 Fabrication

- A. Framing components may be pre-assembled into panels prior to erecting. Prefabricated panels shall be square with components attached in a manner as to prevent racking.
- B. All framing components shall be cut squarely for attachment to perpendicular members, or as required for an angular fit against abutting members. Members shall be held positively in place until properly fastened.
- C. Axially loaded studs shall be installed in a manner, which will assure that ends of the studs are positioned against the inside track web, prior to stud and track attachment.
- D. Provide insulation equal to that specified elsewhere in all double jamb studs and double-header members, which will not be accessible to the insulation contractor.

PART 3 - EXECUTION

3.01 ERECTION (WIND LOAD ONLY)

- A. Handling and lifting of prefabricated panels shall be done in a manner as to not cause distortion in any member.
- B. Tracks shall be securely anchored to the supporting structure as shown on the plans.
- C. At track butt joints, abutting pieces of track shall be securely anchored to a common structural element, or they shall be butt-welded or spliced together.
- D. Studs shall be plumbed, aligned and securely attached to the flanges or webs of both upper and lower tracks.
- E. Jack studs or cripples shall be installed below windowsills, above window and door heads, at free standing stair rails, and elsewhere to furnish support, and shall be securely attached to supporting members.

- F. Wall stud bridging shall be attached in a manner to prevent stud rotation by welding or anchor clips. Bridging rows shall be spaced according to the following schedule unless noted otherwise on the Drawings. Walls up to 10'-0" height: one row at mid-height. Wall exceeding 10'-0" height: bridging rows spaced not to exceed 5'-0" on-center.
- G. Provision for structure vertical movement shall be provided where indicated on the Drawings.
- H. Isolate wall studs from structural system to prevent transfer of structural loading into studs in both vertical and horizontal directions.
- I. Splices in studs shall not be permitted.
- J. Wire tying of components shall not be permitted. Weld or screw all connections.

3.02 ERECTION (AXIAL LOAD-BEARING)

- A. Handling and lifting of prefabricated frame panels shall be done in a manner as to not cause distortion in any member.
- B. Tracks shall be securely anchored to the supporting structure as shown on the plans.
- C. Complete uniform and level bearing support shall be provided for the bottom rack.
- D. At track butt joints, abutting pieces of track shall be securely anchored to a common structural element, or they shall be butt welded or spliced together.
- E. Studs shall be plumbed, aligned and securely attached to the flanges or webs of both upper and lower tracks.
- F. Framed wall openings shall include headers and supporting studs as shown on the Drawings.
- G. Jack studs shall be installed below windowsills, above window and door heads, at free standing stair rails, and elsewhere to furnish support, and shall be securely attached to supporting members.
- H. Temporary bracing shall be provided until erection is completed.
- I. Wall stud bridging shall be installed in a manner to provide resistance to both minor axis bending and rotation. Bridging rows shall be equally spaced not to exceed 3'-4" on-center.

- J. Provide stud walls at locations indicated on plans as "shear walls" for frame stability and later load resistance. Such stud walls shall be positioned to resist the vertical components as indicated on plans.
- K. Splices in axially loaded studs shall not be permitted.
- L. Provide insulation equal to that specified elsewhere in all doubled jamb studs and doubled header members, which will not be accessible to the insulation contractor.

3.03 ERECTION (COLD-FORMED STEEL JOISTS)

- A. Joists shall be located directly over bearing studs or a load distribution member shall be provided at the top track.
- B. Provide web stiffeners at reaction points where indicated by plans.
- C. Joist bridging shall be provided as shown on the plans.
- D. Provide an additional joist under parallel partitions when the partition length exceeds one-half the joist span and around all floor and roof openings, which interrupt one or more spanning members unless otherwise noted.
- E. End blocking shall be provided where joist ends are not otherwise restrained from rotation.

END OF SECTION

DIVISION 6 WOOD AND PLASTICS

SECTION 06010 ROUGH CARPENTRY

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all materials, labor, equipment, accessories and tools necessary for the completion of all rough carpentry work, as shown or reasonably implied, including wood blocking and bracing required to accommodate other trades.

1.02 STANDARDS AND GRADE MARKING

- A. Applicable Standards: comply with the latest edition of the following published standards and grading rules in effect on Bid Date.
 - 1. Lumber: American Softwood Lumber Standard PS 20 (U.S. Department of Commerce), S4S, 19 percent moisture at time of dressing.
 - 2. Plywood: Softwood Plywood Construction and Industrial Standard PSI (U.S. Department of Commerce)
 - 3. Also comply with where applicable:
 - a. American Plywood Association Standards
 - b. WWPA, WCLB, SPIB or NLGA grading rules
 - c. AWPI LP-22 pressure treated Standards
 - d. "Manual of House Framing", National Forest Products Association
- B. Grade Marking: deliver lumber bearing the grade mark of the Association under whose rules it was graded.
- C. Quality: Lumber must be sound, thoroughly seasoned, well manufactured and free from warp that cannot be corrected by bridging or nailing. Lumber shall meet or exceed grade requirements specified.

PART 2 - PRODUCTS

2.01 MATERIALS

All listed materials may not be required on this Project.

- A. Light Framing (4" X 4" max): "Standard" grade, any species.
- B. Structural framing (2" X 6" to 4" X 14"); "standard or better" grade, any species graded under WWPA, WCLB, SPIB or NLGA grading rules.

- C. Sheathing Plywood: Standard EXT-DFPA, C-D, Exterior Glues.
- D. Plywood for shimming nailers at exterior: Preservative treated, equal to Koppers Wolmanized CCA, 25 lbs minimum per cu. Ft. wood.
- E. Pressure treated wood: AWPI, LP-22, water borne preservative (use for all exterior applications to include cants, curbs, nailers, and blocking). Kiln dry to 15% moisture content after treatment.
- F. Plywood backing for electrical equipment: APA C-D plugged, exterior glue, $\frac{3}{4}$ " thickness.
- G. Anchorage and fastening material: Comply with applicable Federal Specifications for nails, staples, wood screws, bolts, nuts, washers, lag screws, lag bolts, masonry anchors, bar and strap anchors and other anchorage and fastening material as may be required.
- H. Backing for toilet accessories and grab bars: "Standard Grade any species, 2 X 12.

PART 3 - EXECUTION

3.01 STORAGE AND PROTECTION

- A. Stack framing lumber and plywood to insure proper ventilation and drainage. Cover Lumber and plywood to protection it from the elements.

3.02 INSTALLATION

- A. Comply with "Manual of House Framing" for nailing, fire stopping, and anchorage, framing and bracing requirements.
- B. Rough Carpentry: Install all blocking, grounds, plywood, shims and other items of rough carpentry as shown on the Drawings and as required for a finished job. All rough carpentry shall be fully and solidly anchored to supporting members with power or hand nailing, 'ramset guns', bolts, lag screws or other appropriate fasteners. Install blocking behind all toilet accessories and all other items to be mounted in or on drywall walls and partitions.
- C. Treated Rough Carpentry: All gravel guard solid wood blocking, other solid wood blocking used in conjunction with the roofing, and nailers and plates in contact with concrete shall be wolmanized. Nailers and plates shall be firmly anchored to resist a force of 175 P.L.F. in any direction.

- D. Plywood Roof Nailers (allowed where shown on the Drawings): Surface height of nailers shall be matched to the height of the rigid insulation, unless detailed otherwise on the Drawings. Nailers shall be firmly anchored to resist a force of 175 P.L.F. in any direction.
- E. Screw-attach plywood sheathing 6" o.c. at edges of panels, and 12" o.c. at intermediate supports. Leave space between panels, and use screw size and type as recommended by APA.

3.03 COORDINATION

- A. Finish carpentry, millwork, toilet accessories and other items furnished under other Sections of these Specifications shall be closely coordinated with this Section.

END OF SECTION

SECTION 06410 MILLWORK

PART 1- GENERAL

1.01 SUMMARY

- A. Furnish all materials, labor, equipment and incidentals necessary for the manufacture and installation of all millwork.

1.02 QUALITY ASSURANCE

- A. The "Quality of Standards" of the Architectural Woodwork Institute shall apply as a minimum acceptable standard and by reference are hereby made a part of this Specification. Any reference to Premium, Custom, or Economy in this Specification shall be as defined in the latest edition of the AWI "Quality Standards," unless otherwise specified herein.
- B. Any item not given a specific quality grade shall be "Custom" grade as defined in the latest edition AWI Quality of Standards.
- C. Competence: The woodwork manufacturer must have a reputation for doing satisfactory work, on time and shall have successfully completed comparable work.

1.03 SUBMITTALS

- A. Submit complete Shop Drawings showing all items of millwork. Organize the Shop Drawings to properly separate the work, as it will be produced and used with items showing related positions and sections drawn at not less than one and one half inches (1 ½") equal one-foot (1'-0") scale. This Subcontractor shall be responsible for details and dimensions not controlled by job conditions. The General Contractor will be responsible for and furnish to this Subcontractor dimensions which he alone or other trades control such as wall-to-wall, ceiling heights, etc.
- B. Submit color samples for plastic laminate. Show all proposed joints on Shop Drawings.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Prior to accepting delivery, inspect all millwork to ensure that no sub grade, defective, or damaged pieces are delivered. No such pieces shall be installed on the Project.
- B. Millwork shall be delivered only after General Contractor assures that proper storage will be provided at the job site.

- C. Store millwork in a protected area until the General Contractor indicates he is ready to receive it.

1.05 CONSTRUCTION

- A. Certain items in this Section cannot be fabricated and assembled in the mill or shop, but this Section shall construct all items required, including those items requiring job site fabrication.
- B. The Architect may permit deviations from the Drawings in method of construction and substitution of materials after approval, if these differences retain or increase the quality and workability of the millwork and the general appearance of the design are retained.

1.06 WORKMANSHIP

- A. To permit fabricator of millwork to utilize his manufacturing techniques to the best advantage, all details of millwork construction are not shown on the Drawings, but it is the intent of this Specification to require items of millwork be complete and finished with the highest degree of workmanship. In general, millwork shall be completely fabricated at shop as far as possible and delivered ready to set in place in largest units consistent with convenient erection and transit.
- B. Work material in best manner, using dado, rabbet, lap, shoulder lap and other joints as indicated, glued to provide greatest strength and using a minimum of nails and screws. If used, nails and screws must be concealed. Use glue clamps. Make all mitered corners using cutter head or shaper that will provide an interlocking joint.
- C. Round all exposed edges or corners of millwork.
- D. Provide edging on all exposed plywood and particleboard edges. Edging shall run continuous and be solid matching material except fir plywood shall be edge banded with S4S material. Miter edging at corners; glue solidly.
- E. Install laminated plastics top and surfacing edges on cabinets to plywood or particleboard with waterproof mastic as recommended and specified by manufacturer of plastic laminate used.
- F. Cut openings in cabinet or vanity tops to receive sinks and built-in units. Work closely with mechanical section to insure exact size opening for sink rim. Sink sizes may vary.
- G. On all trim $\frac{3}{4}$ " X 2" and under, kerf the backside, on trim $\frac{3}{4}$ " X 2 $\frac{1}{4}$ " and over, back out in lieu of kerfing.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General:

1. Grades specified conform to the most recent grading rules of the Southern Pine Association, the West Coast Lumberman's Association, Douglas Fir Association, Hardwood Plywood Association or Lumber Manufacturing Association, under whose rules lumber is produced.
2. Lumber shall be kiln-dried to 10% to 12 % moisture content, which shall be maintained during fabrication of millwork.

B. Plywood: All sight exposed faces are plain sliced red oak unless noted otherwise on the Drawings.

1. INT-DFPA-A-A two exposed faces: 3/4" thick.
2. INT-DFPA-A-D one face exposed, 3/4" thick.

C. Solid Stock:

1. S4S Grade Red Oak where sight exposed, unless noted otherwise on the Drawings.
2. "B" and better Southern Yellow Pine or Parone Pine where not sight exposed, unless noted otherwise.

D. MDF: Industrial Grade (NO PARTICLE BOARD WILL BE ALLOWED)

1. Cabinet Backs-1/4"
2. Bulkheads-5/8"
3. Tops-3/4"
4. bottoms-3/4"

E. Veneer core panels may be used where appropriate and approved.

2.02 MILLWORK CABINETS-TRANSPARENT FINISH

A. AWI quality grade: Custom grade.

B. Construction: Details shall conform to "flush overlay" design, as indicated on the Drawings. Door and drawer faces cover the body members or face frames of the cabinets. Match the existing millwork.

C. Exposed parts: Red oak, Plain Sliced, unless otherwise noted on the Drawings.

2.03 HIGH PRESSURE LAMINATE TOP

- A. Plastic laminate, satin or textured finish, minimum 0.05 inch thickness. Color as selected from manufacturer's stock standard patterns and solid colors.
- B. Adhesive: Waterproof as recommended by manufacturer.
- C. Manufacturers:
 - 1. Formica Corporation, Cincinnati, Ohio
 - 2. Wilsonart, Temple, Texas
 - 3. Nevamar
- D. Color to be selected by Architect, more than one color may be chosen.

2.04 POLYESTER LAMINATE OVERLAY (THERMOSET)

- A. Polyester laminate shall be 9 to 11 mils in thickness, 62% resin content, colorfast and shall meet or exceed ASTM D-L-300.

PART 3 - EXECUTION

3.01 SHOP ASSEMBLY

- A. All millwork items are to be shop assembled whenever practical and delivered to job ready to set in place and finish. Items too large for handling and delivery are to be assembled in as few sub-units as possible. When shop assembly is not practical, all individual pieces of an item are to be bundled together and marked before delivery.

3.02 DELIVERY OF MILLWORK

- A. No millwork will be delivered to the job until the building is completely closed in and weatherproof and all trades, which require water for their work, such as plaster, have been out of the building for a minimum of ten (10) days. Heat will be required in building during this ten (10) day period during cold weather.

3.03 SHELF SPANS

- A. For spans up to 36", use $\frac{3}{4}$ " thick material.
- B. For spans between 36" and 48", use 1" thick material.
- C. For spans greater than 48", provide additional mid-span support.

3.04 INSTALLATION

- A. Install all millwork in accordance with the best workmanlike practice of the trade. All millwork items shall be installed true and level. All doors and drawer fronts shall be square, level and shall align with each other. All shelves shall be level. Holes for piping or other utilities shall be accurately located and neatly cut. Putty all nail and screw holes. Caulk all millwork to adjacent surfaces.
- B. Solidly anchor angle frame for vanities to walls using bolts or other approved anchors.
- C. Install laminated plastic in compliance with manufacturer's directions. Exposed seams of joints in finished surfaces shall be located where shown on Shop Drawings.

END OF SECTION

DIVISION 7 THERMAL AND MOISTURE PROTECTION

SECTION 07111 UNDERSLAB DAMPPROOFING

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all labor, materials, equipment and incidentals required for the installation of a continuous vapor barrier below all floor slabs on grade.

1.02 SUBMITTALS

- A. Submit manufacturers literature, fully describing the product, manufacturers installation instructions and requirements.

PART 2 - PRODUCTS

2.01 VAPOR BARRIER

- A. The material shall be "Moistop" as manufactured by Fortifiber Corp., Los Angeles, California, or approved equal. Equal products shall demonstrate compliance with the following standards:
- B. Compliance with Federal Specifications UU-B-790a, Type I, Grade A, Style 4;
- C. Vapor Permeance (perms), 0.10 by ASTM E-96, Procedure A;
- D. Water Resistance (haws); 76 by ASTM D799;
- E. Puncture Resistance (Beach Units), 63 by ASTM D781;
- F. Tensile Strength (psi), MD-5000, CMD-2800; and
- G. Dry Turnile Strength (lbs/1" width), MD-75, and CMD-43, by ASTM D828.

2.02 MATERIALS

- A. Pressure sensitive tape for joint and puncture sealing Fortifiber Grade 495, as manufactured by Fortifiber corp., or approved equal.

- B. Flashing cement shall be "Asphalt Roofing Cement" conforming to ASTM Specification D2822, as manufactured by Manville, Hoopers, GAF, or approved equal, as approved by vapor barrier manufacturer.

PART 3 - EXECUTION

3.01 INSTALLATION VAPOR BARRIER

- A. The Vapor Barrier shall be installed under all floor slabs prior to the placing of the steel reinforcing and concrete, on the leveled and taped sand cushion. The material shall be rolled down in the widest practical width, parallel with the direction of the concrete floor, lapping all joints a minimum of six inches (6") and sealing them with pressure sensitive tape or solidly troweled application of flashing cement. All penetration or punctures shall also be sealed with pressure sensitive tape or solidly troweled application of flashing cement as per manufacturer's instructions.

END OF SECTION

SECTION 07200 BUILDING INSULATION

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all materials, labor, equipment and incidentals necessary to install general building insulation in the exterior walls, above lay-in ceilings (where scheduled) and sound batts in the interior partitions, as shown on the Drawings and/or specified herein. Other Sections of these Specifications may require additional insulation for specific products or materials.
- B. It is the intent of this specification to provide and install insulation in all areas of the building envelope to separate exterior conditions from the conditioned interior spaces. Insulating the exterior building envelope is to be continuous, without gaps or voids, whether shown on documents or not.

1.02 SUBMITTALS

- A. Submit manufacturer's literature, fully describing the product and necessary installation data.

1.03 DELIVERY AND STORAGE

- A. Deliver materials to job site in original unopened packages, clearly marked with product brand name and manufacturer's labels.
- B. Store materials under cover and protected from moisture, weather and construction activities.

1.04 QUALITY/TESTING STANDARDS

- A. ASTM E-84, "Standard Test Method for Surface burning Characteristics of Building Materials."
- B. ASTM E136, "Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degree Centigrade."
- C. ASTM E-96, "Standard Test Methods for Water Vapor Transmission of Materials."
- D. ASTM E-90, "Standard Method for Laboratory Measurement of Sound Transmission Loss of Building Partitions."

- E. ASTM E-518, "Standard Test Method for Steady-State Thermal Transmission Properties by Means of Heat Floor Meter."
- F. ASTM C-177, "Standard Test Method for Steady-State Thermal Transmission Properties by means of Guarded Hot Plate."

PART 2 - PRODUCTS

2.01 CEILING INSULATION – NOT USED

- A. Glass-fiber blanket: Ceiling insulation shall have a thermal resistance factor of R-30, unless otherwise noted on the Drawings, and be unfaced.
- B. Product shall have flame spread of not greater than 25 and a smoke development of not greater than 50 when tested in accordance with ASTM E-84. This product shall also be classified as non-combustible by passing the requirements of ASTM E-136.
- C. Unfaced Fiberglass Insulation as manufactured by Owens/Corning Fiberglass Corp.: Unfaced Building Insulation, as manufactured by Certain Teed, Fiberglass Commercial Wall Insulation as manufactured Manville Corp., or approved equal.

2.02 EXTERIOR WALL INSULATION

- A. Glass-fiber batt wall insulation shall have a thermal resistance of R-19 unfaced, unless otherwise noted on the Drawings, and faced with a kraft facing.
- B. The Kraft facing shall have a maximum of 1.0 perms when tested in accordance with ASTM E-96.
- C. Kraft Faced Fiberglass Insulation as manufactured by Owens/Corning Fiberglass Corp., Kraft Faced Building Insulation as manufactured by CertainTeed; Fiber Glass Commercial Wall Insulation, as manufactured by Manville Corp., or approved equal.

2.03 PRE-ENGINEERED BUILDING INSULATION

- A. Wall insulation system shall be 3.5" R-11 NAIMA 202-96 faced GYMGUARD "Lamtec" vapor retarder. Color shall be "White". – NOT USED
- B. Roof insulation system to be 9 1/2" thick and have a R-30 rating. Material shall consist of 2 layers; top layer 3.5" R-11 NAIMA 202-96 unfaced fiberglass blanket insulation. Bottom shall be 6" r-19 NAIMA 202-96 fiberglass blanket insulation manufactured to fit tight between purlins spaces and faced GYMGUARD by "Lamtec" vapor retarder with long tabs to lap over the top of the purlins. The finished product shall carry a UL rating of FHC 25/50. Color shall be "White".

2.04 RETRO-FIT METAL ROOF INSULATION

- A. Glass-fiber blanket: 3 1/2 " thick roll insulation shall have a thermal resistance factor of R-13, unless otherwise noted on the Drawings, and be unfaced.

PART 3 - EXECUTION

3.01 GENERAL

- A. Install insulation full thickness all areas to be insulated. Leave no gaps.
- B. Cut and fit tightly around obstructions and fill all voids to include double and nested studs and headers.
- C. Install insulation in conformance with manufacturer's printed instructions.
- D. Fit insulation behind electrical receptacles, piping, etc., to form a completely insulated area.
- E. Insulations with facings shall have facing installed to the warm-in-winter side.

3.02 CEILING INSULATION – NOT USED

- A. Install tightly butted over ceiling panels. Install over water and sprinkler piping to insure piping to insure piping is in the conditioned space

3.03 EXTERIOR WALL AND SOUND BATT INSULATION

- A. Friction-fit in place between metal/wood studs as support until interior finish is applied. Wall stud spaces greater than eight feet (8') in height shall have supplementary support to hold the material in place, as per manufacturer's recommendations.

END OF SECTION

SECTION 07205 PERIMETER INSULATION

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all materials, labor, and incidentals required to install all perimeter foundation insulation.

1.02 SUBMITTALS

- A. Submit manufacturer's literature.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Perimeter Insulation: Shall be an extruded cellular foam polystyrene one inch (1") thickness insulation board, 4 ft. wide, prescored. Cut into 2'-0" wide sections or prescored for breaking into 2'-0" wide sections.

2.02 PRODUCTS/MANUFACTURERS

- A. Styrofoam SM Insulation Board, as manufactured by Dow Chemical Co.
- B. Amfoam Extruded Polystyrene Insulation, Amco Foam Products Co.
- C. Foamular 150, as manufactured by UC Industries, Inc.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All installation to be according to latest instructions of Manufacturer.
- B. Install with joints tightly butted together without voids. Anchor in place to avoid shifting during concreting operations. Set insulation in adhesive as recommended by the manufacturer of insulation on vertical services.

END OF SECTION

SECTION 07415 REROOFING ADJUSTABLE FRAMING SYSTEM

PART 1 - GENERAL

1.01 SCOPE

- A. This section includes the requirements applicable to the re-roofing Adjustable Framing System to be furnished and installed under the contract. All work involved with the furnishing and installation of the re-roofing adjustable framing system shall be accomplished in conformance with the requirements specified herein and with related requirements covered by other sections of this specification.

1.02 RELATED SECTIONS

- A. Section 13121 – Pre-engineered metal building – Prefinished metal roofing panels

1.03 REFERENCES

- A. American Iron and Steel Construction (AISC) - Manual of Steel Construction - Allowable Stress Design, Ninth Edition.
- B. American Iron and Steel Institute (AISI)- Specifications for the Design of Cold-Formed Steel Structural Members, 1986 Edition and 1989 Addendum.
- C. Metal Building Manufacturer's Association (MBMA) Low Rise Building System Manual.
- D. American Society of Civil Engineers (ASCE) 7-93 - Minimum Design Loads for Buildings and Other Structures.
- E. Metal Roof Manufacturer's Structural Calculations, Product Information and Cautions and Erection Instructions.
- F. AWS D1.3 Structural Welding Code - Sheet Steel.
- G. AWS D1.1 Structural Welding Code - Steel.
- H. State and Local Building Codes have jurisdiction.

1.04 SYSTEM DESCRIPTION

- A. The adjustable framing system shall provide support for the new roof system over the existing roof and shall adjust to accommodate the irregularities of the existing roof and form a uniform structural platform to support the new roof system at the specified slope.

- B. The adjustable framing system shall transfer loads from the new roof system to the existing roof structure in such a manner as to not overload the existing structural members.
- C. Design the adjustable framing system to resist the forces produced by the following loads:
 - 1. Wind Load: In accordance with 2006 International Building Code
Exposure C, Importance Factor = 1.0
Wind Velocity = 90 mph - minimum net uplift of system = 30 psf
 - 2. Live Load/Snow Load: 20 psf minimum.
 - 3. Dead Load: Total of all permanently installed material including roofing, structural frame, accessories and all equipment that is fixed in position.
- D. Design of the adjustable framing system shall be in accordance with AISC, Allowable Stress Design Specification for Structural Steel Buildings, Ninth Edition, 1989, and AISI, Specification for the Design of Cold Formed Steel Structural Members, 1986 and 1989 addendum.

1.05 JOB CONDITIONS

- A. Existing Conditions: Existing roof system and underlying structure on the building consists of metal joists and steel deck framing with built up roofing.

1.06 SUBMITTAL

- A. Submit manufacturer's product data and installation instructions.
- B. Submit shop drawings showing dimensioned layout and details of adjustable framing system, dimensioned layout of existing roof and underlying structure, attachment requirements to existing structure, bracing, slopes, parts descriptions, top member height chart and a description of how the re-roofing shall proceed. Note section properties for sections used (flexural and axial loaded elements). Note allowable loads for fasteners in manner used (shear, tension, etc...). Shop drawings shall be sealed and signed by a Professional Engineer registered to practice in the State of Oklahoma.
- C. Submit a complete set of adjustable framing system structural calculations prepared exclusively for this project. Structural calculations shall be sealed and signed by a Professional Engineer registered to practice in the State of Oklahoma.
- D. Obtain approval of all submittals prior to fabrication and installation.

1.07 QUALITY ASSURANCE

- A. **Manufacturer:** The re-roof framing system manufacturer shall have been in the business as a re-roof framing system manufacturer for at least five years. The manufacturer shall submit upon request at least ten projects similar in size and scope prior to commencement of work listing the architect, owner, scope, location and name of project.
- B. **Product:** The adjustable framing system shall have demonstrated its suitability for this application in at least one of the following manners:
1. Successful use on similar projects for a minimum of 5 years resulting in National acceptance of the product.
 2. Submission of proof of appropriate load testing of the system and detailed engineering analysis.
- C. **Installer:** The installer shall install the adjustable framing system in strict accordance with the manufacturer's shop drawings and installation instructions. The installer shall have a minimum of two years experience in the installation of re-roof framing systems or be specifically approved by the manufacturer.
- D. **Approved Products:**
1. ReRoof America, Inc., 6711 South Yale Ave., Suite 205, Tulsa, OK with the CURA® Adjustable Reroof Framing System 74136-3327, (800) 280-2872 as the basis of acceptable performance. Like products of other manufacturer's may be approved providing they meet or exceed all of the requirements specified herein.
 2. No substitutions will be considered unless written request for approval is received in the architect's office at least twelve days prior to date for receipt of bid. Each such request shall include the name and description of the proposed substitute, drawings, details, cuts, mock-ups, performance and test data, a list of ten projects of similar scope, references, photographs of existing installations, a letter by the manufacturer stating that the proposed substitute meets or exceeds all design criteria specified and any other information necessary for evaluation.
 3. After evaluation, approval will be issued via written addendum. No verbal approval will be given.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Steel

1. All hot rolled steel used to fabricate the adjustable frames shall have minimum yield strength of 36,000 psi. All cold-formed steel used to fabricate the adjustable frames shall have minimum yield strength of 40,000 psi. Steel shall meet requirements of an appropriate ASTM standard and shall be certifiable.
2. The adjustable frames shall be coated with a red oxide paint or equivalent by either a spray or dip process.

B. Fasteners

1. Field fasteners shall be minimum 1/4 - 14 x 1" HWH #3 self-drilling/self-tapping screws coated with a corrosion resistant coating. Screws shall be manufactured by a recognized manufacturer and shall be marked with manufacturer's identification symbol.
2. Field fasteners installed with the head under the roof panel shall be minimum #12 - 14 x 1" Pancake Head #3 self-drilling/self-tapping screws coated with a corrosion resistant coating. Screws shall be manufactured by a recognized manufacturer and shall be marked with manufacturer's identification symbol.

2.02 FRAMING SYSTEM DESIGN

- A. Provide adjustable framing system with open web construction consisting of steel top, bottom and web members that are sized and selected specifically for this project. Adjustable framing system shall incorporate adjustable height ranges as required by this project but in no case shall total adjustability be less than six inches. Adjustability is required to establish the proper elevation of the top member shall be achieved by an adjustable top clip, by sliding the web member vertically on the top or bottom member, by diagonal web members that rotate up and down or by field cutting any given web member to the precise length required.
- B. The top member of the adjustable framing system shall be a minimum 16 gage structural shape installed in such a manner that its top flange lies substantially in the same plane as the new roof. The top flange of the top member shall have sufficient width to accommodate attachment of the new roof system. The top member of the adjustable framing system shall accommodate its longitudinal thermal expansion and contraction by means of a slotted connection designed to satisfy the configuration of this project, but in no case shall the top member exceed 150' in length without an expansion splice.

- C. The adjustable framing system web members shall be a structural angle or channel factory pre-cut to the exact length required to allow proper function of adjustable elements. Framing systems without adjustable elements shall have any given web member field cut the precise length required in order to establish the proper top member elevations without adjustable elements. Drawing shall clearly dimension the required overlap relationship between adjoining members to assure proper field cutting of members. Web members and any associated splices or connections shall be designed to resist any moment created by eccentric loading of the member as well as the associated axial and shear loads.
- D. Intermittent bottom members shall be factory pre-cut and the bottom flange of the bottom member shall be factory pre-punched for attachment to the existing structure. All bottom members shall be sized and selected to distribute the new roof loads to the existing structure without over stressing the bottom member or exceeding the allowable compressive strength of the roof. Calculations shall demonstrate structural suitability of the bottom member.
- E. The adjustable framing system shall be braced both laterally and longitudinally using steel strapping designed to satisfy the design loads and the roof system used. When bracing changes direction, component forces are created which must be taken into consideration in the design and erection of the framing system. The framing design shall include bracing as required to resist the following:
 - 1. Applicable horizontal loads.
 - 2. A minimum of 2% of the vertical load applied laterally.
 - 3. All forces developed in the plane of the roof as a result of vertical roof loads and wind loads.
- F. Shop drawings shall clearly state whether the frame was designed for fixed or floating attachment of the roof panels. If designed for floating clips, the shop drawings shall clearly state whether the system was designed for the roof panel to be fixed at the eave, the ridge, or an intermediate location.
- G. Framing design shall not rely on the roof panel or flashing to transfer in plane loads across the ridge of the roof.

2.03 METAL ROOF PANEL SYSTEM

- A. Metal roofing panels are to be 24 gauge prefinished standing seam type as specified in section 13121.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify conditions of existing roof systems and structural supports before starting installation of the adjustable framing system. Notify the architect of conditions detrimental to the successful installation before erecting the adjustable framing system.

3.02 PREPARATION

- A. Remove existing roof-mounted equipment and modify penetrations as specified in other sections.
- B. Remove gravel, and other uneven or loose materials as required to provide a clean, even contact surface between framing system bottom member and support elements.
- C. Provide blocking and shimming as required.
- D. If required, replace deteriorated roof, insulation and roof deck as specified in other sections.

3.03 INSTALLATION

- A. General
 1. Install the adjustable framing system in accordance with manufacturer's shop drawings and installation instructions.
 2. Coordinate with installation of roofing and other adjacent work.
- B. Fasten bottom members to substrate according to manufacturer's shop drawings and installation instructions.
- C. Temporarily waterproof fastener penetrations and other penetrations thru existing roof.
- D. Establish required top member elevations at the highest and lowest guide frames within a roof area. Attach web members to the bottom members at the highest and lowest guide frames. Adjust and attach top members at the required elevation to the web members at the highest and lowest guide frames. Provide temporary bracing as required. Install string lines between the highest and lowest guide frames. Ensure that string lines are tight and not sagging. Use wire and turnbuckles or other method if necessary to be certain that new roof plane is straight and true. Establish the elevation of intermediate frames according to string lines. Repeat erection sequence as required for continuity.

E. Install permanent bracing as shown on manufacturer's shop drawings.

F. Tolerances:

1. Out-of-Plane: The top members of the adjustable frames shall not vary from the theoretical plane of the new roof bearing by more than + 1/4 inch individually and 1 inch in 180 inches overall slope.
2. The adjustable framing system shall be installed in a plumb and vertical position. Out of plumb tolerance shall not exceed + 1/4 inch in 60".
3. The top support beam surface of the adjustable framing system supporting the new roof shall not be out of plane with the new roof by more than 1/4" in 12".

3.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver adjustable framing system in marked bundles of like sizes and configuration. Deliver top support members, bottom members and factory pre-cut web members bundled separately.
- B. Store on supports so as to maintain adjustable framing system in a dry, clean segregated condition.
- C. Handle adjustable framing system so that individual members and factory-made joints are not over stressed during shipping, storage and erection.

END OF SECTION

SECTION 07621 FLASHING AND SHEET METAL (PREFINISHED)

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all materials, labor, equipment and incidentals necessary for the installation of all prefinished roofing sheet metal work.

1.02 SUBMITTALS

- A. Submit manufacturers literature fully describing and listing all materials required, and complete range of color samples.

1.03 WARRANTY

- A. Provide a twenty (20) year warranty against color fade, chalking and film integrity of the product finish.
- B. The roofing Subcontractor shall furnish a two (2) year written Warranty against leakage for all sheet metal work as specified herein, in conjunction with the Roofing Warranty.

1.04 REFERENCE PUBLICATIONS

- A. SMACNA, "Architectural Sheet Metal Manual". Comply with details of fabrication of flashing sheet metal.
- B. NRCA "Roofing and Waterproofing Manual". Comply with details of installation.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Flashing material shall be 24 ga. Galvanized steel, finish with a thermoset acrylic enamel coating, minimum of one (1) mil total dry film thickness, factory applied to a thoroughly cleaned and pretreated surface.
- B. Color shall be selected from manufacturer standard KYNAR 500 colors submitted by Contractor.

PART 3 - EXECUTION

3.01 APPLICATION

A. Sheet Metal Flashing

1. Form, fabricate and install all sheet metal work, as shown on Drawings and/or as specified herein. Work shall be accurately formed to sizes, shapes and dimensions shown or required and shall be installed accurately, true to line and completely weathertight. All items are to be shop fabricated in maximum practical lengths with a minimum of joints. Provide flat lock seams in all exposed flashing unless otherwise noted.
2. Furnish items, which are to be installed by others, to the proper trades for installation.
3. All joints to be soldered, except where expansion joints are required, with fifty percent (50%) tin, fifty percent (50%) lead solder, using the flux best suited for the material being soldered.
4. Provide for thermal expansion. Use overlaps or expansion joints. Where required for watertightness, provide hooked flanges filled with polyisobutylene mastic. Embed flanges 1 inch.
5. Expansion joint maximum spacing:
 - 50'-0" -steel
 - 40'-0" -copper, stainless steel
 - 30'-0" -aluminum
6. Separate dissimilar metals or flashings from corrosive materials with 15-mil sulphur-free bituminous coating, FS TT-C-494.
7. Anchor work in place with noncorrosive fasteners, adhesives, setting compounds, tapes or other materials as recommended by manufacturer of each material or system.
8. Set flanges in thick bed of roofing cement.

3.02 INSTALLATION COORDINATION

- A. Fully coordinate the installation of flashing and sheet metal with the roofing system manufacturer. Adjust materials and techniques of installation and counter flashing to insure full compatibility with the roofing membrane.

END OF SECTION

SECTION 07920 SEALANTS

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all labor, materials, equipment and incidentals necessary for the application/installation of sealants to protect joints against the intrusion of foreign matter, passage of water or air.

1.02 QUALITY ASSURANCE

- A. Qualifications of Installers: only workmen thoroughly trained in sealant technique shall perform Installation of sealants.
- B. Rejection of Installed Sealant: Indication of a lack of skill on the part of installers shall be sufficient grounds for the Architect to reject the installed sealant and to require its immediate removal and complete replacement at no additional cost to the Owner.

1.03 SUBMITTALS

- A. Submit manufacturer's literature and color samples.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original, tightly sealed containers or unopened packages with manufacturer's name, labels, product identification and lot numbers where appropriate.
- B. Store materials out of weather in original containers or unopened packages as recommended by manufacturer.

PART 2 - PRODUCTS

2.01 PRODUCTS

- A. Sealant: (All uses may not be in Project)
 - 1. For exterior vertical control and expansion joints;
Multi-component Urethane Sealant equal to ASTM 920, Class 25 and Federal Specification TT-S-00230C, Type II, Class A, non-sag type.

2. For exterior horizontal control and expansion joints:
Multi-component Urethane Sealant, non-modified, equal to ASTM 920-79, Type M, Grade SL, Class 25 and Federal Specification TT-S-00227e, Type I, Class B.
Acceptable Manufacturers: Pecora NR-200; Vulkem 245; Tremco THC-900
3. For perimeter glazing (for use with multi-component silicone):
Single-component Silicone Sealant meeting ASTM-920-79, Grade NS, Class 25 and Federal Specification TT-S-00230e, Type II, Class A and Federal Specification TT-S-001543C. Acceptable Manufacturer: Dow Corning 795; Tremco Spectrum 2
4. For perimeter glazing (for use with multi-component urethane):
Single or multi-component Urethane Sealant meeting Federal Specification TT-S-0023, Type II or TT-S-00227e, Type I.
5. For interior usage:
One component polyurethane sealant.
6. For plumbing fixtures (for use between fixture and floor or wall):
Silicone rubber based, one-port non-sag elastomeric sealant, mildew resistant complying with FDA 21CFR177.2600, and type as recommended by manufacturer of sealant.

B. Primer: Primer shall be as recommended by manufacturer of sealant.

C. Back up Material: Foamed, closed-cell polyethylene or open-cell polyurethane rod stock or material as specially recommended by the manufacturer of sealant.

D. Bond Breaker Tape: Polyethylene or other plastic tape as recommended by sealant manufacturer.

2.02 SEALANT COLORS

A. Colors shall be selected by Architect from manufacturers range of standard colors. More than one color may be chosen.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine joints to be sealed for construction defects, which would adversely affect execution of work.
- B. Ensure that masonry and concrete have cured 28 days minimum.
- C. Do not start work until conditions are satisfactory.

3.02 PREPARATION

- A. *Cleaning: Clean joint surfaces, using joint cleaner or other methods as recommended by sealant manufacturer, to be free of dust, dirt, oil, grease, rust, lacquers, laitance, release agents, moisture or other matter which might adversely affect adhesion of sealant.*
- B. *Masking: Mask areas adjacent to joints.*
- C. *Priming: Apply primer, following manufacturer's instructions.*

3.03 APPLICATION

- A. *Install backing material in joints using blunt instrument to avoid puncturing. Do not twist rod while installing. Install backing so that joint depth is 50% of joint width, but a minimum of ¼ inch deep.*
- B. *Bond breaker tape shall be applied to sealant contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant.*
- C. *Apply sealant in joints using pressure gun with nozzle cut to fit joint width. Make sure sealant is deposited in uniform, continuous beads without gaps or air pockets.*
- D. *Tool joints to required configuration within 10 minutes of sealant application. If masking materials are used, remove immediately after tooling. (Note: Soap and water will not be permitted in joint tooling process.)*

3.04 CLEANING

- A. *Remove excess materials adjacent to joints by mechanical means or with xylol (xylene) or mineral spirits as work progresses to eliminate evidence of spillage or damage to adjacent surfaces. Note: When using flammable solvents, avoid heat, sparks and open flames. Always provide adequate ventilation and follow all precautions listed on solvent container label.*
- B. *Leave finished work in neat, clean condition with no spillovers onto adjacent surface.*

END OF SECTION

DIVISION 8 DOORS AND WINDOWS

SECTION 08115 STEEL FRAMES

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all labor, materials, equipment and incidentals necessary for all hollow metal work such as door frames, sidelights, borrowed lights, exterior frames and transom frames.
- B. Hollow metal requirements for this project are for standard manufacture of the best quality. Competent agents or representatives, who are experienced in the handling of such products, shall represent the company.

1.02 SHOP DRAWINGS

- A. Submit shop drawings showing hollow metal work, schedules and details.

1.03 AMERICANS WITH DISABILITIES ACT (ADA) COMPLIANCE

- A. It is the specific intent of this Specification to require full and complete compliance with the requirements of the ADA, to include the 48" maximum mounting height for operable Finish Hardware.

1.04 TEST

- A. Underwriters Laboratories labeled frames: All labeled frames shall be of type, which has been investigated and tested in accordance with UL-10 (B), ASTM E-152, NFPA 252, ANSI A2-2 and when required, UL-305. Labeled frames shall have the same rating as the scheduled door.

1.05 STORAGE AND HANDLING

- A. Frames shall be received by the Contractor at the job site and handled in a manner so as not to be damaged. They shall be stored in a protected area on wood runners or skids and shall be covered with vented tarpaulins or vented plastic.

1.06 APPROVED MANUFACTURERS

- A. Steelcraft
- B. The Ceco Corporation
- C. Republic Builders Products
- D. Curries Manufacturing, Inc.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Hollow metal frames shall be of sixteen (16) gauge for interior frames and fourteen (14) gauge for exterior frames, commercial quality cold rolled steel in compliance with ASTM A 366 and ASTM A 568. Exterior frames shall be galvanized in compliance with ASTM A 525 and ASTM A 526. Frames shall be neatly mitered and the corners welded and ground smooth for an invisible joint. Provide temporary spreader bars on welded frames. Anchors shall be furnished for at least each twenty-four inch (24") centers of jamb height to coordinate with wall and/or stud condition.
- B. Frames shall be mortised, reinforced, drilled and tapped for all mortise hardware, in accordance with Hardware Schedule, and templates furnished by the hardware supplier; except that drilling and tapping for surface door closer brackets, and/or other surface applied hardware shall be done in the field. Frames shall be punched for rubber door silencers as specified under Builder's Hardware Comply with ANSI A115 "Specification for Door and Frame Preparation for Hardware"
- C. All mortising and reinforcements shall be accurate and done in a neat, workmanlike manner. Provide steel strike and hinge reinforcement covers for frames.
- D. Locate finish hardware in accordance with Door and Hardware Institute's "Recommended Locations for Builders Hardware; and ADA requirements.
- E. Provide 26 ga. Steel plaster guards or mortar boxes welded to frame at back of hardware cutouts on all grouted frames.

- F. Finish: After fabrication, thoroughly clean, chemically treat (to assure maximum paint adhesion) and dip or spray all surfaces of the frame exposed to view with a coat of rust inhibiting primer, either air dried or baked on. All materials shall be protected for shipping so that they may arrive at job site without undue damage from shipping. Replace any damaged or dented frames.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Installation of frames: Frames shall be set so that the finished installation is at correct elevation, plumb, level, in line and at correct location in the wall, thoroughly and solidly anchored.

END OF SECTION

SECTION 08200 WOOD DOORS

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all materials, labor, services and incidentals necessary for the installation of all wood doors.

1.02 DELIVERY, STORAGE AND HANDLING

- A. Prior to accepting delivery, inspect all doors to ensure that no sub grade, defective or damaged pieces are delivered.
- B. Doors shall be delivered only after Contractor indicates that proper storage will be provided at the Project Site.
- C. Store doors in a protected area until the Contractor indicates he is ready to receive them.

1.03 TEST

- A. Underwriters Laboratories labeled doors- All labeled doors shall be of type, which has been investigated and tested in accordance with UL-10, ASTM E-152, NFPA 252, ANSI A2-2 and when required UL-305 as shown on the Drawings and specified herein.

1.04 AMERICANS WITH DISABILITIES ACT (ADA) COMPLIANCE

- A. It is the specific intent of this Specification to require full and complete compliance with the requirements of the ADA. Wood Doors shall be designed for full compliance to include Finish Hardware mounting heights.
- B. The following requirements are applicable to this Project:
 1. The lowest 12" of the door shall be free of obstructions. Full glazed doors shall have a 12" bottom rail.
 2. Maximum mounting height for operable hardware shall be 48" to include deadbolts.
 3. Doors shall be designed for a ½" maximum threshold height.

1.05 SUBMITTALS

- A. Submit shop drawings indicating, to scale, all types, sizes and necessary installation details of the doors to be supplied.
- B. Submit manufacturer's literature fully describing all types of doors to be supplied.

- C. Submit "Life-of-the Installation" warranty.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. General grades specified conform to the most recent grading rules of the Southern Pine Association, the West Coast Lumberman's Association, Douglas Fir Association, Lumber Manufacturing Association, or Hardwood Plywood Association under whose rules the lumber is produced.
- B. Lumber shall be kiln-dried to 10% to 12% moisture content, which shall be maintained during the fabrication and transport of doors.
- C. Solid Core Wood Doors and Transom Panel Doors shall be equal to Weyerhaeuser Doors as listed below, in sizes and thickness indicated in the Door Schedule:

DPC-1 Standard non-labeled doors

DFP-20 20-minute door

DFM-45 "C" label door

DFM-90 "B" label door

1. Doors shall be faced with Premium; plain sliced "Red Oak".
2. Doors shall be finished with clear natural finish as specified in Painting, Section 09900.
3. Solid Core Wood Doors and Transom Panels shall carry a Life-of-the-Installation guarantee against warping, twisting, or manufacturing defects. Issue guarantee to Owner in writing.
4. Field cutouts of particleboard core door. Coat all raw edges with a heavy coat of good quality exterior varnish.
5. Provide labeled doors where shown on the Door Schedule.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. All doors to receive clear finish shall be sealed immediately upon delivery to the job site.

B. Installation of hardware:

1. The supplier will mark each item of hardware for location. If any item of hardware is delivered to the job not properly marked, return it.
2. Install and make necessary adjustments for proper working order.
3. Provide clean properly sized and accurately placed mortise and surface mounted finish hardware cuts and routs. Use appropriate jigs and templates and power mortising equipment for the installation of all mortise hardware.
4. Damaged hardware shall be replaced.
5. After hardware is installed, protect exposed surfaces by use of heavy paper and masking tape and maintain until job completion.

C. Removal for Painting:

1. Remove all hardware before painter's finish is applied and permanently replace and re-adjust for proper function after painter's finish has dried hard.

D. Grilles and Glass in Doors: (If applicable)

1. Location: Refer Door Schedule.
2. Materials: Grilles – furnished by mechanical section for installation by this Section.
3. Application: Install square and level.
4. Glass in rated doors shall be installed with metal stops.

- E. Doors shall be hung to accurately fit their frames and shall operate smoothly, closing completely. Do not impair structural strength of the door in fitting or during hardware installation.

END OF SECTION

SECTION 08360 OVERHEAD DOORS

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes: Overhead door, electrically operable with weather seal at jamb and hardware.
- B. Electrical wiring from makeup box to electric operators and control station.

1.02 RELATED WORK

- A. Steel channel framing for door openings.
- B. Brace framing for door tracks in excess of that specified in this section.
- C. Electrical service to make up box located on electric door operators.
- D. Empty conduit from control station to door operations.

1.03 SHOP DRAWINGS AND PRODUCT DATA

- A. Submit shop drawings and product data, to include pertinent dimensions, general construction, component connections and details, anchorage methods, hardware locations, installation details, operating instructions and maintenance instruction.

1.04 DELIVER MATERIALS

- A. Deliver doors and accessories in manufacturer's packaging complete with installation instructions.

PART 2 – PRODUCTS

2.01 DOOR AND OPERATOR

- A. Upward acting door 10'x10' to be #432 medium duty series, ribbed exterior, 24 ga. steel, polystyrene insulating core, 26 ga. steel backing (interior), 2" thickness, interior mounted slide lock, standard lift tract (mounted as high as possible), chain hoist and bottom sensing edge as manufactured by Overhead Door Corporation with electric operators as specified.
- B. Operator per Section 08720.

- C. *Weather seal installed at jamb and head to door on all overhead doors.*

PART 3 – EXECUTION

3.01 INSTALLATION

- A. *Install overhead sectional doors complete with electric operators and controls in accordance with manufacturer's recommendations. Coordinate installation with electrical service.*
- B. *Fit, align and adjust complete door assemblies level and plumb, and to provide smooth operation.*
- C. *Securely brace overhead door tracks suspended from structure. Secure tracks to structural members only.*
- D. *Secure weather seal to manufacturers recommendations.*

3.02 CLEAN UP

- A. *Remove all debris resulting from this operation, place in dumpster provided.*

END OF SECTION

SECTION 08520 ALUMINUM WINDOWS

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes: Fixed Aluminum windows. Furnish labor and materials for the complete installation of the windows.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Aluminum Windows: Aluminum window shall be of commercial quality alloy 6063-5, heavy-gauge, with nominal wall thickness tolerances as defined in the American Architectural Manufacturers Association Master Specification for Aluminum Windows. "MANKO 650" Series, as manufactured by "Manko Window Systems".
- B. Thermal Barrier Material: Thermal barrier material shall consist of a two-part chemically curing high strength polymer resin (Polyurethane).
 - 1. All fasteners, screw rivets, and miscellaneous fastening devices shall be of other non-corrosive material compatible with aluminum in accordance with ASTM A164-55 or A165-55.
 - 2. Finish: Anodized finish with color selected by the Owner from mfg standard.
 - 3. Weather-stripping: Shall be dense weather-stripping conforming to AAMA 701.2.
 - 4. Glazing: Sash shall be glazed with 7/8" sealed, double insulated, low "E" clear glass set in wrapped vinyl glazing channel.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install frames plumb, level and anchor frames to insure stable operation.
- B. Windows shall be installed with even margins to frame, top and sides. Test for smooth operation.

3.02 CLEAN UP

- A. Remove all debris resulting from this operation, place in dumpster provided.

END OF SECTION

SECTION 08700 FINISH HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes: Door hardware.

A. Furnish labor and materials to complete the installation of all work under this section.

1.02 GENERAL REQUIREMENTS:

A. This material shall be procured from a source of supply approved by the Architect as competent to correctly interpret the plans, details and specifications, and be prepared at all times to promptly and satisfactorily service the hardware on the job. This supplier must be an established contract builders' hardware firm, who meets all the above requirements, and who maintains and operates an office, display room and stock in the State of Oklahoma.

This material must be furnished by or under the direct supervision of an architectural hardware consultant, as certified by the Door & Hardware Institute Inc. regularly employed by this supplier, and all bids must be so certified. Bids on this material will not be acceptable from firms who have not been successfully engaged in selling and servicing contract builders' hardware for a period of at least five (5) years.

1.03 SCOPE OF THE WORK

A. The work to be done under this specification consists of furnishing and delivering to the General Contractor, at the building, all hardware.

B. The installation of this material shall be done by the General Contractor, but this contractor shall deliver all items to the building properly marked and identified. The General Contractor is responsible for protecting the original finish and texture of all items of finish hardware.

C. The finish hardware shall be installed by mechanics skilled in this type of work. The escutcheons must be set plumb and locks, knobs and cylinders must be installed in a neat and workmanlike manner and all template information to the various manufacturers, sizes, functions, designs, and types of hardware specified must be furnished. No substitutions will be considered.

D. If hardware for any particular door is not listed or described, it shall be furnished and shall be as specified for similar locations.

- E. The hardware items listed in this specification are from the catalogs of the manufacturers as noted on the schedule. Suppliers of other manufacturers not covered by this specification must secure approval of the architects in writing not less than one week before date of letting.

1.04 SUBMITTALS

- C. **HARDWARE SCHEDULE:** Contractor shall prepare and submit to the Architect five copies of a complete schedule of all finish hardware required. Schedule shall follow requirements of specifications and shall indicate types, manufacturer's name and number location and finish of each item required. Approval of schedule will not relieve contractor of responsibility for furnishing all necessary hardware.
- B. **SAMPLES:** Submit such samples as required by the architect for approval: do not deliver hardware until approval is obtained.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Hardware manufacturers shall be as designated in the Hardware Schedule, or an approved alternate of compatible quality.
- B. **ROUGH HARDWARE:** Not a part of this section of the specification. General Contractor to furnish and set all items that are specified or necessary for a complete job, and all hardware specified in other sections.
- C. **PACKING AND MARKING:** Package each item of hardware and each lockset separately in individual containers, with necessary screws, keys, instructions and installation templates for spotting mortising tools. Mark each container with item number corresponding to number shown on contractor's hardware schedule.
- D. **FINISH:** All hardware shall be us26d (626) brushed chrome or us32d (630) brushed stainless steel. Door closers shall be spray painted to match. Hardware for aluminum doors to match door finish.

PART 3 -EXECUTION

3.01 INSTALLATION

- A. **Hardware Mounting Heights:**
 1. Door and Hardware Institute recommended locations for Builders Hardware for Standard Steel Doors and Frames, except as otherwise indicated.
 2. Toilet accessories mounted at America Disabilities Act standard heights.

B. Install each hardware item to comply with manufacturer's instruction and recommendation

3.02 ADJUSTING

A. Hardware Adjustment: Return to project one (1) month after Owner's occupancy and adjust hardware to proper operation and function.

3.03 CLEAN UP

A. Place in dumpster provided all debris resulting from this operation.

3.04 KEYS & KEYING

A. All locksets shall be keyed alike or different as directed and master keyed. Furnish two (2) keys per lockset and six (6) master keys per project.

MANUFACTURERS LIST:

SC	SCHLAGE – NO SUBSTITUTION
CR	CORBIN RUSSWIN – NO SUBSTITUTION
LC	L.C.N.
RO	ROCKWOOD
PB	P.B.B. HINGE
PE	PEMKO

WAGONER COUNTY HEALTH DEPARTMENT

H.W. SET #1

SINGLE DOOR

EACH DOOR SHALL HAVE:

1 EA. CYLINDER 20-013-626 (verify type)

ALL OTHER HARDWARE BY DOOR SUPPLIER.

SC

H.W. SET #2

SINGLE DOOR

EACH DOOR SHALL HAVE:

ALL HARDWARE BY DOOR SUPPLIER.

H.W. SET #3

SINGLE DOOR

EACH DOOR SHALL HAVE:

3	EA. HINGES BB81-4.5 X 4.5-US26D	PB
1	EA. LOCKSET AL53PD-SAT-626	SC
1	EA. DOOR CLOSER 1461-HW/PA-TBSRT-ALUMINUM	LC
1	EA. KICKPLATE K1050-10" X DW-2"-630	RO
1	EA. DOOR STOP 409/441-US26D	RO
3	EA. SILENCERS 608	RO

H.W. SET #4

SINGLE DOOR

EACH DOOR SHALL HAVE:

3	EA. HINGES BB81-4.5 X 4.5-US26D	PB
1	EA. LOCKSET AL53PD-SAT-626	SC
1	EA. DOOR STOP 409/441-US26D	RO
3	EA. SILENCERS 608	RO

H.W. SET #5

SINGLE DOOR

EACH DOOR SHALL HAVE:

3	EA. HINGES BB81-4.5 X 4.5-US26D	PB
1	EA. LOCKSET AL80PD-SAT-626	SC
1	EA. DOOR STOP 409/441-US26D	RO
3	EA. SILENCERS 608	RO

H.W. SET #6

SINGLE DOOR

EACH DOOR SHALL HAVE:

3	EA. HINGES BB81-4.5 X 4.5-US26D	PB
1	EA. LOCKSET AL80PD-SAT-626	SC
1	EA. DOOR CLOSER 1461-RW/PA-TBSRT-ALUMINUM	LC
1	EA. KICKPLATE K1050-10" X DW-2"-630	RO
1	EA. DOOR STOP 409/441-US26D	RO
3	EA. SILENCERS 608	RO

H.W. SET #7

SINGLE DOOR

EACH DOOR SHALL HAVE:

3	EA. HINGES BB81-4.5 X 4.5-US26D	PB
1	EA. LOCKSET ND66PD-RH0-626	SC
1	EA. DOOR CLOSER 1461-RW/PA-TBSRT-ALUMINUM	LC
1	EA. KICKPLATE K1050-10" X DW-2"-630	RO
1	EA. THRESHOLD 171A-DW-WS/PA	PE
1	EA. WEATHERSTRIP 306AV-H&J	PE
1	EA. DOOR SWEEP 315CN-DW PE	
1	EA. DOOR STOP 409/441-US26D	RO

H.W. SET #8

PAIR DOORS

EACH PAIR SHALL HAVE:

6	EA. HINGES BB81-4.5 X 4.5-US26D	PB
1	EA. LOCKSET AL80PD-SAT-626	SC
1	EA. FLUSH BOLT 555-12"-626 (top only)	RO
1	EA. DOOR CLOSER 1461-HW/PA-TBSRT-ALUMINUM (active door only)	LC
2	EA. KICKPLATE K1050-10" X DW-2"-630	RO
2	EA. DOOR STOP 409/441-US26D	RO
2	EA. SILENCERS 608	RO

H.W. SET #9

SINGLE DOOR

EACH DOOR SHALL HAVE:

3	EA. HINGES 4B81-4.5 X 4.5-US26D-NRP	PB
1	EA. MULTI-POINT LATCHING SYSTEM FE6710-NSH-626	CR
1	EA. DOOR CLOSER 1461-HW/PA-TBSRT-ALUMINUM	LC
1	EA. KICKPLATE K1050-10" X DW-2"-630	RO
1	EA. DOOR STOP 409/441-US26D	RO
3	EA. SILENCERS 608	RO

H.W. SET #10

SINGLE DOOR

EACH DOOR SHALL HAVE:

3	EA. HINGES BB81-4.5 X 4.5-US26D	PB
1	EA. PRIVACY AL40S-SAT-626	SC
1	EA. DOOR STOP 409/441-US26D	RO
3	EA. SILENCERS 608	RO

H.W. SET #11

SINGLE DOOR

EACH DOOR SHALL HAVE:

3	EA. HINGES BB81-4.5 X 4.5-US26D	PB
1	EA. PASSAGE AL10S-SAT-626	SC
1	EA. DOOR STOP 409/441-US26D	RO
3	EA. SILENCERS 608	RO

H.W. SET #12

SINGLE DOOR

EACH DOOR SHALL HAVE:

3	EA. HINGES BB81-4.5 X 4.5-US26D	PB
1	EA. PULL PLATE 111 X 70C-630	RO
1	EA. PUSH PLATE 70C-4" X 16"-630	RO
1	EA. DOOR CLOSER 1461-RW/PA-TBSRT-ALUMINUM	LC
1	EA. KICKPLATE K1050-10" X DW-2"-630	RO
1	EA. DOOR STOP 409/441-US26D	RO
3	EA. SILENCERS 608	RO

END OF SECTION

SECTION 08720 OPERATORS

PART 1 – GENERAL

1.01 SUMMARY

- A. *Section includes: The electric operators for overhead doors, wall mount push button, and remote control.*
- B. *Provide labor, equipment, materials, and the operators to complete this section of the work.*

PART 2 - PRODUCTS

2.01 MATERIALS

- A. *Electric operators shall be Model MD, side mounted, as manufactured by Overhead Door Corporation. Motor horsepower shall be as recommended by the Overhead Door manufacturer, 115 volts, single phase.*
- B. *Motor shall have sufficient capacity to operate the door at an average speed of approximately eight (8) to twelve (12) inches per second. Motor shall drive the shaft with a V-belt. All bearings shall be a permanent lubrication type.*
- C. *Electrical enclosure shall be a NEMA Type 1 and be mounted on the operator frame and have a 24 VAC control circuit wired for momentary contact "open" and constant contact "closed".*
- D. *Operator control circuit shall be heavy duty, 24 volt, Class 2, three-button (open, close, stop) control station shall be wall mounted.*
- E. *Provide radio control system with one controller of use in vehicle for each door.*
- F. *Brake shall be spring set and solenoid released and be able to stop and hold curtain in any position.*

PART 3 – EXECUTION

3.01 INSTALLATION

- A. *The installation of the electric operators shall be completed by experienced workman of this trade.*

B. Install operator in accordance with the manufacturers recommendations.

3.02 CLEAN UP

B. Place in dumpster provided all debris resulting from this operation.

END OF SECTION

SECTION 08780 MILLWORK HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all materials, labor, equipment and incidentals necessary for the installation of Millwork Hardware.

1.02 SUBMITTALS AND SUBSTITUTIONS

- A. Submit millwork hardware schedule accompanied by manufacturer's literature (cut sheets) for each item.

PART 2 - PRODUCTS

2.01 MATERIALS AND FINISH

- A. All exposed millwork hardware items shall be chrome, US26D.
- B. The machine and wood screws shall be finished to match hardware.

2.02 PRODUCTS/SUPPLIERS

Hardware	Manufacturers & Approved Equals	
Drawer Slides	K & V	Grants
Cabinet Pulls	Stanley	
Cabinet Hinges	Stanley	
Cabinet Catches	Stanley	
Cabinet Door Lock	Sargent K & V	Corbin

- A. Drawer Slides:
 - 1. 3" to 7-1/2" deep: #1428, K & V
 - 2. 8" or more deep: #1429, K & V
 - 3. File Drawers: #8400, K & V
 - 4. Keyboard Drawer Slide: #8150, K & V
 - 5. Pencil Drawer Slide: #8250, K & V
- B. Cabinet Door Hinges (Overlay):
 - 1. Doors 3/4" to 7/8" thick: #1592, Cabinet Hinge (knuckle type) by Stanley.
 - 2. Doors 1-1/2" to 1-3/8" thick: #1589 Cabinet Hinge (knuckle type) by Stanley.
- C. Adjustable Shelf Standard (end supported): 255ZC K & V, or SST (Zinc) M-D.

- D. Shelf Support Clips (end supported): 256ZC K & V, or SS20C (Zinc) M-D.
- E. Drawer and Door Pulls: Series 4484, Stanley.
- F. Drawer and cabinet Door Lock: (Supply Strike Plate)
 - 1. 1" thick and over door or drawers: Series 1654, Sargent.
 - 2. ¾" thick door or drawer-#986 K & V, or Series 4142, Sargent.
- G. Miscellaneous Hardware:
 - 1. Magnetic catches for cabinet doors: #41 Stanley, or # 916 K & V.
 - 2. Felt adhesion silencers-all doors and drawers.
 - 3. Magnetic catches for doors (1" or thicker): #45 Stanley.
 - 4. Hanging file rack: Equal to Sparco #SP3-6 for legal files.

2.03 MANUFACTURERS

- A. K & V: Knape and Vogt, Lamirada, CA 90638.
- B. M-D: Macklanburg-Duncan, Oklahoma City, OK 73125.
- C. Sargent: Sargent and Company, New Haven, Conn., 06511.
- D. Stanley: Stanley Hardware, New Britain, CT, 06050.
- E. Engineered Products Company, Flint, Michigan, 48501.

PART 3 - EXECUTION

3.01 INSTALLATION AND MANUFACTURER

- A. Installation shall be in compliance with manufacturers instructions.
- B. Felt adhesive silencers shall be installed on the corners of all door and drawer fronts.
- C. Magnetic catches shall be installed on all cabinet doors, which have pivot hinges.
- D. Each file drawer shall have a hanging file rack installed.

END OF SECTION

SECTION 08810 GLASS AND GLAZING

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all materials, labor, equipment and incidentals necessary for the complete installation of all glass and glazing.

1.02 REFERENCE SPECIFICATIONS

Comply with applicable portions of following Reference Specifications latest edition in effect on Bid Date.

- A. Prime Glass Standard: FS DD-G-451
- B. Heat Treated Glass Standard: FS DD-G-1403
- C. Safety Glass Standard: "Safety Standard for Architectural Glazing Materials", Consumer Product Safety Commission 16 CFR 1200.
- D. Installation: "Glazing Manual", Flat Glass Marketing Association. (FGMA)

1.03 SUBMITTALS

- A. Submit manufacturer's literature fully describing products and accessories required for the work.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver to the job site in the original manufacturer's packaging.
- B. Store and handle in a manner to prevent damage or breakage.

1.05 SAFETY GLAZINGS

- A. Install safety-glazing materials in all locations as required by law, codes and regulations.

PART 2 - PRODUCTS

2.01 GLAZING MATERIALS

- A. Clear Float Glass; Type I, class I (transparent), quality q3 (glazing select). Glass shall be ¼" thick unless otherwise indicated.
- B. Tempered safety glass shall be ¼" thick clear, certified to be in compliance with the Safety Standard for Architectural Glazing Materials (16 CFR 1201).
- C. Insulating Glass: Low "E" type - Two sheets of float glass, outer sheet of glass to be clear, inner sheet of glass to be clear, Quality q3, ¼" thick, and ½" dry air or gas-filled space with -20 degrees F. dew point, with Class A sealant-type edge construction to maintain an hermetic seal.
- D. Insulating Safety Glass: Low "E" type - Two sheets of glass; both sheets to be ¼" tempered safety glass, color clear, certified to be in compliance with the safety standard for Architectural Glazing Materials (16 CFR 1021); Quality q3; with ½" dry or gas filled space, -20 degrees F. dew point, with a Class A sealant type edge construction, to maintain hermetic seal.
- E. Exterior Hollow Metal Door Glazing: Two sheets of glass, both sheets to be 3/16" tempered safety glass, color clear, certified to be in compliance with the safety standard for Architectural Glazing Materials (16 CFR 1021), Quality q3 with ¼" dry or gas filled space, -20 degrees F. dew point, with a Class A sealant type edge construction to maintain hermetic seal.

2.02 OTHER MATERIALS

- A. Face glazing compound shall conform to FS TT-G-410; use for glazing single thickness panes unless otherwise recommended by the glass manufacturer.
- B. Setting blocks shall be neoprene, 70-90 Shore A hardness.
- C. Spacers shall be neoprene, 40-50 Shore A hardness.

2.03 INSULATING GLASS EDGE CONSTRUCTION

- A. Edge Construction: Twin primary seals of polyisobutylene; tubular aluminum or galvanized steel spacer-bar frame with welded or soldered sealed corners, and filled with desiccant; and secondary seal outside of bar, bonded to both sheets of glass and bar, of polysulfide, silicone or hot-melt butyl elastomeric sealant (fabricator's option).

- B. Warranty: Provide manufacturer's standard 10-year product warranty on maintained hermetic seal.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Glass shall be set in accordance with detailed recommendations of the FGMA Glazing Manual. All lights over six (6) square feet to be on two (2) neoprene setting blocks, set at quarter points. Lengths of setting blocks to be such to limit load from glass to fifteen (15) pounds per square inch, but in no case, less than four (4) inches. Frames will be spot puttied before setting stops, if necessary to prevent glass from rattling.
- B. Hollow metal frames: Insulated glass specified herein or indicated on drawings shall be of double sealed construction consisting of interior bead of butyl and exterior seal of polysulfide.

3.02 CLEANING

- A. After other trades have completed their work, thoroughly wash all glass, remove all paint, mortar, labels, etc., and replace with new glass any scratched, broken or otherwise defective glass.

END OF SECTION

DIVISION 9 FINISHES

SECTION 09251 DRYWALL CONSTRUCTION

PART 1 – GENERAL

1.01 SUMMARY

- A. Furnish and install all materials, labor and equipment for drywall construction.

1.02 GENERAL REQUIREMENTS

- A. Building shall be closed-in prior to start of drywall work.
- B. In cold weather, the building shall be heated during the application of the gypsum board and joint treatment to maintain a uniform temperature in the range of forty-five (45) degrees F. to seventy (70) degrees F., and ventilation shall be provided to eliminate excessive moisture.
- C. All materials shall be delivered to the job in original unopened containers or bundles, and stored in a place protected from damage and exposure to the elements.
- D. The installation and application of all materials shall be in accordance with the latest printed directions of the manufacturer.

1.03 SUBMITTALS

- A. Submit manufacturers literature describing all materials and components to be incorporated into drywall work.
- B. Prepare and submit a sample of drywall texture to be used. Obtain approval before beginning finish work.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- B. All material shall be delivered to Project Site in original unopened containers or bundles, stored protected from damage or the elements.
- C. Handle materials to prevent damage. Damaged products shall not be incorporated into the work.

1.05 REFERENCE PUBLICATION

- A. Comply with applicable portions of "Gypsum Construction Handbook" as printed by United States Gypsum Company, latest edition in effect on the Bid Date.

PART 2 – PRODUCTS

2.01 MATERIALS

Materials shall be equal to the following United States Gypsum Products:

- A. Gypsum Panels: 5/8" thick gypsum panels with tapered edges, fire rated, or moisture resistant in compliance with ASTM C 630 at locations shown on Drawings.
- B. Mold Resistant Gypsum Panels: 5/8" thick gypsum panels with tapered edges and mold resistant in compliance with ASTM C 630 at locations shown on Drawings – National Gypsum Gold Bond XP wallboard or approved equal.
- C. Fasteners: USG Brand Screw Type S, GWB-54 or W.
- D. Corner Bead: No. 103 Dur-A-Bead.
- E. Metal Trim: No. 200-A Metal Trim.
- F. Joint System: PERF-A-TAPE Joint System in compliance with ASTM C 475.
- G. Metal Studs and Runners: 25, 20, 18 Gauge Galvanized or painted in compliance with ASTM C 645 where shown on the Drawings. Refer to drawings for stud size.
- H. Resilient Channels: RC-1 Resilient Channels.
- I. Furring Channels: DWC-25, Hat shaped in compliance with ASTM C 645
- J. Channel stiffener: Cold-rolled 1 1/2" x 16 gauge channel with bridging clips.
- K. Control Joints: No. 093
- L. Acoustical Sealant: Latex, Acrylic or Acrylic-Latex, non-staining type, permanently elastic and paintable.

2.02 MANUFACTURERES

- A. Products equal to the above materials, furnished by the following manufacturers, will also be acceptable:
1. Celotex
 2. Fintkote Products Division
 3. National Gypsum Company
 4. Georgia Pacific

PART 3 – EXECUTION

3.01 MATERIAL LOCATIONS

- A. Install materials at the specific locations as follows:
1. Use 20 ga. Studs spaced at 16" o.c. in all partitions which carry ceramic tile.
 2. Install moisture resistant gypsum panels behind all ceramic tile.
 3. Install mold resistant gypsum board on the interior room side of all exterior walls.

3.02 RATED ASSEMBLIES

- A. Where Rated Assemblies are required, install in full compliance with ALL the requirements of the rating agency for the system and rating required.

3.03 INSTALLATION

- A. Metal Studs:
1. Runners shall be aligned accurately, as shown on Drawing, and securely anchored with suitable fasteners, spaced out not more than twenty-four (24) inches on center. Use toggle bolts or hollow wall anchors at 16 inches cc for anchorage to suspended drywall ceilings.
 2. Studs shall be positioned vertically on the runners, spaced not greater than 16 inches or 24 inches on center, as shown on Drawings. Anchor all studs to runner flanges by positive screw engagement through each stud flange and each runner flange. When necessary, studs shall be securely spliced with a minimum eight (8) inches nested lap in which one (1) screw stud is required.
 3. Studs shall be located not more than two (2) inches from all abutting partitions, partition corners and other construction.
 4. Provide triple studding at all abutting partitions, and double studding at all partition corners. Provide double studs at all door and window jambs. (Nested stud where shown). Stud shall be securely anchored to the jamb and head anchor clips at each door, borrowed light or window frame.
 5. Install two (2) cold-rolled channel stiffeners in all metal stud walls 8'-0" or longer in unsupported length or walls which contain a door which is wider than 3'-0".

6. Isolate all non-loading partitions from building structure to prevent transfer of loading and deflections into metal studs, both vertically and horizontally.
 7. Terminate non-load bearing partitions at least 12" above finish ceiling line. Terminate partitions at roof deck where noted on Drawings.
- B. Furring and Resilient Channels: Furring channels shall be positioned vertically and spaced not greater than twenty-four inches (24") O.C. and shall be secured with self-drilling expansion anchors.
- C. Gypsum Panels:
1. Gypsum Panels: shall be applied with long dimension parallel to framing members at walls and perpendicular to framing members at ceiling and all abutting ends and edges shall occur over supports. Panels of maximum practical length shall be neatly fitted and staggered. Joints on opposite sides of partitions shall occur on different studs. No joints shall occur within twelve inches (12") of doorjamb.
 2. All fasteners shall be spaced a maximum of twelve (12) inches on center in the field of the panel and eight (8) inches on center along the edges of each panel with fasteners staggered along the vertical abutting edges. Heads of fasteners shall provide a light depression below the surface of the panel and shall not be driven closer than three-eighth (3/8) inches from the edges and ends of the panel. Fasteners shall be of the length recommended by the manufacturer.
 3. Form "Floating" construction at internal corners except where special isolation or edge trim is indicated.
 4. Install vapor barrier on interior of exterior wall framing members to comply with ASTM C 755. Seal all joints with vapor retarder tape. Insure full coverage. Seal all punctures, tears or penetrations.
- D. Accessories:
1. Install all accessories in accordance with manufacturer's directions, plumb, true and level in a neat and workmanlike manner with corners mitered and true fitting. All accessories shall be installed in full lengths where practical. Where it is not practical for installation in full lengths, a minimum of accurately fitted joints will be permitted.
 2. All vertical or horizontal external corners shall have DUR-A-BED corner reinforcement unless radius corner treatment is called for by schedule.
 3. All interior corners shall have PERF-A-TAPE corner reinforcement.
 4. All intersections of drywall with other materials and all perimeter of gypsum board walls shall have No. 200-A Metal taping bead.
 5. Install control joints in full compliance with manufacturers directions and printed instructions. Do not exceed recommended spacing even if specific joint locations are not shown on Drawings. Coordinate locations of joints with Architect.
 6. During the one-year warranty period, installing a drywall control joint and finishing the wall to match the existing shall repair any cracks, which occur in drywall surfaces.

- E. *Joint Treatment: All joints, screw heads and other depressions in the surface of the panels shall be treated in accordance with the manufacturer's directions for the PERF-A-TAPE Joint System. Neatly smooth off and make ready for the painter.*

- F. *Wall Texture: All walls and ceilings shall receive the finishes as noted below. Walls to receive wall fabric, vinyl wall fabric or wall paper shall be sealed with one coat of varnish.*
 - 1. *Smooth finish in all areas unless noted otherwise.*

END OF SECTION

SECTION 09255 EXTERIOR GYPSUM SHEATHING

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all labor, materials, equipment and incidentals necessary for the installation of the exterior gypsum sheathing.

1.02 SUBMITTALS

- A. Submit manufacturer's literature fully describing the materials and/or components of the system.

1.03 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. All materials shall be delivered to the job in original unopened containers or bundles, bearing manufacturer's label.
- B. Store materials in an area protected from the elements and construction activity.
- C. All materials shall be handled in such a manner as to prevent damage. Damaged products shall not be incorporated into the Work.

1.04 MANUFACTURER

- A. Dens-Glass Gold and Accessories, by Georgia Pacific or approved equal.

PART 2 - PRODUCTS

1.05 MATERIALS

- A. Gypsum Sheathing shall be moisture-resistant gypsum board, ½" thick, 4' x 8' in compliance with ASTM-C 1177-91, with gypsum core encased in fiberglass mats on both sides.
- B. Fasteners; Self-tapping, cadmium plated, screws of length and size required by metal stud framing.
- C. Joint adhesive shall be pitch based plastic cement.

- D. Joint tape shall be two-inch wide (2") mesh fabric tape as recommended by sheathing mfg.
- E. Building Felt: ASTM D 226, Type I, Asphalt Saturated Non-perforated, 30 lb over plywood sheathing.
- F. Vapor Barrier: TYVEK "Commercialwrap" as manufactured by DuPont, installed over all exterior gypsum board sheathing locations.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Gypsum sheathing shall be applied horizontally. Fasten sheathing with screws spaced at eight (8) inches o.c. along each stud. End joints shall occur over a stud support. Panels shall be of maximum possible length to produce the minimum number and staggered joint layout.
- B. All vertical joints and all penetrations of sheathing shall be sealed with two (2) inch mesh fabric tape approved by sheathing mfg.
- C. Apply 30 lb felt over surface of plywood sheathing. Lap joints not less than 3", anchor with bat-dipped zinc coated nails, providing an unbroken protective layer over sheathing.
- D. Install vapor barrier per manufacturers' standard installation details.

END OF SECTION

SECTION 09510 SUSPENDED ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish and install acoustical board ceilings complete with supporting systems, hangers, channels and all required accessories.

1.02 SAMPLES

- A. Submit complete samples of all ceiling materials to include a full range of standard colors.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Ceiling Panels:

1. 24 inch x 48 inch x 5/8 inch square edge mineral panels with a STC rating of 35-39, class 25 factory finished with a washable vinyl latex paint finish and a non-directional fine fissured design.
2. 24 inch x 48 inch x 5/8 inch square edge vinyl clad gypsum board tile acceptable for use in food preparation areas and approved by the Health Department.

- B. Exposed Grid: Exposed ceiling grids specified herein shall be intermediate duty, in compliance with ASTM C635, for all ceilings. Grids are based upon the DX ceiling suspension systems of the Armstrong Ceilings Co.

1. Main Runner shall have 1-1/2" x 0.015" web and a 15/16" bottom web, DX-24.
2. Cross runner shall have 1" x 0.015" web and a 15/16" bottom DX-416.
3. Wall mold shall be 7/8" x 0.20" angle with hemmed edge, M-7.
4. Wire hangers shall be 12 gauge for all ceilings unless noted otherwise.
5. Accessories shall be specifically designed as integral parts of the grid system and installed according to manufacturer's recommendations.
6. Finish of all exposed parts of grid system shall be high-baked white enamel.

2.02 ACCEPTABLE MANUFACTURER'S

- A. Products equal to above materials, as manufacturer by the following companies will acceptable.
1. Armstrong Ceilings Co.
 2. Celotex Corp.
 3. National Gypsum
 4. Donn Corporation
 5. U.S. Gypsum Co.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All ceiling panels are to be delivered to the site in manufacturer's original packages. Each package shall have manufacturer's label stating that panels contained have specified STC and class ratings.
- B. Exposed Grid: Install perimeter molding at proper elevation and screw to wall system. Suspend main runners with twelve (12) gauge galvanized wire or aluminum wire at forty-eight (48) inches center to center. Do not hang wires from roof deck. Install a line of hanger wires not more than 1'-0" from all walls. Install a wire at each corner of all light fixtures. Join cross tees to main runners with a positive interlock at twenty-four (24) inches center to form a two (2) foot x four (4) foot grid. All support wires shall be anchored to structural elements above ceiling.
- C. Electrical conduit or other items shall not be anchored to ceiling grid. General Contractor shall enforce this ban on all Subcontractors.

3.02 DEFLECTION

- A. Ceiling system shall be designed to withstand a simple span uniform load of 13.5 lbs per lineal foot with a maximum deflection of less than $1/360$ span.
- B. Ceiling panels in exposed grid installations which show a deflection at the mid-span greater than $3/16$ inch will be unacceptable and replaced at no additional cost to the Owner.

3.03 REPLACEMENT PANELS

- A. Contractor shall provide twenty (20) pieces of each type of installed ceiling panels in unopened cartons for Owner's future use. Panels shall be in perfect condition.

END OF SECTION

SECTION 09650 RESILIENT FLOORING

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all materials, labor and equipment for the installation of resilient floor covering.

1.02 SUBMITTALS

- A. Complete manufacturers data on both vinyl tile and adhesive. Data shall include substrate moisture limits and recommendations.
- B. Complete range of manufacturers color samples.

1.03 TESTS

- A. Prior to start of installation, conduct moisture content testing on substrate.
- B. Testing shall be by the calcium chloride method using test kits equal to those developed by the Rubber Manufacturers Association.
- C. Take one (1) test for each 500 square feet of tiled area and at least one (1) test for each tiled area. The tile subcontractor shall be responsible for selection of test location. Priority for test location shall be given to any suspect area.
- D. Submit moisture test results to Architect.
- E. Do not proceed with tile installation until moisture is within specified limits.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Vinyl Composition Tile shall be 12" x 12" x 1/8" equal to the following:
 - 1. Armstrong "Standard Excelon"
 - 2. Azrok "Premiere"
 - 3. Kentile "Standard Architectural Series"
- B. Edge Strips and Reducing Strips: Not less than 1 inch wide, 1/8" gauge, tapered edge, and vinyl.

- C. Adhesive shall be as recommended by manufacturer for use over concrete floors with curing compounds as specified elsewhere and wall surfaces as shown on Drawings.

2.02 COLOR AND PATTERN

- A. Colors and patterns shall be selected by Architect from manufacturers standard colors. More than one color or pattern may be chosen.

PART 3 - EXECUTION

3.01 PREPARATION OF SURFACES

- A. Before installation of floor covering, concrete floor slab shall be thoroughly cleaned and any cracks or joints filled with floor stone or similar material. Depressions, hollows, peaks or other irregularities shall be corrected by installation of latex underlayment or by grinding.
- B. Apply concrete slab primer when recommended by flooring manufacturer prior to application of adhesive in compliance with manufacturers directions.

3.02 INSTALLATION

- A. Floor Tile: Install floor tile in areas indicated on Drawings. Tile to be installed according to latest written instructions of manufacturer.
- B. Install vinyl edge or reducing strips at all doorways where finish floor material is a different height, where carpet abuts another material and where exposed concrete abuts a finish floor material.

3.02 CLEANING AND WAXING

- A. After tile installation is complete, clean tile and base in manner recommended by manufacturer.

3.03 REPLACEMENT TILE

Contractor shall provide enough spare tile of each color in unopened cartons to cover fifty (50) square feet for Owner's future use. Spare tile shall be in perfect condition.

END OF SECTION

SECTION 09651 VINYL BASE

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all materials, labor and equipment for the installation of vinyl base.

1.02 SUBMITTALS

- A. Complete manufacturers data on both base and adhesive.
- B. Complete range of manufacturers color samples.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Vinyl Base: Comply with FS 55-W-40, Type I, 4' high, 1/8" gauge, covered roll type. Premolded corners are acceptable on returns of 8" or less only. Acceptable manufacturers:
 - 1. Flexco, Division of Textile Rubber Co., Inc.
 - 2. Johnson Rubber Company
 - 3. R.C. Musson Rubber Company
 - 4. Roppe Rubber Company
- B. Adhesive as recommended by manufacturer for use on wall surfaces shown on Drawings.

2.02 COLOR

- A. Colors shall be selected by Architect from manufacturers standard colors.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Apply vinyl base in as long lengths as practicable to walls, columns and all permanent fixtures where indicated. On masonry or other irregular surfaces, fill voids behind base and along top edge with manufacturer's recommended adhesive filler. Apply vinyl base only after completion of carpet or vinyl flooring installation. Match and wrap base around corners. Joints in base shall be neatly fitted and no closer than 2'-0" to any corner.

- B. Install vinyl edge or reducing strips at all doorways where finish floor material is a different height, where carpet abuts another material and where exposed concrete abuts a finish floor material.

END OF SECTION

SECTION 09685 CARPET

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all labor, materials, equipment and incidentals necessary to install carpet.

1.02 SUBMITTALS

- A. Submit manufacturers literature fully describing carpet and all materials to be incorporated into the work to include adhesive.
- B. Submit full range of manufacturers color samples. More than one color may be chosen.
- C. Submit complete installation instructions to include:
 - 1. Trowel Notching Requirements
 - 2. Spread Rates
 - 3. Adhesive Set Times
 - 4. Seaming methods and procedures

1.03 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. The carpet material shall not be delivered until the building is dried-in, heated and air-conditioned.
- B. Store carpet in an enclosed air-conditioned and ventilated area protected from construction activity that could damage the product.
- C. Damaged or deteriorated materials shall not be incorporated into the Work and shall be removed from Project Site.

1.04 INSTALLATION CREWS

- A. Carpet Installation Crews shall be on the direct payroll of the carpet supplier.
- B. Subcontracted Installation Crews may be used only with the approval of the Architect prior to Bidding.

1.05 WARRANTY

- A. Submit the following written warranties in a form acceptable to the Owner.
 - 1. 10-year Wear Warranty
 - 2. 10-year Colorfast Warranty
 - 3. 10-year Edge Ravel Warranty
 - 4. 20 lb. Tuft Bind Warranty (ASTM D-1335)
 - 5. A 3-year Installers Warranty covering all aspects of installation to include, but not limited to, seams and bubbles.

PART 2 - PRODUCTS

2.01 CONSTRUCTION STANDARDS FOR CARPET

- A. Construction: Tufted or Textured Loop.
- B. Yarn: Continuous Filament Nylon by one of the following manufacturers:
 - 1. Dupont
 - 2. BASF
 - 3. Monsanto
 - 4. Allied
 - 5. Shaw
- C. Static Resistance: 3.5 KV or less when tested under AATCC-134. Carpet to be installed in spaces designated, as "Computer" shall have a static resistance of 2.0 KV or less.
- D. Yarn ply: Uniply or two ply
- E. Machine gauge: 1/8, 1/10 or 5/64.
- F. Stitches per inch: Square, 8/inch minimum.
- G. Yarn Weight: 28 oz. Minimum.
- H. Finished pile height: 0.171" minimum, 0.220" maximum.
- I. Coloration method: Solution dyed.
- J. Backings: Primary-Polypropylene. Secondary-Unitary.
- K. Total Weight: 66 oz. Per square yard minimum.
- L. Width: 12'.

M. Tuft Bind: (ASTM D1335) 20 lbs.

N. Flammability: (ASTM E-84) Flame spread rating of 75 or less.

O. Colors: A minimum of three (3) contrasting yarn colors shall be woven into the carpet.

2.02 ACCESSORIES

A. Adhesive for carpet:

1. Adhesive shall be a premium multi-purpose adhesive.
2. Adhesive used shall be approved by the carpet manufacturer.
3. Adhesive used shall be compatible with curing compounds, admixtures and other materials used in the concrete slab.
4. Adhesive shall be a high temperature resistant product capable of withstanding non-air conditioned, unventilated summertime temperatures in the facility without loss of performance.

B. Joiner: Tile and Carpet Joiner (Stock no. 150) as manufactured by Mercer, or approved equal.

C. Edge: Carpet Edge (Stock no. 400) as manufactured by Mercer, or approved equal.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine substrate and conditions under which flooring is to be installed and report any unacceptable conditions to General Contractor.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected. Installation of carpet materials shall constitute acceptance of substrate.

3.02 PREPARATION

- A. Concrete shall be smooth with no more than 1/8" variation from the plane within any 10'. Grind down all ridges and other irregularities. Fill all cracks, holes and depressions with latex cement underpayment (patching compound) as recommended by carpet manufacturer.
- B. Remove all paints, oils waxes, sealers and curing compounds not compatible with the adhesive employed. Organic solvents shall be avoided.

- C. *Moisture tests: Determine the suitability of the concrete subfloor for receiving the carpeting with regard to moisture content (and curing compounds by a bond test as recommended by the carpet and/or adhesive manufacturer.*
- D. *Subfloor cleaning: Broom and vacuum-clean subfloor prior to the installation of the carpet.*

3.03 INSTALLATION

- A. *Layout: Lay carpet with a minimum number of seams consistent with prudent use of material. Avoid cross-seams.*
- B. *Adhesive application: Apply the adhesives in strict compliance with the manufacturer's specific recommendations for this Project, observing the recommended trowel notching, spread rates, and open times.*
- C. *Carpet installation: Install the carpet in strict compliance with manufacturer's written instructions.*
- D. *Seal all seams in the carpet in conformance with the written instructions of the carpet manufacturer to provide tight hidden seams.*
- E. *Carpet joiner shall be installed as per manufacturer's instructions, in locations where carpet abuts other flooring.*
- F. *Carpet edge shall be installed as per manufacturer's instructions, in locations where carpet abuts exposed concrete flooring or other floor finish materials.*

3.04 CLEANING AND PROTECTION

- A. *Remove all excessive adhesives from the surface of the carpet.*
- B. *Perform initial maintenance on the completed installation as recommended by the carpet manufacturer.*
- C. *Protect the carpet as recommended by the carpet manufacturer from damage by other trades and by the placement of fixtures and furnishings.*

END OF SECTION

SECTION 09900 PAINTING

PART 1 - GENERAL

1.01 SUMMARY

- A. *Section Includes: Paint and finishing of the exterior and interior exposed surfaces.*
- B. *Furnish labor and materials to complete work indicated.*

1.02 DELIVERY, STORAGE, AND HANDLING

- A. *Deliver paint materials in sealed original labeled containers, bearing manufacturers name, type of paint, brand name, color designation, and instructions for mixing and/or reducing.*
- B. *Store paint materials at minimum ambient temperature of 45 degrees F. in well ventilated area.*
- C. *Take precautionary measures to prevent fire hazards and spontaneous combustions.*

1.03 SUBMITTALS

- A. *Submit color samples of all paint, stain, and finish to be used for Owners approval.*

1.04 ENVIRONMENTAL REQUIREMENTS

- A. *Apply paint finishes only when moisture content of surfaces is within acceptable ranges for type of finish being applied.*
- B. *Ensure surface temperatures of surrounding air temperature is above 40 degrees F. before applying alkyd finishes; above 45 degrees F. for interior latex. Minimum for varnish and transparent finishes is 65 degrees F.*
- C. *Provide adequate continuous ventilation and sufficient heating facilities to maintain temperature above 45 degrees F. for 24 hours before, during and 48 hours after application of finishes.*

PART 2 - PRODUCTS

2.01 MATERIALS

- A. *The following are approved manufacturers: PPG Industries, Inc., Pratt and Lambert, Inc., The Sherwin-Williams Company.*

PART 3 - EXECUTION

3.01 PREPARATION

- A. Clean and prepare surfaces for painting to manufacturer's instructions, lightly sand before prime coat.
- B. Protect other surfaces from paint and damage.

3.02 APPLICATIONS

- A. Apply each coat to proper consistency.
- B. Sand lightly between coats to achieve required finish.
- C. Do not apply finishes on surfaces that are not sufficiently dry.
- D. Paint all vents, pipes, grilles, and miscellaneous items not painted on the exterior of the building. Verify color with architect.

3.03 CLEAN UP

- A. As work proceeds and upon completion, promptly remove paint where spilled, splashed, or spattered. During progress of work keep premises free from any unnecessary accumulation of tools, equipment, surplus materials, and debris.
- B. Upon completion of work leave premises neat and clean and place debris in dumpster provided.

PAINTING AND FINISH SCHEDULE

Paint and Finish Schedule provides for minimum two-coat application. Third coat may be required to give complete coverage and uniform appearance.

- A. Ferrous Metal: H.M. doors and frames, handrails, steel bollards
 - 1st coat Machinery and equipment primer
 - 2nd coat Alkyd Exterior/Interior Satin Enamel
- B. Gypsum Board: Walls (general)
 - 1st Coat: Latex Sealer
 - 2nd Coat: Latex Satin Enamel

- C. Gypsum Board: Walls in Toilets.
 - 1st Coat: Latex Sealer
 - 2nd Coat: Latex Semi-Gloss Enamel

- D. Wood (Transparent Stain): Doors and cabinets, oak wood trim
 - 1st Coat: Transparent Stain
 - 2nd Coat: Sanding Sealer.
 - 3rd & 4th Coat: Satin Clear finish.

- E. Wood (painted): Interior trim and fixed shelving
 - 1st Coat: Latex primer.
 - 2nd Coat: Latex Satin Enamel

- F. Concrete Masonry Units (interior): CMU interior walls
 - 1st Coat: Block fill.
 - 2nd Coat: Latex Sealer.
 - 3rd Coat: Latex Semi-Gloss Enamel.

END OF SECTION

DIVISION 10: SPECIALTIES

SECTION 10160 METAL TOILET PARTITIONS

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish and install metal toilet partitions, urinal screens and accessories.

1.02 SHOP DRAWINGS

- A. Submit shop drawings or submittals for all items.
- B. Submit color samples of manufacturer's standard colors. Architect shall select a standard color. More than one color may be chosen.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

The products of the following manufacturers are acceptable:

- A. Accurate Partitions Division, U.S. Gypsum Company
- A. American Sanitary Partitions
- B. General Partitions Manufacturing Corp.
- C. Global Steel Products Corp.
- D. Sanymetal Products Co., Inc.

2.02 PARTITION TYPE

- A. Toilet Partitions: Floor supported, overhead braced

2.03 MATERIALS

- A. Sheet steel shall conform to ASTM A 591, galvanized bonderized, minimum thickness as follows:
 - 1. Pilaster-20 gauge
 - 2. Panels-20 gauge
 - 3. Doors-22 gauge
 - 4. Concealed reinforcement for anchorage-12 gauge
 - 5. Concealed reinforcement for tapping-14 gauge
- B. Core material shall be sound deadening double-faced honeycomb, impregnated kraft-paper core.
- C. Pilaster shoes shall comply with AISI Type 302/304, 20-gauge stainless steel, 3" high.
- D. Stirrup Brackets, Hardware and Accessories shall be non-ferrous alloy with satin chrome finish. Anchors and fasteners shall be theft proof, exposed, finished to match hardware.

PART 3 - EXECUTION

3.01 FABRICATION

- A. Pressure laminate face sheets to core, edges sealed with continuous locking strip or lapping and formed edges. Miter and weld corners with welds ground smooth or cap with stainless steel fittings.
- B. Provide concealed reinforcement for installation of hardware, fittings, brackets and required accessories.
- C. Reinforce partition panels for attachment of grab bars, as shown.
- D. Doors shall not be less than 1" thick units size as shown.
- E. Overhead-Braced Pilaster shall be 1 ¼" thick, with galvanized steel floor supports and leveling bolts. Overhead brace, continuous extruded aluminum tube, anti-grip design with clear anodized finish, unless otherwise indicated. Set and secure brace into top of each pilaster.
- F. Floor-Supported Screens shall be 1" thick units, of same construction and finish as toilet compartment panels. Provide brackets, base anchorages and shoes to match compartment units.

- G. Provide Hardware and Accessories for each door, as follows:
1. Hinges shall be either surface-mounted or cutout inset type, adjustable to hold door open at any angle up to 90 degrees, and they shall be set to hold the doors open at 30 degrees.
 2. Latch and keeper shall be recessed latch unit, with combination rubber-faced door strike and keeper.
 3. Coat Hook and Bumper shall be manufacturer's standard unit, rubber-tipped.
- H. Baked Enamel Finish shall be manufacturer's standard, colors as indicated or as selected by Owner from manufacturer's standard colors.

3.02 INSTALLATION

- A. Install partitions rigid, straight, plumb and level in accordance with manufacturer's printed instruction. Set units with not more than ½" between pilasters and panels, and not more than 1" clearance between panels and walls.
- B. Adjust and lubricate hardware for proper operation after installation, as follows:
1. Set hinges on in-swing doors to hold doors open approximately 30 degrees from the closed position when unlatched.
 2. Set hinges on out-swing doors to return to the fully closed position.
- C. Perform final adjustments to leveling devices, door hardware and other operating parts. Clean exposed surfaces and touch up minor finish imperfections using materials and methods recommended by partition manufacturer.

END OF SECTION

SECTION 10440 SIGNAGE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes: Installation of interior signage on *ALL* interior doors – 1 sign per interior door required.
SIGNAGE REQUIRED AT ALL NEW AND EXISTING INTERIOR DOORS – APPROXIMATELY 60 SIGNS REQUIRED.
- B. Section includes: Installation of exterior lettering and plaque.
- C. Furnish all labor and materials to complete work indicated.

1.02 SHOP DRAWINGS

- A. Submit shop drawings or submittals for all items in this section.
- B. Submit color samples of manufacturer's standard colors. Architect shall select a standard color.

1.03 STANDARD OF QUALITY

- A. It is the intentions of this specification to establish a standard of quality by specifying brand name. Other manufacturers, upon submittal to Architect of sufficient data to establish an equivalent standard of quality, may be used.

1.04 AMERICANS WITH DISABILITIES ACT (ADA) COMPLIANCE

- A. It is the specific intent of this Specification to require full and complete compliance with the requirements of the ADA to include mounting heights, braille and other applicable requirements.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. PERMANENT ROOM SIGNS shall comply with the following requirements:
 - 1. Must have characters raised 1/32";
 - 2. Characters must be upper case and sans serif or "simple serif";
 - 3. Characters must be accompanied by Grade 2 Braille;

4. Raised characters must be a minimum of 5/8" and maximum of 2" high (based on upper case X);
5. Equivalent written description (if any) must be placed directly below pictogram (symbol);
6. Pictogram can be any size within a minimum field of 6" in height;
7. Pictogram can be raised 1/32", but are not required to be raised;
8. Character and background must be eggshell, matte or other non-glare finish;
9. Characters must contrast with background (either light on dark or dark on light);
10. Must be mounted on wall adjacent to the latch side of the door (if at all possible);
11. Must be mounted so a person can approach within 3" and avoid door swing and protruding objects; and
12. Mounting height must be 60" from floor to centerline of sign.

2.02 GRADE 2 BRAILLE

- A. When Grade 2 Braille is required, the following requirements apply:
 1. Braille dot and cell dimensions are: Dot diameter (at base), 0.090"; Horizontal separation between cells 0.241; Vertical separation between cells 0.395. Federal regulators agree that the dot dimensions are approximate and should be close to those approved by various blind associations. Dot height can be from 0.020; (per blind foundation specs) to 1/32", the ADA required character height.
 2. Grade 2 Braille shall be located in a consistent relationship with text on all signs.

2.03 MATERIALS

All signage shall be Series 200A (sand carved) and M-201 series frame with radius corners as manufactured by Mohawk Engraving Co., Schenectady New York, or approved equal.

- A. Materials shall be 1/8" thick laminate with a melamine resin surface and a phenolic resin core. The material shall be NEMA rated and have flammability and smoke values that meet the standards for flammability of interior materials. Frame shall be extruded aluminum with an anodized finish – color selected from mfg. standard.
- B. Color: to be selected by the Architect.
- C. Letter Style: To be selected by the Architect.
- D. Refer to the Door schedule for specific signage requirements. Interior signs to be 6"x6" minimum. 8" minimum height required at A.D.A. complying restroom signage.

2.04 EXTERIOR SIGNAGE

- A. Cast aluminum letters on the building location shown on drawings. Color to be selected by Owner . See drawings.
- B. Cast aluminum sign 20" wide x 12" for the building listing the names of the Project, board members, Architect, and Contractor; verify all information and location(s) with the Architect – NOT USED

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Mechanically mount all signage. Install all signage accessories in strict compliance with Manufacturer's directions and ADA Requirements.

END OF SECTION

SECTION 10522 FIRE EXTINGUISHER AND CABINET

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes: Installation of the fire extinguisher.
- B. Furnish labor and materials to complete work indicated.

PART 2 - PRODUCTS

2.01 FIRE EXTINGUISHERS AND CABINET

- A. Extinguisher and Cabinet: Steel LARSON MFG CO. "GEMINI" SERIES, Clear Plexiglas with vertical white letters type, Model G2409-5R, 24"H x 9.5"W x 5.5" D, for 4" surface mount, black steel interior and frame, break glass door with lock with 5 lb. dry chemical Class ABC extinguisher. Provided rated cabinet in rated walls. Locate bottom of all cabinets 32" A.F.F.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Manufacturer to provide all materials, and provide complete instruction for installation.
- B. Remove all packing materials, upon completion. Refer to drawings for location.

3.02 CLEAN UP

- A. Remove all debris after operation is complete.

END OF SECTION

SECTION 10600 MOVABLE WALL SYSTEMS

PART 1 – GENERAL

1.01 WORK INCLUDED

- A. Operable Wall System shall be furnished, installed and serviced by wall manufacturer's authorized distributor, in compliance with the architectural drawings and specifications contained herein.

1.02 RELATED WORK

- A. Structural Support: Structural support system required for suspending the operable wall shall be designed, installed and pre-punched by others, in accordance with ASTM E 557 and manufacturer's shop drawings.
- B. Insulation: Sound insulation and baffles for the plenum area above the track system, under the permanent floor, inside air ducts passing over or around the operable wall, and in permanent walls adjoining the operable wall system shall be by others, in accordance with ASTM E 557.
- C. Opening Preparation: Proper and complete preparation of the operable wall system opening shall be by others in accordance with ASTM E 557, and shall include floor leveling; plumbness of adjoining permanent walls; substrate and/or ceiling tile enclosures for the track system; and the painting and finishing of trim and other materials adjoining the head and jamb areas of the operable wall. Any permanent wall(s) receiving an adjustable hinged jamb will require internal structural blocking in order to secure the jamb to the permanent wall. Refer to a copy of the shop drawings for additional details.

1.03 SYSTEM DESCRIPTION

- A. The operable wall system shall consist of Continuously Hinged panels that are manually operated, featuring panels hinged together in a continuous panel train.
- B. The operable wall system shall consist of acoustically rated panels tested in accordance with ASTM E 90 and ASTM E 413 test procedures, and shall have achieved a STC rating as specified herein (see "Acoustical Performance" article listed under Part 2 – Products).

1.04 QUALITY ASSURANCE

- A. The operable wall shall have been tested in an independent acoustical testing laboratory in accordance with ASTM E 90 and ASTM E 413 test procedures.

- B. The operable wall panel construction and finish materials shall consist of Class A rated materials in accordance with ASTM E 84.
- C. The operable wall shall be installed by the manufacturer's authorized distributor in accordance with ASTM E 557.

1.05 REFERENCES

- A. ASTM E 90: Laboratory Measurement of Airborne-Sound Transmission Loss of Building Partitions.
- B. ASTM E 413: Determination of Sound Transmission Class (STC).
- C. ASTM E 557: Architectural Application and Installation of Operable Partitions.
- D. ASTM E 84: Surface Burning Characteristics of Building Materials.
- E. ASTM A 653: Specification for General Requirements for Steel Sheet, Alloy-Coated (Galvannealed) by the Hot Dip Process.
- F. ASTM C 423: Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
- G. CCC-W-408A-D: Federal Specification which applies to Vinyl Coated Wall Coverings.
- H. CFFA-W-101-B: Chemical Fabrics and Film Association Quality Standard for Vinyl Coated Fabric Wall Coverings.

1.06 SUBMITTALS

- A. Manufacturer shall provide written technical information and related detail drawings, which demonstrate that the products comply with contract documents for each type of operable partition specified.
- B. Manufacturer shall provide detailed engineering drawings featuring track plan, panel elevation, horizontal and vertical details and beam punching template as required.
- C. Manufacturer shall provide written test report of the independent acoustical testing laboratory certifying the attainment of the specified STC rating, upon request.
- D. Manufacturer shall provide written instructions specifying the proper operation and maintenance of the operable wall system.

- E. *Manufacturer shall provide a color selector demonstrating the manufacturer's selections of the specified finish material. Samples shall consist of actual swatches of the specified finish material.*

1.07 DELIVERY, STORAGE AND HANDLING

- A. *Panels shall be individually wrapped in a protective plastic covering to keep panels clean during delivery, storage and handling.*
- B. *Panels shall be stored on edge and above the floor on cushioned blocking in a dry and ventilated area, protected from humidity and temperature extremes.*

1.08 SEQUENCING / SCHEDULING

- A. *Beam Punching: Manufacturer shall provide beam punching template drawing detailing the anchor locations for the suspended track system (as required for Drop Rod Mounting), as required for the fabrication and installation of structural overhead support by others.*
- B. *Track Installation: Scheduling of operable wall track installation shall occur after structural overhead support has been properly and completely fabricated and installed by others.*
- C. *Panel Installation: Operable wall panel installation shall occur after fixed wall substrate construction is properly and completely installed by others, as required to protect panels from ongoing adjacent construction.*

1.09 WARRANTY

- A. *Manufacturer shall warrant each partition and its component parts to be free from defects in material and workmanship for a period of five (5) years from the date of delivery to the original purchaser, when installed by an authorized KWIK-WALL distributor. (Contact your local KWIK-WALL distributor or KWIK-WALL Company for complete warranty information.)*

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

- A. *Operable walls shall be Series 3000, Model 3040 Continuously Hinged / Manual as manufactured by KWIK-WALL Company.*

2.02 PANEL CONSTRUCTION

- A. Panel Dimensions: Standard panel dimension shall be a nominal 3 5/8" [92] thick.
- B. Panel Frame: Steel frame shall be 16-gauge galvanized steel, which meets or exceeds ASTM A 653 requirements. Frame shall be all-welded construction with steel corner supports and cross-bracing reinforcement. Panel frame shall be Class A rated, fire retardant, non-combustible and non-corrosive in accordance with ASTM E 84.
- C. Panel Skins: Panel skins shall be Class A rated in accordance with ASTM E 84. Panel skin material shall consist of (select):
 - 1. Standard Steel Skins: consisting of minimum 22-gauge tension-leveled galvanized steel, pressure laminated to a structural acoustical backer and mechanically-joined to the steel frame to form a rigid, unitized and structural panel.
 - 2. Acoustical Substrate: consisting of structural acoustical substrate pressure laminated to both sides of the steel frame to form a rigid, unitized and structural panel.
- D. Panel Hinges: Panel hinges shall be architectural grade, full leaf butt hinges.
- E. Panel Weight: Maximum panel weight shall be 5.9 – 9.5 lb./ft.² (29 – 46 kg/m²) depending on STC rating, size and options selected.

2.03 OPERATION

- A. Operation shall be Continuously Hinged / Manual, consisting of panels hinged together forming a continuous panel train. Panels shall be top-supported by one (1) carrier in every pair.

2.04 STACK ARRANGEMENTS

- A. Stack Type: Panel storage configuration shall be Center Stack, consisting of panels stacked on center to the wall's installed position.
- B. Stack Quantity: Panels shall be stored at (select):
 - 1. Standard One End: on one end of the wall run.

2.05 FINISHES

- A. Finish Material Type: Panel finish material shall be Class A (except wood veneer) rated in accordance with ASTM E 84, consisting of (select):
 - 1. Standard Vinyl: consisting of Type I, reinforced vinyl weighing 15 oz./lin. yd. (465 g/lin. m). Standard Vinyl shall meet or exceed CCC-W-408A-D and CFFA-W-101-B quality standards.

- B. Finish Material Supplier: Finish material shall be (select):
 - 1. Standard Factory Supplied: from manufacturer's standard selection of finish materials, as specified.
- C. Finish Material Application: Finish material shall be (select):
 - 1. Standard Factory Applied: by operable wall manufacturer. Customer supplied finish material samples must be submitted to manufacturer for testing and approval prior to acceptance and application.

2.06 PERIMETER TRIM AND SEALS

- A. Vertical Trim and Seals: Panels shall have vertical astragals containing flexible vinyl seals and incorporate reversible tongue-and-groove-type configurations for positive interlocking with adjacent panels. Vertical astragal type shall be (select):
 - 1. Standard Trimless Astragal: consisting of an aluminum extrusion with tongue-and-groove-type vertical astragals. Vertical trim shall not be permitted on the panel faces, resulting in a minimal groove appearance between adjacent panels.
- B. Horizontal Top Trim and Seals: Top seals shall consist of flexible vinyl sweep seals installed on both sides of the panel. The seals shall consist of a compressed bulb between two (2) fingers of vinyl. Top seal type shall be fixed consisting of continuous-contact flexible vinyl, sealing against the bottom flange of the overhead track.
- C. Horizontal Bottom Trim and Seals: Bottom seals shall consist of multiple fingers of flexible vinyl for positive contact and sealing with various floor surfaces. Bottom seal type shall be (select):
 - 1. Standard Automatic Bottom Seals: consisting of self-activated seals providing 1 1/2" [38] of nominal travel.
- D. Horizontal and Vertical Panel Trim: All exposed panel trim and hinges shall be of one (1) similar color (select):
 - 1. Dark Bronze.

2.06 CLOSURE SYSTEMS

- A. Initial Closure System: The lead panel (the first panel exiting the stack) shall form a seal vertically against a rigid wall surface. The initial closure shall be accomplished by a continuous-contact, flexible vinyl bulb seal(s) installed along the vertical edge of the lead panel for positive compression against a rigid wall surface. Initial closure panel shall contain a flush pull handle on each side.

- B. Final Closure System: The final closure panel (the last panel exiting the stack) shall form a seal vertically against a rigid wall surface. The final closure shall be accomplished by a Half Panel, which is hinged permanently and directly to a structural wall. The Half Panel and its two (2) immediately adjacent panels shall incorporate adjustable bottom seals, and the first panel adjacent to the half panel shall contain a flush pull handle.

2.07 ACOUSTICAL PERFORMANCE

- A. Certification: The operable wall shall have been tested in an independent acoustical testing laboratory in accordance with ASTM E 90 and ASTM E 413 test procedures.
- B. STC Rating: The operable wall acoustical performance rating shall be based on (select):
 - 1. Standard Steel Skins: with a standard rating of 52 STC, or optional ratings of 46 STC or 50 STC.

2.09 PANEL ACCESSORIES

- A. Accessories including Single Pass Doors, Keyed Cylinder Locks, Concealed Door Closures, Room Viewers, Exit Signs, Dry Marker Writing Surfaces, Recessed Eraser Trays, Vision Lites, Tack Surfaces and Pocket Doors shall be compatible with other accessories and options, furnished and installed by the operable wall manufacturer as noted on submitted shop drawings.

2.10 TRACK SYSTEM

- A. Type 850 Continuously Hinged / Manual Aluminum Track: The operable wall track system shall be certified for up to 850 lb. (386 kg) of total live load weight per panel, and extruded from structural aluminum alloy, which prohibits deterioration caused by rust or corrosion. The aluminum track shall have a durable anodized clear satin finish, which resists color fading and flaking. The track shall utilize grooves and interlocking steel pins for positive alignment of adjacent track sections. The track joints shall be reinforced overhead by a heavy-duty steel bracket made of hot-rolled, 3/8" [10] thick plate steel. Aluminum track shall include an integral nut slot to accept a hardened steel square nut to facilitate attachment of each steel all-rod and splice brackets to the overhead structural support.

- B. *Type 850 Aluminum Panel Guide: The panel guide shall be extruded from structural aluminum alloy, which prohibits deterioration caused by rust or corrosion. The aluminum panel guide shall have a durable anodized clear satin finish, which resists color fading and flaking. The panel guide shall utilize a groove and interlocking steel pins for positive alignment of adjacent panel guide sections. Panel guide shall be located on both sides of the exposed track surface to assist in straightening the continuously hinged train of panels. The exposed ends of the panel guide shall have a gathering nose to assist in straightening the operable wall panels and, to prevent damage to the panel faces.*

2.11 CARRIER SYSTEM

- A. *Type 850 Polymer Tire Carrier: Each pair of Continuously Hinged / Manual panels shall be top supported by one (1) carrier capable of supporting up to 850 lb. (386 kg) of total live load weight per panel, utilizing a 5/8" [16] diameter pendant bolt. Each carrier shall consist of four (4) permanently-lubricated, precision ball bearing steel wheels with high strength polymer tires, as required for smooth and quiet operation.*

2.12 SUSPENSION SYSTEMS

- A. *Mounting Systems: The track shall be supported by (select):*
1. *Standard Drop Rod Mount: consisting of adjustable rods of grade 2, 3/8" [10] diameter threaded steel all-rod provided with 3/8" [10] serrated steel nuts.*

PART 3 – EXECUTION

3.01 INSPECTION

- A. *Proper and complete preparation of the operable wall system opening shall be by others in accordance with the architectural drawings, manufacturers shop drawings and ASTM E 557. Any deviation of the actual opening from these specifications shall be called to the attention of the Architect prior to the installation of the operable wall.*
- B. *Deficiencies in the operable wall opening shall be corrected by others prior to installation of the operable wall.*

3.02 INSTALLATION

- A. *The operable wall system shall be installed by manufacturer's authorized distributor.*

- B. The operable wall shall be installed in accordance with manufacturer's written instructions, shop drawings and ASTM E 557 installation guidelines.

3.03 ADJUSTING AND CLEANING

- A. The operable wall panels and track system shall be adjusted and cleaned in accordance with manufacturer's written instructions.

3.04 PROTECTION

- A. The operable wall panels shall be stored in the stacked (retracted) position prior to acceptance by the owner's representative.

3.05 DEMONSTRATION

- A. The operable wall manufacturer's authorized distributor shall demonstrate proper operation and explain proper and necessary maintenance requirements of the operable wall system to the owner's representative.

END OF SECTION

SECTION 10810 TOILET ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all materials, labor, equipment and incidentals necessary for the installation of toilet accessories.

1.02 SUBMITTALS

- A. Submit manufacturer's literature (cut sheets) fully describing, verbally and graphically, the items to be furnished along with a schedule showing quantity and location of each accessory.

PART 2 - PRODUCTS

2.01 PRODUCTS

Toilet accessories shall be the following fixtures as shown on the Drawings, and as manufactured by Bradley:

- A. Paper Towel Dispenser-#250, one in each toilet.
- B. Recessed Toilet Paper Holder- #5104, - NOT USED
- C. Toilet Paper Holder-#5054 with theft-resistant spindle, one at each water closet.
- D. Mop Rack-#9953 one at each mop sink
- E. Grab Bars- #800-001 x 36" and #800-001 x 42" as shown on drawings.
- F. Framed Mirrors- #780-1830, one at each lavatory
- G. Specimen Pass-Thru Cabinet - #9318, one in Lab area as shown on drawings

2.02 OTHER APPROVED MANUFACTURERS

- A. Bobrick Washroom Equipment
- B. American Specialties, Inc.

2.03 FINISHES

- A. All accessories shall be type 304 satin finish stainless steel unless otherwise noted.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Installation of all accessories shall be in accordance with manufacturer's instructions. Grab bars shall withstand a 250# pull or load for five minutes.
- B. Mounting heights shall conform to ADA handicapped accessibility standards.
- C. Prior to installation, insure that adequate blocking is in place for proper and secure anchorage.
- D. Adjust as required for smooth operation and properly functioning mechanisms. Clean and patch all exposed surfaces after removing protective coatings.

3.02 WARRANTY

- A. Provide standard manufacturer's warranty.

END OF SECTION

DIVISION 13 SPECIAL CONSTRUCTION

SECTION 13121 PRE-ENGINEERED BUILDING

PART 1 - GENERAL

1.01 SUMMARY

- A. *Section includes: The pre-engineered metal building and erection of the building including snow guards.*
- B. *Furnish complete labor, materials, and equipment for the building as shown on drawings.*

1.02 SUBMITTALS

- A. *Manufacturer's specifications, catalog cut sheets, and other data needed to prove compliance with the specified requirements.*
- B. *Shop drawings with Oklahoma registered professional Engineers seal and other data shall be required to indicate method of erection. Refer to drawings for additional requirements.*

1.03 DESIGN LOADS

- A. *Design load requirements shall be 20 p.s.f. live load plus collateral load of 3 p.s.f., 90 M.P.H. wind load, exposure C, Seismic load - 2006 INTERNATIONAL BUILDING CODE (IBC). Application of design loads shall be in accordance with the design practices sections of the 2006 IBC CODE.*
- B. *Horizontal deflection shall be limited to "H"/180, bare frame drift at eave, under full wind load where masonry clad, H/120 at other locations.*
- C. *Specified design loads shall be considered to act in various combinations so as to produce the most unfavorable effect on the building or structural member concerned. Unless otherwise specified, load combinations shall be those listed in the design practices section of the 2006 IBC CODE.*
- D. *Vertical deflections of purlins shall not exceed IBC code requirements.*
- E. *Horizontal deflection of girts which brace framing for brick veneer = $L / 360$ max.*
- F. *Refer to structural drawings for additional loading and submittal requirements.*

1.04 WARRANTIES

- A. *Successful building manufacturer shall provide a one (1) year limited warranty against failures caused by faulty or sub-standard materials.*
- B. *Building manufacturer shall warrant exterior wall panels for a period of ten (10) years against chalk, fade, crack, blister or peel.*
- C. *Building manufacturer shall warrant all unpainted Galvalume roof panels, for a period of twenty (20) years against rupture, perforation and structural failure.*

1.05 REFERENCES

- A. *Steel shapes, bars and plates - conform to ASTM A-36.*
- B. *Paint - red color, air-drying, alkyd zinc chromate primer or rust-oleum-red.*
- C. *Standard bolts and nuts - conform to ASTM A-307.*
- D. *Anchor bolts - conform to ASTM A-36.*

PART 2 - PRODUCTS

2.01 MATERIAL

- A. *Materials furnished by metal building manufacturer shall include primary and secondary structural framing members, bracing, metal panels for roof and walls, flashings, fasteners, sealants, accessories and all other miscellaneous component parts required for a complete building.*

2.02 ANCHOR BOLTS

- A. *Anchor bolts shall be furnished by the General Contractor along with required templates from the building manufacturer to the concrete sub-contractors for proper installation.*
- B. *Anchor bolts shall be of length and strength to properly resist the governing reactions induced by the design loads and shall be of the diameter shown on building manufacturer's anchor bolt drawings. All anchor bolts shall be unpainted so as to bond with the concrete in which they are set.*

2.03 STRUCTURAL PAINTING

- A. All framing members shall be cleaned to remove loose mill scale, and other foreign matter and given one shop coat of red color, air-drying, and alkyd zinc chromate primer. Cleaning process shall meet or exceed Steel Structures Paint Council Specification SSPC-5 for power, hand cleaning. The primer coat thickness shall be a minimum of one mil., except .5 mil. on pre-painted coldform.

2.04 ROOF AND WALL PANELS

- A. Roof panels: Shall be 24 Ga., "STANDING SEAM", U.L. 90 rating, Galvalume finish.
- B. Wall panels: Shall be 26 Ga., Galvalume finish (panels at backside of roof parapet).

2.05 SOFFIT

- A. Soffit panels: Soffit at doors, entry and canopy overhangs shall be 24 Ga., "Accent 12" flat metal soffit, color coated panels shall have the exterior side finished with a KYNAR 500 finish coating system applied over the Galvalume or galvanized substrate. Surfaces shall be chemically cleaned, pre-treated, primed and coated, then over baked to cure. Color shall be chosen from manufacturer's KYNAR 500 finish colors. Total coating system shall have a one-mil dry film thickness.

2.06 FASCIA PANELS – NOT USED

- A. Fascia panels: Shall be 26 Ga. "R" panel, color coated panels and shall have the exterior side finished with KYNAR 500 finish applied over the Galvalume or galvanized substrate. Surfaces shall be chemically cleaned, pre-treated, primed and coated, then over baked to cure. Color shall be chosen from manufacturer's standard KYNAR 500 finish colors submitted by Contractor. Total coating system shall have a one-mil dry film thickness.

2.07 ACCESSORIES

- A. Insulation for walls and roofs as specified in section 07200.
- B. Liner panels. Shall be 26 Ga., Color shall be chosen from manufacturer's standard KYNAR 500 finish colors submitted by Contractor. Total coating system shall have a one-mil dry film thickness. – NOT USED
- C. Flashing, Trim and Closures: Shall be 26 Ga., flashing and/or trim shall be furnished at eaves, corners, framed openings and wherever necessary to seal against the weather and provide a finished appearance. Color shall be KYNAR 500 finish selected from standard colors.

- D. Gutters and downspouts (26 Ga.): Gutters to be box shaped with face profile shaped to match rake trim. Downspouts are rectangular shaped and shall have 45 degree elbow at the bottom. Color for gutters and downspouts as selected by Owner from manufacturer's KYNAR 500 finish colors.
- E. Preformed, closed cell, polyethylene closure strips matching the profile of the panel shall be installed along the eaves and at other locations as required to provide weather tightness.
- F. Snow guards: "S-5 Colorgard" by Metal Roof Innovations LTD. Provide and install quantities as shown on drawings. Install metal insert of color to match roof color.

2.08 SEALANTS

- A. Sealants for sideslips, endlaps, accessories, etc. shall be a reformed, butyl rubber based compound. The material shall be non-hardening, non-shrinking and non-corrosive and shall have excellent adhesion to metals, painted surfaces and plastics at temperatures from 30 to 160 degrees F. These sealants shall be in tape mastic form, of shape and size recommended by the structure supplier for various applications.
- B. Tube sealants shall be used to supplement tape mastic sealants and shall be applied in locations indicated by erection instructions. Tube sealant shall be a synthetic elastomer based material, which becomes tack-free in less than 2 hours at 75 degrees F but retains flexibility.

PART 3 - EXECUTION

3.01 ERECTION OF SUPER STRUCTURE

- A. The various structural steel members shall be set true and level and temporary bracing shall be used wherever necessary.
- B. Erector shall not make any field modifications to any structural member except as authorized and specified by the Architect and building manufacturer.
- C. Install all work square, plumb, straight and true, accurately fitted and with tight joints and intersections.
- D. Field quality control: Material furnished under this specification shall be subject to inspection and tests in the mill, shop and field by the Owner or his representative.

3.02 INSTALLATION OF ROOF AND WALL PANELS

- A. Roof panels shall be continuous from eaves to ridge.
- B. Fastener population and pattern for roof panels shall be as required by building manufacturer.
- C. Wall panels shall be installed to the requirements of the manufacturer.

3.03 CLEAN UP

- A. At completion, remove all excess materials and debris resultant from operations of work in this section and place in dumpster provided.

END SECTION

SECTION 13145 RETROFIT STEEL SUB-PURLINS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Retrofit steel sub-purlins.

1.02 RELATED SECTIONS

- A. Section 07200 – Insulation : 3” thick unfaced roof insulation
- B. Section 13121 – Pre-engineered building : “galvalume” metal roof panels

1.03 REFERENCES

- A. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. ASTM A 1011/A 1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

1.04 SUBMITTALS

- A. *Product Data:* Submit manufacturer’s product data, including installation instructions.
- B. *Shop Drawings:* Submit manufacturer’s shop drawings for sub-purlins indicating gauge, yield strength, flange and web sizes, cut-out dimensions, and punch pattern for attachment holes in base flange.
- C. *Design Data:* Design re-roof to achieve U.L. 90 rating. Submit design data from independent engineering firm indicating table of wind uplift capacity of sub-purlins.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. *Delivery:* Deliver materials to site in manufacturer’s original, unopened bundles, containers, and packaging, with labels clearly identifying product name and manufacturer.

B. Storage:

1. Store materials in accordance with manufacturer's instructions.
2. Protect sub-purlins from corrosion, deformation, and other damage.
3. Store sub-purlins off ground, with 1 end elevated to provide drainage.

C. Handling: Protect materials during handling and installation from corrosion, deformation, and other damage.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Roof Hugger, Inc., PO Box 1027, Odessa, Florida 33556. Toll Free Phone (800) 771-1711. Toll Free Fax (877) 202-2254. Phone (813) 909-4424. Fax (813) 948-4742. Website www.roofhugger.com.

2.02 RETROFIT STEEL SUB-PURLINS

A. Retrofit Notched Sub-Purlins: "Roof Hugger".

1. Description:
 - a. 1-piece, custom-punched, Z-section.
 - b. Pre-punched to nest into existing rib profiles.
 - c. Pre-punched for fasteners.
 - d. Fastens directly into existing purlins or joists with fasteners.
2. Material: Galvanized steel, ASTM A 653 or A 1011, G-90, yield strength 50 KSI.
3. Thickness: 16 gauge.
4. Web Height: manufacturer's standard.
5. Base Flange: Pre-punch base flange to manufacturer's standard
6. Top Flange: Nominally 2" unless otherwise specified.
7. Length: Nominally 10'-0" long or per manufacturer's recommendations.

B. Fasteners

1. Attachment to Existing Purlins: #12-14 threads per inch, DP3 self-drilling fastener.
 - a. Length: Required to penetrate existing purlins in accordance with fastener attachment standards.
2. Sub-Purlins Installed Mid-Span: #12-14 threads per inch, DP3 self-drilling fasteners or equal into sub-rafter structure, #17-14 into existing panel when indicated and #10-16 DP3 pancake head through Hugger top flange into sub-rafter when indicated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas to receive sub-purlins. Notify Architect if areas are not acceptable. Do not begin installation until unacceptable conditions have been corrected.
- B. Verify existing purlins and eave struts are in good serviceable condition, without rust-thru of flanges.
- C. Field Verify Before Installation of Sub-Purlins:
 - 1. Existing panel profile and panel rib dimensions.
 - 2. Existing panel run-out by measuring roof over several 20-foot areas to confirm panels were installed on module and in-square. Note variations.

3.02 INSTALLATION

- A. Install sub-purlins in accordance with manufacturer's instructions at locations indicated on the standard details or Engineered Drawings if provided.
- B. Limit installation of sub-purlins to amount that can be roofed over each day.
- C. Install 2 fasteners per linear foot.
- D. Install sub-purlins directly over existing purlins and fasten to existing purlin through existing panel pan section.
- E. Loosely lay Sub-rafters over the existing panel high ribs and between the existing purlins. Sub-rafter spacing and number of fasteners shall be as specified on the engineered drawings or as specified in the Roof Hugger, Florida Product Approval.
- F. Press the Roof Hugger sub-purlins over the sub-rafters on the existing purlin lines in areas where they are specified and install #12-14 DP3 fasteners (or as specified) through the base flange of the Hugger sub-purlin, through the sub-rafter and then into the existing purlins being careful to maintain the alignment of the sub-rafters.
- G. Install Huggers onto the sub-rafters between the existing purlins as specified with #12-14 threads per inch, DP3 fasteners, typically one fastener on each side of the sub-rafter unless otherwise specified.

- H. Where the Roof Hugger is attached to the existing roof panel the pre-punched base flange hole should be drilled out to the correct diameter to allow for the installation of a #17-14 fastener through the Roof Hugger and into the existing roof panel.
- I. Where the Roof Hugger passes over the fitted sub-rafter a #10-16 pancake head fastener should be installed through the top flange of the Roof Hugger into the top of the new fitted sub-rafter.
- J. Removal of Existing Roof Fasteners:
 - 1. Do not remove existing roof fasteners unless installation of sub-purlins over fasteners causes sub-purlins to roll or "porpoise". Some distortion of base flange of sub-purlins caused by existing roof fasteners is normal.

END OF SECTION

SECTION 15020 ADDITION AND RENOVATION WORK INCLUDED

1.01.GENERAL:

A. INCLUDES:

The work contemplated and included under the contract comprises the furnishing of all labor and materials necessary for the complete installation of heating and cooling equipment, piping systems and plumbing systems in the existing building and new building addition, together with all necessary auxiliaries for same.

B. EXISTING SYSTEMS:

Furnish and install compatible components when extending or replacing portions of existing systems. Supply same manufacturer component as existing, matching function and performance whenever practical.

C. EXISTING CONDITIONS AND UTILITIES:

It is the contractor's responsibility to inspect the existing facilities for clearances required to do the work, for structural integrity and viability prior to cutting or drilling access openings and any other existing conditions affecting the proposed work, and make provisions as to the cost in his bid. Should the contractor consider the work required in the existing facility to be prohibitive or restrictive, he shall notify the Engineer in writing prior to the bid of any objections or exceptions to the plans and specifications. It is the contractor's responsibility to inspect and verify prior to bid the existing locations and sizes of existing utilities to be connected. Contractor is responsible for connecting to existing utility. Any distance or location offered on plans is only an estimate to assist Contractor and can not be used in bidding.

D. ALTERNATES:

Refer to architectural general conditions, Alternates section for list of alternate requirements. Include all associated mechanical work with each alternate if no further description is in these specification or on the plans.

2.01. WORK INCLUDED:

A. HVAC:

Furnish and install heating and cooling equipment as scheduled, relocate existing equipment and ductwork, and install new ductwork to make a complete and workable heating and cooling system .

B. HVAC ACCESSORIES:

Furnish and install all thermal insulation, complete systems of temperature controls, apparatus foundations and support pipe hangers and anchors together with all tools, appurtenances, and attendant accessories to make complete and operative installations.

C. PLUMBING:

Furnish and install all plumbing fixtures, waste lines, vent lines, water lines, valves, insulation, floor drains, etc., as indicated on plans to make a complete and workable plumbing system.

SECTION 15020 ADDITION AND RENOVATION WORK INCLUDED

D. FIRE SPRINKLER SYSTEM:

Relocate piping sprinkler heads to conform to the new floor plan as required by NFPA 13 to make a complete and operative system.

E. PAINTING:

All painting by General Contractor:

F. DEMOLITION:

Contractor to remove all equipment and accessories as indicated on plans or as the result of the work required. Contractor to dispose off site of all demolished equipment.

I. EXCAVATION and BACKFILL:

1. Work to be performed by this contractor both inside and outside building. Run trenches and other excavations to accurate grades and remove disturbed earth. Install all buried lines on a 6" layer of sand, cover with a 6" layer of sand and water flood before remainder of "select" backfill is installed.
2. Install all utility piping below slab a minimum of 24" below finished floor elevation except waste piping. Waste piping elevation to begin farthest from building entry with flow elevation 12" below finished floor graded at 1/4" per linear foot toward entrance.
3. Install a 5'-0" length "plug" centered on exterior wall in all trenches which exit or enter building to reduce the potential for water migration beneath the building. The plug will consist of concrete or compacted clay filling the trench. Do not use sand at the plug.

3.01. WORK COMPLETION:

A. INSTRUCTION TO OWNER:

Instruct the owner's operating personnel in the proper operation and maintenance of all elements of the mechanical systems.

B. ACCEPTANCE:

The contractor will be given written notice of final acceptance when all work has been completed in accordance with the Contract Documents.

C. GUARANTEE:

This contractor shall guarantee in writing to keep the entire mechanical system as installed by contractor and/or sub- contractors in repair and perfect working order for one (1) year after date of final acceptance.

END OF SECTION 15020

SECTION 15060 PIPING SYSTEMS

1.01. GENERAL:

- A. SCOPE: Work under this heading shall include the furnishing of all labor, materials and equipment necessary to complete all piping systems as shown on the drawings and described here.
- B. SUBMITTALS: Submit product data of material and accessories in accordance with Section 15010.
- C. SUBSTITUTION: Request approval in writing of proposed equipment at least ten (10) calendar days prior to bid date in accordance with Section 15010.

2.01. PRODUCTS:

A. SANITARY SEWER PIPING:

- 1. SUSPENDED: Schedule 40 PVC. Cellular core PVC is not approved.
- 2. BURIED: Schedule 40 PVC. Cellular core PVC is not approved.
- 3. ACID PIPING: Fuseal schedule 40 Polypropylene with electric fused joints for sanitary sewer and vent where indicated on plans and as required by local code and jurisdiction. CPVC labeled (NSF) for corrosive chemical or acid waste piping with specially formulated solvent cement for resistance to corrosive chemicals as manufactured by Spears is an approved equal.

B. STORM and ROOF DRAIN PIPING:

- 1. SUSPENDED: Schedule 40 PVC . Insulate all horizontal and vertical lines with 1/2" thickness closed cell formed insulation (armaflex or equivalent).
- 2. BURIED BELOW BUILDING: Schedule 40 PVC. Cellular core PVC is not approved.
- 3. BURIED OUTSIDE BUILDING: PVC (SDR-35) with bell joint and locked-in rubber gasket.

C. DOMESTIC WATER PIPING:

- 1. SUSPENDED: In walls, chases, and ceiling space, type "L" hard drawn copper.
- 2. BURIED BELOW BUILDING: Under the floor, type "K" hard drawn copper.
- 3. BELOW GRADE WATER SERVICE: PVC C-900.

D. HVAC PIPING:

- 1. REFRIGERANT PIPING: Use ACR type L soft copper. Insulate suction lines with 3/8" thickness closed cell formed tubing. .
- 2. CONDENSATE DRAIN PIPING: Schedule 40 pvc with 1/2" closed cell insulation. Return air plenums; type "L" hard drawn copper with 1/2" plenum rated insulation.

E. GAS PIPING:

- 1. ABOVE 0.5 psig, use welded black steel pipe.
- 2. 0.5 psig, USE black steel pipe with malleable fittings.
- 3. BELOW GRADE: Coated and wrapped steel having magnesium anodes, "Code approved" polyethylene (orange ASTM-B- 2513 SDR-11) is an acceptable substitute. Exposed

SECTION 15060 PIPING SYSTEMS

polyethylene piping is not allowed.

4. PAINTING: Paint all exposed gas piping with primer coat and final coat yellow color epoxy paint.

F. VALVES:

1. ISOLATION VALVES:

- a. 2.5" and smaller, use Hammond 8901 (threaded), 8911 (soldered), full port ball valves. Equip ball valves with 2" extended handles of non-thermal conductive material for all insulated lines. Other type valves (other than ball) are not approved.
- b. 3" and larger, use Hammond 6211 full lug cast iron bodies with aluminum bronze disk butterfly valves, with extended neck in insulated line, and handle type operators with infinite positions and memory stop, and series 400 stainless steel shafts. Provide and install a gear operator and chain wheel for all valves located 8 feet AFF and over, chain length to be 6.5 feet AFF.

2. CHECK VALVES:

- a. 2.5" and smaller, use Hammond IB946 (threaded), IB945 (solder) all bronze swing check valve, 150 psi.
- b. B3" and larger, use Hammond IR1124 cast iron with bronze trim swing check valve.

3. GAS COCKS: Lubricated plug cock rated at 125 psi, designed for use with fuel gases, and approved by the governing utility.

4. RATING & APPROVALS: Rate all valves for the appropriate fluid and temperature. Valves manufactured by Hammond, Centerline, Crane, Nibco, Wheatley and Stockham are acceptable.

3.01. EXECUTION:

A. INSTALLATION:

1. LOCATION:

- a. Run piping in straight lines at right angles to or parallel with walls, beams or columns. Mount piping as high as practical against roof or ceiling structure.
- b. Do NOT install piping above electrical panelboards, switchboards, motor control centers, dry type transformers or electronic communication control panels.

2. ELECTRICAL CONDUITS:

- a. Layout and install hot water piping runs to avoid paralleling electrical conduits.
- b. Do not locate such piping within six inches of electrical conduits, except where crossings are unavoidable and then keep pipe covering at least one inch from the conduit crossed.

3. SUPPORT:

- a. Support all suspended piping with Grinnel #260 clevis hangers, on ten foot spacing. B-Line approved.
- b. Use 3/8" diameter hanger rods for 2" and smaller pipe and 1/2" diameter for

SECTION 15060 PIPING SYSTEMS

2.5" and larger.

- c. Size hangers for outside diameter at the pipe covering.
 - d. Protect pipe covering with a 20 gage galvanized sheet metal shoe 8" long and extend for one-third the circumference of the covering.
 - e. Do not support piping by or fastened to other pipe or equipment.
4. CLEANING:
- a. Install piping materials free of dirt, scale, rust, excess oil, grease or other compounds; as work progresses, remove foreign matter accumulating in or on the piping as a result of fabrication and erection work.
 - b. Sterilize all domestic water lines using chlorine disinfectant.
 - c. Flush system thoroughly after sterilization.
5. PAINTING: Paint all exposed piping with primer coat and final coat white color epoxy paint if color is not selected by architect.
6. FLASHINGS: Provide all sanitary vent penetrations through the roof with flashings compatible with roof systems.
7. UNIONS:
- a. For 2" and smaller pipe shall be galvanized 150 pound malleable ground joint unions and for 2.5" and larger, shall be black 125 pound cast iron flanged unions.
 - b. Install unions at all locations to facilitate removal of pipe installed devices.
 - c. Install insulating unions at all junctions of dissimilar piping material.
8. SEAL WALL PENETRATION: Seal all pipe penetrations of walls and floors with appropriately rated sealant. Submit for approval.
- B. SCREWED PIPING:
1. Fabricate using sharp cutting, threading and reaming tools which maintain proper thread dimensions and produce standard thread engagement.
 2. Properly ream pipe after cutting.
 3. Make joints with graphite and oil lubricant, or other lubricating type compounds approved by the Engineer; sealing or adhesive type compounds, and all work assembled with such compounds will be rejected.
 4. Coat exposed threads at joints with Tnemec #99 or Rust-Oleum #1069 or #1060 not later than at the end of each days work.
- C. WELDED PIPING:
1. Butt-weld construction, properly beveled and aligned, to be used throughout except as noted for socket weld fittings or valves by drawing notation or material scheduling.
 2. Torch cuts and bevels to be chipped and ground to a "bright" metal condition free of slag before welding.
 3. Finished welds to be peened and welder identification stamped at each weld.
 4. Pipe welding to comply with provisions of latest revision of applicable code, whether ASME Boiler and Pressure Vessel Code, ASA Code for Pressure Piping B31, or state or local requirements as may supercede codes mentioned above.

SECTION 15060 PIPING SYSTEMS

D. PLATES and ESCUTCHEONS:

1. Install floor and ceiling plates where piping passes through exposed walls and ceilings.
2. Provide and install chrome plated escutcheons at all exposed pipe penetrations of walls.
3. Use B and C #10 chrome plated F and C plates or equal.
4. Provide all plumbing fixtures and equipment connections with chrome plated escutcheons at the wall.

E. FREEZE PROTECTION:

1. Install water piping in locations to prevent freezing; always locating piping in heated spaces.
2. If piping is to be located in attic or ceiling space of top floor, locate piping as close to ceiling as practical and cover (like a tent) piping with a minimum of R19 batt insulation to allow the heat from below to maintain temperatures above freezing.

F. COPPER PIPE JOINTS: Solder copper pipe 1.5" and smaller using "lead" free solder. Do not solder joints on copper piping 2" and larger. Braze copper pipe 2" and larger using "sillfoss" sticks.

G. EXCAVATION and BACKFILL:

1. Work to be performed by this contractor both inside and outside building. Run trenches and other excavations to accurate grades and remove disturbed earth. Install all buried lines on a 6" layer of sand, cover with a 6" layer of sand and water flood before remainder of "select" backfill is installed.
2. Install all utility piping below slab a minimum of 24" below finished floor elevation except waste piping. Waste piping elevation to begin farthest from building entry with flow elevation 12" below finished floor graded at 1/4" per linear foot toward entrance.
3. Install a 5'-0" length "plug" centered on exterior wall in all trenches which exit or enter building to reduce the potential for water migration beneath the building. The plug will consist of concrete or compacted clay filling the trench. Do not use sand at the plug.

H. SEWER LINES:

1. Sewer lines to be laid in separate trench.
2. Connections to be made using "Y" branches.
3. Provide cleanouts at foot of soil and waste stacks, at points where main sewer lines leave the building and at other points where needed to completely rod the system and as indicated on plans.
4. Cleanout holes to be the full diameter of the pipe served; do not exceed 4".

3.02. TESTING:

A. GENERAL:

1. Testing to be at completion of roughing in before pipe is covered or enclosed by building construction.
2. Intermediate tests to be made as necessary.

SECTION 15060 PIPING SYSTEMS

3. Leaks to be repaired and tests repeated until systems proven tight.
4. Damage due to failure of test shall be responsibility of contractor.
5. Notify Engineer of intention to test at least 24 hours prior to test.
6. Call for inspection after test has been applied and stabilized unless expressly advised to contrary by Engineer.

B. WASTE, SOIL and VENT:

1. Temporarily plug up all outlets after vertical lines and soils, wastes, vents, etc., have been set. Fill pipe with water full to the top, and allow to remain for six (6) hours.
2. Make a final test after vertical and horizontal pipes and roughing in have been made and before sewer connections are made.
3. Fill all pipes to the top of the vertical lines and allow to remain for six (6) hours.

C. WATER PIPING: Test water piping at 100 psi hydrostatic pressure for 48 hours. Make other tests as herein before specified.

D. GAS PIPING:

1. Test gas piping using a Mercury manometer or a dial pressure gauge with minimum face diameter of 4 inches and scale 0 to 60 psi.
2. Test air pressure shall be 20 inches of mercury, 15 psi gauge or 175% of operating pressure (whichever is greater).
3. Hold pressure for a minimum of two hours with no loss.

E. DEFECTS: Make good all defects, and retested without delay. Such work shall be done without additional charge.

END OF SECTION 15060

SECTION 15182 PLUMBING PIPE INSULATION

1.01.GENERAL:

- A. INCLUDES:
Insulate all equipment and piping as specified here, using materials indicated.
- B. SUBMITTALS:
Submit product data of material and accessories in accordance with Section 15010.
- C. SUBSTITUTION:
Request approval in writing of proposed equipment at least ten (10) calendar days prior to bid date in accordance with Section 15010.

2.01. EXECUTION:

- A. PIPING:
 - 1. Insulation Requirements:
All hot water lines, hot water return, cold water and condensate lines are to be insulated including branches to fixtures and equipment. All roof, deck and planter drain lines above the slab are to be insulated.
 - 2. Fiberglass:
Insulate with ½" PPG fiberglass sectional pipe covering with manufacturer's universal jacket smoothly pasted on with vermin proof paste.
 - 3. Closed cell insulation:
½" flexible elastomeric thermal foam insulation manufactured by Armstrong, type AP Armaflex as installed per manufacturer's recommendation is approved. Use 1.5" thickness for domestic chilled water system piping.
- B. EXPOSED PIPING:
Exposed piping to be insulated with ½" thick molded glass fiber pipe covering with PVC covers. Valves and fittings to be covered with molded PVC covers with glass fiber inserts.
- C. UNDER FLOOR PIPING:
Insulate all hot water and hot water return piping installed under the floor with ½" Armaflex insulation.
- D. ROOF, DECK , INTERSTITIAL LEVEL and PLANTER DRAINS:
All piping located above ceilings and exposed above floors including all vertical connections between drains & horizontal piping, and connected horizontal piping, including drain sump to be insulated with ½" Armaflex insulation.
- E. MANUFACTURERS:
Gustin-Bacon, Owens Corning and Specialty Products and Insulation Co. are acceptable manufacturers.

END OF SECTION 15182

SECTION 15400 PLUMBING SYSTEMS

1.01.GENERAL:

A. INCLUDES:

The work contemplated and included under this heading comprises the furnishing of all labor and materials necessary for the complete installation of plumbing systems in the proposed buildings, together with all necessary auxiliaries.

B. PLUMBING FIXTURES:

Furnish and install plumbing fixtures shown on drawings, including sinks, service sinks, lavatories, water closets, electric water cooler, urinals, etc., with all brass connections therewith, such as traps, supply tubing, stop and basin cocks, etc. Deliver fixtures to building properly crated and in perfect condition.

C. BRASS:

Brass must be of best quality. Brass pipe to be seamless brass tubing, with fittings of heavy cast brass. Nipples to be extra heavy. Light weight goods will not be accepted.

D. MANUFACTURERS:

To establish type and class of fixtures, plumbing fixture schedule shows manufacturer's catalog numbers. Fixtures by American Standard, Eljer, Kohler, and Crane will be accepted. ALL EXPOSED CONNECTIONS TO BE CHROME PLATED.

E. SUBMITTALS:

Submit product data in conformance to Section 15010.

2.01. PRODUCTS:

A. PLUMBING FIXTURES:

Install where shown on drawings and supplied as scheduled.

B. CLEANOUTS:

Install where shown on the drawings and elsewhere in all sanitary wastes and sewer piping at 50' intervals in straight runs and at 90 degree turns. Floor cleanouts to be Zurn #ZN-1400 adjustable series, wall cleanouts to be Zurn #ZN-1443 series. Cleanouts to be in line size. Use 4" cleanout for pipes larger than 4". Wade and J.R.Smith are acceptable.

C. FLOOR DRAINS:

Install where shown on the drawings and set 1/4" below finished floor or as noted on the drawings. Use Zurn #ZN- 415-6B, 3" standard duty, 3" waste, 6" polished nickel strainer with standard sanitary p-trap for all applications unless otherwise noted on plans. Wade and J.R.Smith are acceptable.

D. ROOF DRAINS:

Install where shown on the drawings. Use Zurn series #ZC-100-C unless otherwise noted on plans. Wade and J.R.Smith are acceptable.

SECTION 15400 PLUMBING SYSTEMS

E. HYDRANTS:

Install where indicated on the drawings. Freeze proof hydrants on the building to be Zurn series #Z-1321 unless otherwise noted. Wade and J.R.Smith manufacturer are acceptable.

F. T & P RELIEF VALVES:

Watts #40XL with an ASME rated capacity in excess of the heater rating. Install temperature and pressure relief valve for each tank, and pipe to floor drain or as indicated on plans.

G. SHOCK ABSORBERS:

Equal to Zurn series #Z-1700 or as scheduled on plans. Install on all hot and cold water branch lines. J.R.Smith is approved.

H. HANDICAP LAVATORY PIPING INSULATION:

Insulate or protect lavatory P-Trap and exposed hot water piping and valve assemblies. Refer to schedule for particular type required.

3.01. EXECUTION:

- A. Mount all fixtures in areas marked "HC" or as required in strict conformance to the American Disabilities Act heights, clearances and distances from walls.

END OF SECTION 15400

SECTION 15510 FIRE PROTECTION SPRINKLER SYSTEM

1.01.GENERAL:

A. GENERAL REQUIREMENTS:

The specification for Fire Protection Work is a "performance" specification. It is intended to establish a design criteria for the work. Contractor shall assume full responsibility for the layout and details to meet the specific requirements of the National Fire Protection Association and subject to inspection and approval by the Insurance Services Office (ISO). It is the contractor's responsibility to design and size the system to comply with the requirements specified herein.

B. SCOPE OF WORK:

The work shall include all labor, material, and equipment necessary for a complete functional fire protection system to include the following, but not limited to the following:

1. Underground fire service line from existing city main to building, if required, including city tap, metering, valves, metering vaults, fire hydrant, tee for domestic water supply and road crossing as shown on plans. (Fire service line to be priced separately). If existing water service is insufficient for calculated load, contractor to provide a total system of fire booster pumps, storage tanks and emergency power to maintain calculated flow and pressure to assure proper operation of the fire protection system. (Contractor to price booster system separately).
2. Sprinkler risers at location shown.
3. Wet pipe sprinkler system in all heated parts of the building to be sprinkled based on the requirements of NFPA.
4. Dry pipe sprinkler system in all unheated parts of the building based on requirements of NFPA. Include appropriate air compressor and accessories to maintain air pressure in dry portion of piping.
5. Wet pipe sprinkler system in areas that are unheated will be not be permitted.
6. Preparation of detailed drawings to meet NFPA and Oklahoma Insurance Services approval.
7. All fee, permits, inspection and test required for the fire protection work.
8. Furnish and install zone flow switches and valve tamper switches for connection by fire alarm.
9. Except where ceilings are omitted, all piping shall be concealed.

C. BIDDER QUALIFICATION:

Only contractors regularly engaged in design and installation of sprinkler systems for a period of NOT less than five years shall be considered. Contractor to provide a letter of certification of qualifications for approval with bid.

2.01. PRODUCTS:

A. VALVES:

All valves and control valves shall be provided as required. All control valves shall meet NFPA requirements. All valves to be UL listed for use on fire protection systems. Alarm check valves for each riser shall be complete with retarded chamber, drain, and water motor gong.

SECTION 15510 FIRE PROTECTION SPRINKLER SYSTEM

B. UNDERGROUND PIPING:

Underground piping shall be Johns Manville Class 200 "Blue Brute" PVC heavy wall water main as approved by UL and NFPA for fire protection water main. All piping shall conform to NFPA Pamphlet No. 13.

C. ABOVE GRADE PIPING:

All above grade piping shall be in accordance with NFPA and UL requirements. Pipe sizes and number and rating of sprinkler heads per riser shall comply with NFPA Pamphlet No. 13.

D. FIRE DEPARTMENT CONNECTION:

Post with siamese connection will be 2-1/2" x 2-1/2" x 4" with threads conforming to local fire department, refer to plans for location.

E. HANGERS:

All above grade piping shall be hung by means of approved hangers in accordance with NFPA pamphlet No. 13.

F. TAMPER SWITCHES:

UL and FM approved with tamper switches installed for connection by others.

G. SPRINKLER HEADS:

1. Use brass upright sprinkler heads in areas without ceilings. Use white semi-recessed pendant heads with white escutcheon in areas with ceilings. Use white large orifice, extended coverage, horizontal sidewall with one piece flat in sidewall applications unless noted otherwise on plans.
2. Locate all sprinkler heads in each space in a symmetrical manner with equal spacing between heads and equal spacing to walls. Locate heads centered in 24" x 24" tile and centered in 24" x 48" tiles in either half but not directly centered in the 48" length (divide the tile in half and center in either half, similar to a 24" x 24" tile).

3.01. EXECUTION:

A. CITY MAIN CONNECTION:

Connect to city water main; complete the underground fire line.

B. LOCATION:

Run piping in straight lines at right angles to or parallel with walls, beams or columns. Mount piping as high as practical against roof or ceiling structure. Coordinate with other trades for necessary ducts and equipment above the ceiling; HVAC ducting, electrical cable trays, roof drain piping and sanitary sewer piping have the right of way over fire protection piping. Do NOT install piping above electrical panelboards, switchboards, motor control centers, dry type transformers or electronic communication control panels.

C. DRAINS:

SECTION 15510 FIRE PROTECTION SPRINKLER SYSTEM

Provide drains so the sprinkler system can be drained complete. Connect all drains to the building floor drains or to the exterior of the building. All drains that penetrate the outside wall will be sealed weather tight, will include an approved escutcheon (weather resistant) and the exposed pipe will be galvanized and painted over (color to match exterior wall color).

D. SLEEVES:

Use sleeves for all piping through walls and floors. Fire seal openings and provide chrome escutcheons at all exposed wall or floor pipe penetrations.

E. TESTING:

After piping has been completed, thoroughly flush the entire piping system and test at 200 pounds for a period of 2 hours as required by NFPA before connection to risers.

END OF SECTION 15510

SECTION 15770 HEATING, COOLING AND VENTILATING SYSTEMS

1.01.GENERAL:

A. INCLUDES:

Work under this heading will include the furnishing of all labor, material and equipment necessary to complete the heating, cooling, and ventilating systems as shown on the drawings and described here.

B. SUBMITTALS:

Submit in accordance with section 15010.

C. SUBSTITUTION:

Request approval in writing of proposed equipment in accordance with Section 15010.

D. MANUFACTURER:

All products will be essentially of the manufacturers noted on the plan schedules. Thermostats will be as specified herein. Refer to section 15010 for substitutions.

E. WARRANTIES:

Provide manufacturer's guarantee against defects in materials and workmanship for a period of one year and with a minimum four year extended warranty covering the compressors. Provide manufacturer's non-prorated full parts replacement for heat exchangers for a period not less than 15 years from date of shipment.

F. QUALITY ASSURANCE:

Equipment to be a product of manufacturer regularly engaged in production of such units and issuing complete catalog data on such products, such catalogs to be in possession of Engineer and be fully updated. Unit shall be UL listed and labeled, classified in accordance with UL 1995. Performance certified under A.R.I. and A.G.A Standards pertaining thereto.

2. PRODUCTS:

A. SPLIT DX EQUIPMENT:

1. All equipment will have low ambient operation to 30° F and include a crankcase heater. All low ambient equipment will be factory installed.
2. Compressors are to be scroll type with internal thermal overload protection and mounted on the compressor manufacturer's recommended rubber vibration isolators.
3. Equip refrigerant system with thermostatic expansion valve type refrigerant flow control. Include automatic reset low pressure and manual reset high pressure refrigerant controls. System to be equipped with Schrader type service fittings on both high and low pressure sides and refrigerant liquid line filter/dryer (bi-directional for heat pumps).
4. Refrigerant piping to be ACR type L soft copper. Test lines to 300 psi and evacuate per condensing unit manufacturer's recommendation. Insulate suction lines with 3/8" thickness armaflex formed tubing.
5. Evaporative coils are to be furnished with a double slopped drain pan for the positive

SECTION 15770 HEATING, COOLING AND VENTILATING SYSTEMS

drainage of the condensate. Pan to be manufactured of stainless steel type 304 or demonstrate to be non corrosive (galvanizing not accepted).

B. FILTER HOUSINGS:

Furnish and install manufactured filter housings for all filters indicated other than those integral to HVAC equipment. Furnish and install filter housing for all filters as indicated on plans as separate. Filter housing must include fully gasketed door with positive lock door latches and gasketing of filters to prevent bypass leakage. Contractor fabricated or shop fabricated filter housings are not acceptable.

C. CONDENSATE DRAIN PIPING:

1. Interior Equipment:

Schedule 40 PVC piping and drain to available floor drain, condensate pump or fixed air gap fitting.

D. FLUES:

Furnish and install flues manufactured by Metalbestos type "RV" up to 8" diameter and type "QC" above 8" diameter with flashing and belmont caps.

E. TEMPERATURE CONTROL:

1. Each heating and air conditioning unit as minimum will have an electronic remote mounted heating-cooling thermostat with fan on-auto switch and automatic heating/cooling changeover control. Thermostat to be seven day programmable with key board lockout to prevent tampering after program is set. Thermostat to be Honeywell #TH8110U for gas heat, electric cooling units or for heat pump units. Include appropriate base for thermostat.

2. Contractor to initially program all thermostats with the following schedule:

Occupied Heat = 72° Unoccupied Heat = 62°

Occupied Cool = 75° Unoccupied Cool = 85°

Schools: Occupied Mon. thru Fri. 7 am to 4 pm, all other times are Unoccupied.

All Others: Occupied Mon. thru Fri. 7 am to 6 pm, all other times are Unoccupied.

3. Thermostat wiring concealed in walls or above ceiling is not required to be in conduit.

Install all thermostat wiring exposed interior or exterior to the building in conduit.

F. CEILING EXHAUST FAN:

Furnish and install where scheduled or shown on plans. Fans are to include lined housing, centrifugal blower, back draft damper, duct connection, electrical disconnecting means, aluminum grille (white finish), M.V.I. certification. Duct fans through roof with round duct or as indicated on plans. Install bird-proof cap and roof flashing.

3.01. EXECUTION:

A. ADJUSTMENT:

Check the adjustment and operation of all temperature control equipment on the job. Adjust

SECTION 15770 HEATING, COOLING AND VENTILATING SYSTEMS

Electronic thermostats as indicated above. Instruct owner's representative how to program thermostat (one hour minimum) and turn over all manufacturer's literature to representative.

B. FILTERS:

Install pleated filters (MERV 7 efficiency minimum) of size indicated on plans. Replace filters at final acceptance.

C. SMOKE DETECTORS:

All units 2000 CFM and over to be equipped with duct mounted smoke detector, (supplied by fire alarm contractor, installed by mechanical contractor, wired by fire alarm contractor) to shut down unit and alarm to central fire alarm system.

3.02. TESTING:

A. INCLUDES:

Contractor to adjust and balance air conditioning and heating systems.

B. PRIOR TO OPENING BUILDING:

The contractor will make the following test and furnish a copy of the results to the engineer for approval:

1. Check the rotation of each piece of rotating equipment, including the alignment of V-belt drives, belt guards, couplings, etc.
2. Check the ampere input of each motor against the nameplate rating of that motor.
3. Check the heater coil in the starter against the size recommended for the suitable protection by the starter manufacturer.
4. Check the speed of each belt-driven piece of equipment against the manufacturer's recommendation as shown on the shop drawings or certified performance curves.
5. Check the capacity of each fan from manufacturer's certified performance curves and speed and head data obtained on the job.
6. Check the capacity of each fan by using an anemometer traverse across the coils or filters where physically possible.
7. Balance all duct systems to obtain the quantities of air called for on plans. The total quantities of each fan system will be within 5% and each individual outlet will be within 10% of quantities shown measured with a flow hood.
8. Check the adjustment and operation of all temperature control equipment on the job.
9. Eliminate all duct flutters, splitter noises, excessive vibration, and other noises in the air distribution system.
10. Provide flexible duct connections at all equipment connections to isolate supply and returns.
11. Adjust Electronic thermostats as indicated above. Instruct owner's representative to program thermostat (one hour minimum) and turn over all manufacturer's literature to representative.
12. Verify that all condensate piping for overflow and convertible position locations all have proper plugs.

SECTION 15770 HEATING, COOLING AND VENTILATING SYSTEMS

C. FINAL ADJUSTMENTS:

The contractor will obtain the following test information and furnish a copy to the engineer for approval:

1. Check with sling psychrometer the dry and wet bulb temperature in a sufficient number of locations to assure the lack of hot and cold spots.
2. Make any necessary adjustments to obtain satisfactory conditions in each and every space or portion thereof, in the opinion of the engineer.
3. Adjust grilles and ceiling outlets to eliminate drafts.
4. Furnish all instruments to make measurements.

D. TEST SUBMITTAL:

All tests will be submitted to engineer prior to final acceptance.

E. FINAL PAYMENT:

The contractor will not qualify for final payment until all tests are completed.

END OF SECTION 15770

SECTION 15801 AIR DISTRIBUTION SYSTEM

1.01.GENERAL:

A. WORK INCLUDED:

Work under this heading shall include the furnishing of labor, materials and equipment to complete the air distribution systems described here and shown on the drawings.

B. REFERENCE STANDARDS:

1. Fabricate in accordance with SMACNA duct and ASHRAE handbooks.
2. Construct ductwork to NFPA 90A, Air Conditioning and Ventilating Systems NFPA 90B, Standard for the Installation of Warm Air Heating and Air Conditioning Systems.

C. DEFINITIONS:

1. Duct Sizes:
Rectangular Duct and Round duct sizes are inside clear air flow dimensions unless specifically indicated on plans.
2. Low Pressure:
Static pressure in duct less than 2 inch w.g. and velocities less than 2,300 fpm.

D. SUBMITTALS:

1. Submit in accordance with section 15010.
2. Submit product data including particulars such as gauge sizes, and configurations prior to start of work.
3. Confirm ductwork has been fabricated and installed in accordance with recommendations and SMACNA standards.
4. Submit 1/4" scale shop drawings of all duct for approval before fabrication.

2.01. LOW PRESSURE DUCTWORK:

A. DUCT MATERIALS:

1. General Ducts: Build Ductwork with new galvanized prime grade copper bearing steel sheet gauges as tabulated in latest edition of ASHRAE Guide. All sides of all uninsulated ducts shall be cross-broken.
2. Fasteners: Use rivets and bolts throughout; sheet metal screws accepted on low pressure ducts.
3. Sealant: Water resistant, fire resistive, compatible with mating materials.
4. Round Supply and Return Ducts: Use galvanized sheet metal manufactured duct. Spiral round duct either manufactured or shop fabricated is approved. Adjustable elbows and snap-lock duct work is not allowed. Install ONLY wye taps. 90 degree taps are not allowed. Use Aluminum duct in wet areas. All square to round duct to be furnished with square to round transitions. Plenum taps are not allowed unless specifically indicated on plans.
5. Flexible Round Ducts: Allowed ONLY for termination of ductwork at air devices. Flexible duct wrapped with flexible fiberglass insulation, enclosed by seamless aluminum pigmented plastic vapor barrier jacket, "k" value at 75° F. maximum 0.23 btu in./sq. ft. deg.F.hr (class 1, UL 181) .

SECTION 15801 AIR DISTRIBUTION SYSTEM

6. Under Floor and Below Grade Ductwork: Not allowed.

B. AIR TERMINAL DEVICES:

Refer to schedule on plans. Outside air louvers shall be aluminum with aluminum screens painted per architect's color selection.

C. THERMAL INSULATION:

1. Insulate all round supply and return ducts with 1.5" thickness, 3/4 lb. density insulation with FSK vapor barrier, as required by local code unless noted otherwise on plans. Do not use standard duct tape. Use equal to Shurtape AF-100, 2 mil., 1.5" minimum width, UI 181A-P. F.
2. Insulate all rectangular supply and return ducts with 1.5" thickness, 3/4 lb. density insulation with FSK vapor barrier wrap. Exterior installations, 2" thickness liner, 1.5 lb. density fiber glass especially manufactured and coated as a thermal and acoustical liner. Liner to meet NFPA flame spread and smoke developed ratings.

D. DUCT FABRICATION:

1. Size round ducts installed in place of rectangular ducts from ASHRAE table of equivalent rectangular and round ducts. No variation of duct configuration or sizes permitted except by written permission. Install ONLY wye taps. 90 degree taps are not allowed.
2. Complete metal ducts within themselves with no single partition between ducts. Where width of duct exceeds 18 inches, across break for rigidity. Open corners are not acceptable.
3. Lap metal ducts in direction of air flow. Hammer down edges and slips to leave smooth duct interior.
4. Construct tees, bends, and elbows with radius of not less than 1-1/2 times width of duct on center line. Where radius construction is not possible use rectangular elbows (only with permission from Engineer), provide air foil type turning vanes. Where acoustical lining is required, provide turning vanes of perforated metal type with fiberglass inside. Space turning vanes to provide maximum efficiency and minimum resistance to air flow.
5. Increase duct sizes gradually, not exceeding 15 degrees divergence where possible. Maximum divergence upstream of equipment to be 30 degrees and 45 degrees convergence downstream.
6. Rigidly construct metal ducts with joints mechanically tight, substantially airtight, braced and stiffened so as not to breathe, rattle, vibrate or sag. Caulk duct joints and connections with sealant as ducts are being assembled.
7. Coordinate location of low pressure ductwork with conduit piping and structure to provide maximum head room and to provide a neat and orderly appearance.
8. Construct plenums of galvanized panels joined by standing seams in outside of casing riveted or bolted on approximately 12 inch centers. Reinforce with steel angles and provide diagonal bracing. Tightly fit at apparatus and seal with sealant.
9. Secure adjustable dampers to operating rods; construct of a metal gauge heavy enough to prevent bending, rattling or fluttering when systems are in operation. Equip all adjustable dampers in ductwork that is concealed with Young Regulator end bearings. No Young Regulators shall be installed on any ceiling.

SECTION 15801 AIR DISTRIBUTION SYSTEM

10. All joints and seams shall be covered with four inch wide stripes of glass fabric, applied in two layers with coating of Versa Grip by Hardcast, Inc. water based duct sealant per manufacturer's instructions to provide air tight seals.
11. Exhaust ductwork shall conform to all requirements for low pressure ductwork.

E. LOW PRESSURE DUCT GAUGES:

1. Rectangular Ducts:
 - a. Up to 12" width, 26 gauge minimum.
 - b. 14 to 30" width, 24 gauge minimum.
 - c. 32 to 54" width, 22 gauge minimum.
2. Round Ducts:
 - a. Up to 7" diameter, 30 gauge minimum.
 - b. 8 to 16" diameter, 28 gauge minimum.
 - c. 18 to 22" diameter, 26 gauge minimum.
 - d. 24 to 36" diameter, 22 gauge minimum.
 - e. 38 to 50" diameter, 20 gauge minimum.
 - f. 50 to 60" diameter, 18 gauge minimum.
3. Plenums:
 - a. Fabricate fan plenums and plenums downstream of fan in accordance with duct gauges.
 - b. Fabricate plenums upstream of fan between apparatus of 16 gauge.
 - c. Fabricate plenums upstream of filters of 18 gauge.
4. Outside mounted ducts: The minimum gauge for all ducts mounted outside of the structure regardless of size or shape to be 20 gauge. The minimum interior lining insulation is 2" thick, 2#/cf density. Exterior insulation is not allowed for ducts mounted outside the structure.

F. FLEXIBLE DUCT CONNECTIONS:

1. UL listed 30 ounce, waterproof and fire-retardant, air-tight woven fibrous glass cloth, double coated with chloroprene or chlorosulphonated polyethylene, suitable for temperatures and pressures encountered. Clear width, not including clamping section, shall be 6 inches.
2. Cover outdoor flexible connections with 16 gage sheetmetal.
3. Manufacturers: Ventfabrics, Inc., "Ventglass", United McGill, Duro-Dyne, Ductmate.

3.01. EXECUTION:

A. INSTALLATION:

1. RADIUS TURN ELBOWS:

Use radius turn elbows for all changes in direction for all rectangular ductwork; do NOT use ductwork that requires turning vanes or extractors unless space will not permit radius turn ductwork and then only with approval of Engineer.
2. SUPPORT:

Rigidly support all ductwork by hangers from above. Use galvanized strap hangers spaced to carry the load, but not farther than six feet apart. All hangers shall be neatly installed

SECTION 15801 AIR DISTRIBUTION SYSTEM

and shall be truly vertical. All horizontal runs of ductwork shall be truly horizontal except those ducts that must slope to miss structural members or continuously grading piping. Hangers shall be sized to carry load adequately and in no case shall they be less than 1/16" x 1-1/2".

3. LOCATION:

Run ductwork in straight lines at 90° or 45° angles to or parallel with walls, beams or columns. Mount ductwork as high as practical against roof or ceiling structure. Do NOT install ductwork above electrical panelboards, switchboards, motor control centers, dry type transformers or electronic communication control panels. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

4. OPENINGS:

Provide openings in ductwork where required to accommodate thermometers and controllers. Provide pitot tube openings where required for testing of systems, complete with metal can with spring device or screw to ensure against air leakage. Where openings are provided in insulated ductwork, insulation material inside a metal ring.

5. CLEAN DUCTS:

Clean duct system and force air at high velocity through duct to remove accumulated dust. To obtain sufficient air, clean half the system at a time. Protect equipment which may be harmed by excessive dirt with filters, or bypass during cleaning.

6. FLEX DUCTS:

Connect diffusers to low pressure ducts with six (6) feet maximum length of flexible duct. Hold in place with strap or clamp.

7. SEAL DUCTS:

At each point where ducts pass through partitions, seal joints around duct with non-combustible material.

B. FLEXIBLE DUCT CONNECTIONS:

Provide flexible duct connections at unit to isolate supply and returns.

3.02. TESTING:

A. INCLUDES:

Contractor to adjust and balance air conditioning and heating systems. All balancing shall be by an independent testing contractor other than the job mechanical contractor.

B. INITIAL ADJUSTMENTS:

1. Balance all duct systems to obtain the quantities of air called for on plans. The total quantities of each fan system shall be within 5% and each individual outlet shall be within 10% of quantities shown measured with a flow hood.
2. Eliminate all duct flutters, splitter noises, excessive vibration, and other noises in the air distribution system.

C. FINAL ADJUSTMENTS:

The contractor shall obtain the following test information and furnish a copy to the engineer for approval:

SECTION 15801 AIR DISTRIBUTION SYSTEM

1. Check with sling psychrometer the dry and wet bulb temperature in a sufficient number of locations to assure an even space temperature.
2. Make any necessary adjustments to obtain satisfactory conditions in all spaces as required by the Engineer.
3. Adjust grilles and ceiling outlets to eliminate drafts.
4. Furnish all instruments to make measurements.

D. TEST SUBMITTAL:

All tests shall be submitted to the Engineer prior to final acceptance.

E. FINAL PAYMENT:

The contractor shall not qualify for final payment until all tests are completed.

END OF SECTION 15801

SECTION 15860 DUCT ACCESSORIES

1.01.GENERAL:

A. WORK INCLUDED:

1. Access Doors
2. Fire Dampers
3. Smoke Dampers
4. Balancing Dampers
5. Flexible Connections

B. QUALITY ASSURANCE:

1. Fire dampers to be UL listed and constructed accordance with UL standard 555 Fire Dampers and bear a UL label attesting same.
2. Smoke Dampers to be UL listed and constructed accordance with UL standard 555S Smoke Dampers and bear a UL label attesting same.
3. Construct fusible links on fire dampers to UL Standard 33, Fusible Links for Fire Protection Service.
4. Access doors to be UL labeled.

C. REFERENCE STANDARDS:

1. Accessories to meet the requirements of NFPA 90A, Air Conditioning and Ventilating Systems.
2. Fabricate in accordance with ASHRAE handbooks and SMACNA duct manuals.

D. SUBMITTALS:

1. Submit in accordance with Section 15010.
2. Submit product data of factory fabricated assemblies.
3. Submit manufacturers' printed installation instruction.

2.01. PRODUCT:

A. ACCEPTABLE MANUFACTURERS:

1. Manufacturers:
 - a. Air Balance
 - b. Ruskin
 - c. Controlled Air
 - d. Vent Fabric
 - e. Greenheck

B. ACCESS DOORS:

1. Fabricate rigid and close-fitting doors of galvanized steel with sealing gaskets and quick fastening locking devices. For insulated ductwork, install minimum 1 inch thick insulation with sheet metal cover.
2. Provide two hinges and two sash locks for sizes up to 18 inch square, two hinges and two compression latches with outside and inside handles for sizes up to 24 inch x 48 inch. Provide and additional hinge for larger sizes.

SECTION 15860 DUCT ACCESSORIES

C. FIRE DAMPERS:

1. Fabricate of galvanized steel weighted to close and lock in closed position when released by fusible link.
2. Fire dampers to be multi-blade type.
3. Fire dampers shall have blades retained in a recess so free area of connecting ductwork is not reduced.
4. Set or select fusible links for 160° F. release (return air). Set or select fusible links for 212° F. release (supply air).
5. Access Doors to Fire Dampers:
Provide for each fire damper in ductwork an access door of a size and so located to provide adequate room for inspection and servicing of fire dampers. Access doors to be airtight and secured to duct with screws or other approved manner. Provide gasket between doors and ducts. Conform to all recommendations and requirements of the National Fire Protection Association.

D. SMOKE DAMPERS:

1. Fabricate of galvanized steel; assembly to satisfy leakage class II requirements.
2. Smoke damper assemblies to be sized as same free area or larger than that of connecting ductwork.
3. Provide appropriate electrical operator for damper. Coordinate voltage of damper operator with output voltage of fire alarm system.
4. Fire alarm system to provide power to operate all smoke dampers and to control operation of dampers; close on alarm, open normally.

E. BALANCING DAMPERS:

1. Dampers to be single or multiple blade as required. Dampers are to be installed by the sheet metal contractor under the supervision of the temperature control contractor. All blank-off plates and conversions necessary to install smaller than duct size dampers are the responsibility of the sheet metal contractor.
2. All damper frames are to be constructed of #13 gauge galvanized sheet metal and shall have flanges for duct.
3. Damper blades shall not exceed 6" width. All blades are to be of corrugated type construction, fabricated from two sheets of #22 gauge galvanized sheet steel, spot welded together. Blades are to be suitable for high velocity performance.
4. Replaceable rubber seals are to be provided with damper. Seals are to be installed along the top, bottom and sides of the frame and along each blade edge. Seals shall provide a tight closing, low leakage damper. Leakage and flow characteristic charts must be submitted to the engineer prior to approval of dampers.
5. All damper operators to be of the molded rubber diaphragm piston type and to be fully proportioning unless otherwise specified. They to be quiet in operation and shall have ample power to overcome friction of damper linkage and air pressure acting on louvers to position dampers accurately and smoothly. The damper operator mounting arrangement to be outside the air-stream whenever possible.

SECTION 15860 DUCT ACCESSORIES

F. FLEXIBLE CONNECTIONS:

1. Fabricate of neoprene coated flame proof fabric approximately 2 inch wide tightly crimped into metal edging strip and attach to ducting and equipment by screws or bolts at 6 inch intervals.

3.01. EXECUTION:

A. INSTALLATION:

1. Install items in accordance with manufacturer's printed instructions.
2. Demonstrate re-setting of fire dampers to authorities having jurisdiction and Owner's representative.

B. APPLICATIONS:

1. Provide access doors for inspection and cleaning before and after filters, coils, fans, automatic dampers, at fire dampers, and elsewhere as indicated. Review locations prior to fabrication.
2. Provide 4 inch x 4 inch quick opening access doors for inspections at balancing dampers.
3. Provide fire and smoke dampers at locations shown, and where ducts pass through fire rated and smoke rated partitions. Use combination fire and smoke dampers where shown. Separate dampers may be used at discretion of contractor.
4. Provide fire dampers at ducts and outlets that pass through floors and fire rated ceilings, and where required by authorities having jurisdiction. Fire dampers to be complete with required perimeter mounting angles, sleeves, breakaway duct connections, corrosion resistant springs, bearing, bushing, and hinges.
5. Provide balancing dampers at points on low pressure supply, return, and exhaust systems where branches are taken from larger ducts as required for air balancing.
6. Provide flexible connections immediately adjacent to fans and equipment subject to vibration.

END OF SECTION 15860

SECTION 16010 GENERAL PROVISIONS

1.01.GENERAL:

A. GENERAL REQUIREMENTS:

This section will include provisions of the General Requirements, Division 1. These specifications are to be construed as amending the Division 1 requirements only as pertaining to any conflicting requirements. Electrical plans, mechanical plans, general plans, and all associated specifications are part of this specification.

B. DRAWINGS:

Electrical drawings show the general arrangement of all piping, equipment, and appurtenances and are to be followed as closely as actual building construction, site conditions, and the work of other trades will permit. Conform the electrical work to the requirements shown on all of the drawings. General and structural drawings will take precedence over electrical drawings. Notes on plans take precedence over specifications. Because of the small scale of the electrical drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The contractor will investigate the structural and finish conditions affecting the work and arrange his work accordingly.

C. COMMUNICATION:

1. PROJECT MEETINGS:

Coordinating, clarification, and intent of design and construction communication at project meetings with all concerned parties is recommended. Official meeting notes will be taken by a designated person and a footnote attached to all distribution of meeting notes to provide any participant an opportunity to disagree officially (within a set period of time) with the accuracy of items discussed.

2. MAIL or HAND DELIVERY:

Request for Information (RFI) is permitted by mail, hand delivery, email or fax with the following provisions:

- a. Forward all communication through Architect or copy to Architect.
- b. Include possible options, solutions, drawings as necessary and/or conclusions. RFI's received without Contractor's opinion of solutions or conclusions will not be accepted at Engineer's discretion.
- c. Submit timely requests. Engineer will respond with appropriate consideration for scheduling of construction activities as communicated by the Contractor. Time or response deadlines included with requests or otherwise imposed will be disregarded at the discretion of the Engineer.
- d. Response to RFI will not be construed as requirement or permission for adjustment of contract sum. Adjustment of contract sum is a function of the "Change Order" process as outlined in Section 1.
- e. If the request originates from General Contractor, he will have thoroughly examined all aspects of the item in question with his subcontractors and material suppliers prior to issuance. RFI's received without consultation with appropriate subcontractor or material supplier will not be accepted at Engineer's discretion.

3. TELEPHONE CONVERSATION:

Request for Information is permitted with the understanding that telephone

SECTION 16010 GENERAL PROVISIONS

conversations are considered as preliminary and unofficial.

4. **COMMUNICATION by FACSIMILE or EMAIL:**

Request for Information is permitted using facsimile communication or email communication with return receipt.

5. **VERBAL COMMUNICATION at JOB SITE:** *Information given or opinioned by Engineer at job site is considered preliminary with no official status. The Engineer's Field Report will include all official communication from job site visitations.*

2.01. **EQUIPMENT & MATERIALS:**

A. **BASIC MATERIAL REQUIREMENTS:**

All materials to be new and bear the manufacturer's name, trade name and UL label in every case where a standard has been established for the particular material. All equipment under each section of the specifications to be essentially the standard product of a manufacturer regularly engaged in sales and service in the United States of America and engaged in the production of the required type of equipment, and be the manufacturer's latest and approved design.

B. **DELIVERY and STORAGE:**

Deliver equipment and materials to the site and stored in original containers, suitably sheltered from the elements, but readily accessible for inspection until installed. Store all items subject to moisture damage (such as controls) in dry, heated spaces.

C. **EQUIPMENT and MATERIALS of the SAME GENERAL TYPE:**

To provide appearance, operation, and maintenance there will be use of the same manufacture throughout the work.

D. **PROTECTION:**

Cover equipment tightly and protect against dirt, water and chemical or mechanical injury. At the completion of the work, clean and polish fixtures, equipment and materials thoroughly. Damage or defects developing before acceptance of the work will be made good at the contractor's expense.

E. **DIMENSIONS:**

It will be the responsibility of the contractor to insure that items to be furnished fit the space available. He must make necessary field measurements to ascertain space requirements, including those for connections, and to furnish and install sizes and shapes of equipment so that the final installation will suit the true intent and meanings of the drawings and specifications.

F. **MANUFACTURER'S DIRECTIONS:**

To be followed completely in delivery, storage, protection and installation of all equipment and materials. The contractor will promptly give notice in writing of any conflict between any requirement of the Contract Documents and the manufacturer's directions and will obtain written instructions before proceeding with the work. Should the contractor perform any work

SECTION 16010 GENERAL PROVISIONS

that does not comply with the manufacturer's directions or such written instructions, he will bear all costs arising in correcting the deficiencies.

3.01. EXECUTION:

A. MATERIAL SUBMITTALS PROCEDURE:

1. Within thirty days after award of the contract or letter of intent, the Contractor will furnish directly to the Engineer one (1) copy of electronic PDF brochure (one file with all sheets of brochure) including all manufacturer's literature and drawings describing all proposed major equipment and materials via email (submittals@martinengineeringdesign.com). Brochure makeup will comply with paragraph B. below; (Material Submittals Brochure Requirements). Email a copy of PDF brochure to General Contractor or Project Manager and Architect.
2. If there are objections, the Engineer will notify the Contractor with a list of items that is rejected and requires re-submittal. Contractor to re-submit the entire pdf brochure including those corrected items (pdf format) objected to with reasonable promptness. This procedure will be repeated until the entire submittal brochure is without Engineer's objections.
3. SUMMARY:
 - a. Email one PDF brochure directly to Engineer. Copy email to General Contractor or Project Manager and Architect.
 - b. Include Contractor name, address, telephone number, email address and name of contact person to Engineer. Engineer will email directly the Contractor with any objections.
 - c. Contractor to resubmit to Engineer the entire pdf corrected brochure, include copy to General Contractor or PM and Architect. Repeat procedure until all is approved. One copy of completed submittal brochure will be sent to Contractor with Engineer's approval stamp with copies to Architect and GC or PM.

B. MATERIAL SUBMITTALS BROCHURE REQUIREMENTS:

1. All materials and equipment covered under Division 16 to be submitted at one time. Partial submittals will not be accepted or processed.
2. Stamp via PDF program the job name on all sheets of the submittal. Arrange the descriptive material in the brochure in the same order as found in the specifications.
3. Provide a Cover Sheet for the brochure that includes Project name, Architect's name, Engineer's name and General Contractor's name, date and any other pertinent information.
4. Provide a Table of Contents itemizing contents of brochure.
5. Bookmark items submitted under each specification section number.
6. Manufacturer's regular catalog sheets will not be acceptable under these requirements unless they indicate completely all of the specification requirements. Where submittal sheets cover several sizes or types of materials, they shall be clearly indicated and marked the size or type of material to be used on the project. Do NOT use "highlighter" function to indicate equipment submitted (black & white prints do not show up highlighting); use arrows or heavy underlines. In cases where several sizes of the same

SECTION 16010 GENERAL PROVISIONS

type of equipment are required to be furnished, the submittal will include a schedule identifying each piece of equipment, complete with all capacity information needed to compare every submittal item with its respective specified item. Special features to be listed on a separate sheet.

4. Brochures will contain a written and signed certification by the Contractor that the equipment or materials are suitable for conditions shown and specified; that the equipment or materials are believed to be in conformity with the plans and specifications, except as may be specifically described; be signed by the Contractor. Brochures received not in conformity with these requirements will be returned for required action.
5. All data and material to be thoroughly reviewed by Contractor prior to submittal. Engineer's repetitive reviewing time (more than twice) incurred due to the Contractor's failure to comply with the requirements of the specifications will be invoiced to the Contractor at the Engineer's standard hourly rates.
6. Finding "APPROVED, NO EXCEPTION TAKEN" or "APPROVED AS NOTED" will not eliminate responsibility for compliance with the plans and specifications, unless specific attention has been called, in writing, to the proposed deviations at the time of transmittal of the brochures and such deviations have been found acceptable, nor will it eliminate the responsibility for freedom from errors of any sort in the data submitted. Discovery of such deviations at or after installation will be cause for immediate replacement at no additional cost to the Owner.
7. No material or equipment so governed will be ordered or purchased until found acceptable by the Engineer. Should the contractor install any material or equipment not approved by the Engineer, he shall bear all costs for immediate replacement of material or equipment to the satisfaction of the Engineer.

C. SUBSTITUTION:

1. Substitution will not be considered except by email submitted by bidder and received at least ten (10) calendar days prior to bid date (submittals@martinengineeringdesign.com).
2. Request constitutes a representation by Bidder that:
 - a. Proposed product meets or exceeds the quality and performance of the specified product.
 - b. Warranty meets or exceeds the warranty of the specified product.
 - c. Coordination and installation changes to other Work to be completed with no additional cost to owner.
 - d. Additional costs or time extensions claims be waived.
3. Submit a separate request for each substitution on completed copy of Substitutions Request Form attached to this Section. Attach descriptive literature on all proposed equipment to form. Submit one copy of each Request for Substitution for consideration to the Engineer and submit one courtesy copy to the Architect.
4. Request will not be accepted if not in full compliance of this section.
5. If the proposed equipment is approved, the Engineer will approve the equipment by addendum. No materials or equipment so governed to be ordered until found acceptable by the Engineer.

SECTION 16010 GENERAL PROVISIONS

3.02. COORDINATION:

A. COORDINATION WITH OTHERS:

Contractors will examine all drawings and specifications relating to all other parts of the project. Where work is related or in contract, all contractors to exchange approved shop drawings to coordinate the related parts.

B. ANCHOR BOLTS, SLEEVES, INSERTS, PADS, FOUNDATIONS and SUPPORTS:

That may be required for the mechanical and electrical work will be furnished under the same section of the specifications as the respective items to be supported, and they will be installed, except as otherwise specified, by the trade furnishing and installing the material in which they are to be located.

C. SLOTS, CHASES, OPENINGS and RECESSES:

Through floors, walls ceilings, and roofs as specified in new structure will be provided by the various trades in their respective materials, but the trade requiring them will see that they are properly located and to do any cutting and patching caused by the neglect to do so. No cuts will be made into any structural element, beam or column, without written approval. Openings in existing structures will be provided by the trade requiring same.

D. LOCATIONS:

Pipes, ducts, switches, panels, equipment, fixtures, electrical raceways, etc. will be adjusted to accommodate the work to interferences anticipated and encountered. The contractor will determine the exact route and location of each pipe, and electrical raceway prior to fabrication.

1. Right of way: Lines which pitch will have the right-of-way over those which do not pitch. For example, plumbing drains shall normally have right-of-way. Lines whose elevations cannot be changed shall have the right-of-way over lines whose elevations can be changed.
2. Offsets, transitions and changes in direction in electrical raceways will be made as required to maintain proper head room whether or not indicated on the drawings. The contractor shall furnish and install all pull boxes, etc. as required to effect these offsets, transitions and changes in direction.

E. INSTALLATION and ARRANGEMENT:

The contractor will install all electrical work to permit removal (without damage to other parts) of coils, circuit breakers, filters, belt guards, sheaves and drives, and all other parts requiring periodic replacement of maintenance. The contractor will arrange pipes, raceways and equipment to permit ready access to valves, cocks, traps, starters, motors, control components and to clear the openings to swinging and overhead doors and or access panels.

F. DRAWINGS by CONTRACTOR:

When directed by plan note, detail, specification or by Engineer, the contractor is to submit drawings for approval clearly showing the electrical work and its relation to the work of other trades before commencing shop fabrication or erection in the field.

SECTION 16010 GENERAL PROVISIONS

3.03. CODES, FEES and LATERAL COSTS:

A. CODES and STANDARDS:

All materials and workmanship must comply with all applicable codes, specifications, local ordinances, industry standards and utility company regulations.

1. *Conflicts: In cases of difference between building codes, specifications, state laws, local ordinance, industry standards and utility company regulations and the Contract Documents, the most stringent will govern.*
2. *Non-Compliance: Should the contractor perform any work that does not comply with the requirements of the applicable building codes, state laws, local ordinances, industry standards, and utility company regulations, he will bear all costs arising in correcting the deficiencies.*

B. FEES, PERMITS and INSPECTIONS:

All required fees, permit and inspections to be obtained and paid for by the contractor under the section of specifications for which they are required.

1. *Certificate of final inspection: Under each applicable section of the specifications, the contractor, upon completion of the work under that section, furnish a certificate of final inspection from the department having jurisdiction.*

C. TEMPORARY UTILITY SERVICE:

All required temporary construction electric service to be obtained and paid for by the contractor under the section of the specifications for which they are required.

3.04. CLOSE OUT:

A. BUILDING SYSTEMS OPERATING AND SPARE PARTS MANUAL:

Submit to Engineer a Building Systems Operating and Spare Parts Manual in a pdf format (scanned copies are not allowed; document must be searchable) containing the following, with main sections bookmarked:

1. *Brief statement of start-up and shutdown sequence for each item of equipment and each system. Statement should refer to valves, switches and starters by both name and assigned number.*
2. *Installation, operation and maintenance instructions for each item of equipment in pdf format. This shall include preventative and emergency maintenance including:*
 - a. *Name and model number of each item of equipment.*
 - b. *Serial number or such other mark as may be required for parts ordering.*
 - c. *Statement as to source of repair parts and service.*
 - d. *Manufacturers spare parts recommendations.*
 - e. *Manufacturers repair parts list.*
 - f. *Manufacturers guarantees and warranties.*
3. *Manual to include all items in the approved Material Submittal Brochure.*
4. *Manual to include copies of all approved tests required including conductor integrity, grounding tests, operating tests, etc.*

SECTION 16010 GENERAL PROVISIONS

B. AS BUILT DRAWINGS:

Submit to Engineer, upon completion of the work, of contract plans marked up to show all deviations from indicated installations. As built plans can be marked on a printed copy and scanned into a pdf electronic file or the changes can be made with a cad program and presented in a cad file; AutoCad format (dwg) or FastCad format (fcw). Markings shall include:

1. Changes in routes of concealed conduit.
2. Other changes to concealed work which affect future maintenance and repair work.

C. O & M and AS BUILT DRAWINGS DELIVERY:

Provide all electronic pdf files required in sections A. and B. above on flash drives of a minimum of 125% capacity of the total of all files. Deliver two flash drives to Engineer, where he will include all construction specifications and cad drawings on the flash drives, keeping one copy for his records and deliver one to the Owner for his use.

END OF SECTION 16010

SECTION 16010 GENERAL PROVISIONS

SUBSTITUTION REQUEST FORM

(Form 16010s, attached to Section 16010)

Specified Item: (Section, Page, Paragraph, Plan Sheet, Detail, Description)

Proposed substitution: The undersigned requests consideration of the following:

The undersigned certifies that the following paragraphs, unless modified or clarified and initialed on this form, are correct:

1. The proposed substitution does not affect plan dimensions or spaces provided for equipment.
2. The undersigned will reimburse Owner for review or redesign services associated with or caused by the substitution.
3. The proposed product will meet or exceed the quality, appearance and performance of the specified product.
4. Warranty of the proposed product will meet or exceed the warranty of the specified product.
5. All coordination and installation changes to other Work as a result of the proposed product will be completed with no additional cost to owner.
6. Maintenance and service parts will be locally available for the proposed substitution.
7. Additional costs or time extensions claims will be waived as a result of installation or delivery of proposed product.

Submitted by: _____

Typed Name and Signature: _____

Company: _____

Address: _____

City, State: _____

Date: _____ Telephone & Fax: _____

Email Address: _____

List of Attachments: _____

End of Form 16010s

SECTION 16020 RENOVATION AND ADDITION WORK INCLUDED

1.01.GENERAL:

A. INCLUDES:

The work contemplated and included in this contract comprises the furnishing of all labor and materials necessary for the additional installation of the electrical distribution system and miscellaneous electrical systems in the existing building, together with all necessary auxiliaries for same.

B. EXISTING SYSTEMS:

Furnish and install compatible components when extending or replacing portions of existing systems. Supply same manufacturer component as existing, matching function and performance whenever practical.

C. EXISTING CONDITIONS AND UTILITIES:

It is the contractor's responsibility to inspect the existing facilities for clearances required to do the work, for structural integrity and viability prior to cutting or drilling access openings and any other existing conditions affecting the proposed work, and make provisions as to the cost in his bid. Should the contractor consider the work required in the existing facility to be prohibitive or restrictive, he shall notify the Engineer in writing prior to the bid of any objections or exceptions to the plans and specifications. It is the contractor's responsibility to inspect and verify prior to bid the existing locations and sizes of existing utilities to be connected. Contractor is responsible for connecting to existing utility. Any distance or location offered on plans is only an estimate to assist Contractor and can not be used in bidding.

D. ALTERNATES:

Refer to architectural general conditions, Alternates section for list of alternate requirements. Include all associated electrical work with each alternate if no further description is in these specification or on the plans.

2.01. WORK INCLUDED:

A. TOTAL SYSTEM:

Furnish and install the additional electrical distribution system to make a complete and workable system.

B. MISCELLANEOUS SYSTEMS:

Furnish and install conduit systems for miscellaneous electrical systems as indicated on the plans. Furnish and install miscellaneous electrical systems as specified on the plans or in these specifications.

C. EXISTING SYSTEMS:

Replace existing Fire Alarm, Telephone, CATV, and Paging system components in new ceilings and new walls. Install new devices in new addition, extending existing system. Reconnect or replace any wiring destroyed during demolition or construction phases to restore existing

SECTION 16020 RENOVATION AND ADDITION WORK INCLUDED

systems to original working order.

D. MOTORS:

All motors will be furnished by others, but connected by this contractor.

E. Disconnects, starters, control stations, pilot lights and final connections for the plumbing and mechanical work.

F. Disconnects, starters, control stations and final connections for all motors and equipment furnished by others or owner including kitchen equipment to make complete workable systems, unless noted otherwise on plans or specifications.

G. PAINTING:

Painting, if required, to be by general contractor.

H. DEMOLITION:

Contractor to remove all equipment and accessories as indicated on plans or as the result of the work required. Contractor to dispose off site of all demolished equipment.

I. EXCAVATION and BACKFILL:

1. Work to be performed by this contractor both inside and outside building. Run trenches and other excavations to accurate grades and remove disturbed earth. Install all buried lines on a 6" layer of sand, cover with a 6" layer of sand and water flood before remainder of "select" backfill is installed.
2. Install all conduit piping below slab a minimum of 24" below finished floor elevation, no exceptions.
3. Install a 5'-0" length "plug" centered on exterior wall in all trenches which exit or enter building to reduce the potential for water migration beneath the building. The plug will consist of concrete or compacted clay filling the trench. Do not use sand at the plug.

3.01. WORK COMPLETION:

A. INSTRUCTIONS TO OWNER:

The contractor will instruct the operating personnel of the Owner in the proper operation and maintenance of all elements of the electrical systems.

B. ACCEPTANCE:

When the contractor completes all work in accordance with the Contract Documents, and the instructions to the Owner completed, the contractor will be given written notice of the final acceptance.

C. GUARANTEE:

This contractor will guarantee in writing to keep the entire electrical system as installed by contractor and/or sub- contractors in repair and perfect working order for one (1) year after date of final acceptance.

SECTION 16020 RENOVATION AND ADDITION WORK INCLUDED

END OF SECTION 16020

SECTION 16111 CONDUIT SYSTEMS

1.01.GENERAL:

A. INCLUDES:

Work under this heading includes furnishing of all labor, materials and equipment necessary to complete all electrical conduit systems as shown on the drawings and described here.

B. SUBMITTALS:

Submit product data of material and accessories in accordance with Section 16010.

2.01. PRODUCTS:

A. RIGID STEEL STANDARD PIPE (RGS):

Hot dipped galvanized or electro-galvanized with both ends threaded, conforming to NEC and bearing UL listing. Use screwed couplings of same material. RGS to be used in the following areas:

1. Embedded in concrete, 3/4" minimum size.
2. Damp or wet locations.
3. Below grade (PVC coated or tape wrapped), 3/4" minimum size.
4. In rooms or areas where conduit is exposed per plans.
5. Hazardous locations.

B. INTERMEDIATE METALLIC CONDUIT (IMC):

Conforming to NEC and bearing UL listing. Use screwed couplings of same material. IMC may be used in same areas as rigid steel conduit as approved by NEC.

C. ELECTRICAL METALLIC TUBING (EMT):

Conforming to NEC and bearing UL listing. Use set screw couplings. EMT may be used concealed above grade in dry locations as approved by NEC.

D. RIGID PLASTIC CONDUIT (PVC):

Type 40 heavy wall rigid conduit with UL listing for 90° C cable rating, conformant to NEC. Use couplings of same material and NEC approved methods. Use factory rigid steel elbows on all bends of 1-1/4" and larger PVC conduit. PVC conduit is never allowed to be exposed, either inside or outside. PVC conduit may be used in the following areas:

1. Embedded in concrete, 3/4" minimum size.
2. Concealed damp or wet locations.
3. Below grade, 3/4" minimum size.
4. Concealed in walls to a point 18" above finished floor.

E. FLEXIBLE STEEL CONDUIT:

Hot-dipped galvanized interlocked spirally wound steel strip conformant to NEC and bearing UL label. Connector to be galvanized. Flexible steel conduit may be used only from outlet box to recessed lighting fixtures, six (6) foot maximum length. Provide green ground wire from outlet box to fixture to maintain ground continuity.

SECTION 16111 CONDUIT SYSTEMS

F. FLEXIBLE LIQUID-TIGHT CONDUIT:

Type U.A. conformant to NEC and bearing UL listing. Connector to be galvanized. Flexible liquid-tight conduit may be used to extend conduit connections to motors, two (2) foot maximum length. Provide green ground wire from outlet box to equipment to maintain ground continuity.

G. OUTLET BOXES:

Outlets including light, switch, receptacle, etc., to be provided with approved galvanized code gauge steel knockout boxes, suitable in design to the space which they occupy and the purpose they service. Sectional boxes will be not accepted, except in locations approved by Engineer, such as brick walls or unplastered tile walls; in concrete block walls, use "Raco" concrete boxes.

H. FLOOR BOXES:

Use Hubbell #PFB1 plastic floor box with #PFBA1 adapter ring, #PFBT1 low voltage divider and #PFBCBL service floor box cover with matching carpet ring (black). Include (1) Hubbell #TJ6 modular voice/data jack (one spare outlet for owner provided data cabling) and (1) 15 ampere duplex receptacle. Provide complete floor box system including all accessories for mounting duplex receptacle and voice/data outlet flush with floor as required on plans, unless otherwise noted on plans.

3.01 EXECUTION:

A. CONDUIT LOCATION:

All conduit and wire in entire facility to be concealed unless specifically noted on the plans.

B. CONDUIT SIZE:

Size conduit in accordance with NEC for number and size of conductors installed unless noted otherwise on plans. The minimum size conduit permitted will be 1/2" with no more than four (4) #12 or #10 conductors installed in conduit.

C. CONDUIT INSTALLATION:

1. Make conduits continuous from outlet to outlet, cabinet or junction box, and so arranged the wire may be pulled in with minimum practicable bends or junction boxes. To change direction, make smooth bends of pipe without flattening pipe or flaking galvanizing. Bends to be long radius pattern and in no case smaller than corresponding radius elbows. Use factory elbows for 1-1/4" and larger.
2. Fasten conduit securely in place with approved straps and hangers, in sufficient number to prevent movement of any part (this included conduit installed on form before concrete is poured). No perforated straps or twisted wire will be accepted.
3. Plug conduit ends and fill boxes temporarily to prevent plaster or dirt from entering. Place conduit in concrete forms to not interfere with steel or strength of slabs and joists. Consult drawings before running conduit to ascertain where work might conflict.
4. Clamp conduits rigidly to box by locknut and bushing on inside and locknut on outside; conduit to enter box squarely. Use bushings and locknuts of galvanized malleable iron,

SECTION 16111 CONDUIT SYSTEMS

with sharp, clean cut threads; insulating bushing on 1-1/4" conduit and over.

5. Run ALL conduit in straight lines at right angles to or parallel with walls, beams or columns. Mount conduit as high as practical against roof or ceiling structure. Support with conduit straps, suitable clamps or hanger to provide rigid installation--maximum of 8'. Do not support conduit by or fastened to other pipe or equipment. Do not support conduit by attachment to outlet and junction boxes.
6. Do not locate a conduit within six inches of domestic hot water or heating HVAC pipes, except where crossings are unavoidable and then keep conduit at least one inch from the covering on pipe crossed.
7. Insert a pull wire in each empty spare conduit or conduit where wiring is to be installed by others if the conduit is more than 50 feet long and contains more than the equivalent of two 90° bends, or where conduit is more than 150 feet long. Provide a nylon cord having a 200-pound minimum tensile strength. Include not less than 10 inches of slack left at each end of the pull wire.

D. OUTLET BOX INSTALLATION:

1. Set outlet boxes accurately in walls, columns, floors, or ceilings so as to be flush with finished surfaces and rigidly secure in position.
2. For plastered surfaces, provide code gauge galvanized steel plaster rings set so that surface of ring finishes flush with grounds to which plaster will be worked.
3. Provide boxes for switches and receptacles with proper covers to receive this equipment.
4. Where outlets are backed up on each side of partitions, offset to eliminate transfer of noise.
5. Provide 3/8" no-bolt type fixture studs for all outlets intended to support lighting fixtures.
6. Provide a beveled edge flat steel blank cover for any junction or outlet box not equipped with a fixture, switch, or receptacle.
7. In face brick walls, use outlet boxes of brick size or multiples thereof, deep enough that face course of brick need not be cut for conduits. Cover for each of the boxes is to be a special shape in order to fit box.
8. Properly support all outlet boxes to structure or wall. Outlet boxes are not permitted to be supported solely by conduit attachment.

E. LOCATION of OUTLETS:

Locate outlets approximately as shown on drawings, properly located with respect to other fixtures, as well as interior finish. Where several outlets occur in a room, arrange same symmetrically. Adjacent devices, as indicated on plans, will require multiple gang boxes with appropriate sectional dividers and multiple gang device plates. Do not group single gang devices with single gang boxes and plates together. Set devices and plates plumb and parallel to wall. In questionable cases, secure definite locations from Engineer. Any outlet improperly located must be corrected at contractor's expense. Switch outlets must clear door trim, except where mounting on trim is approved. Height of outlets above finished floor and mounting heights, if not shown on drawings, to be as follows:

1. Lighting wall brackets: 6'-8" to bottom of fixture, full 80" clear under fixture.
2. Switches: 4'-0" to center outlet box.

SECTION 16111 CONDUIT SYSTEMS

3. Receptacles: 1'-6" to center outlet box.
4. Safety switch: 5'-0" to top of switch housing.

F. ANCHORS, BOLTS and SCREWS:

Securely fasten conduit straps, cutout switches, etc., to walls, slabs, etc., with cadmium plated screws and lead cinch anchors, expansion bolts or approved equal anchors. For exposed work, use cadmium plated bolts. Wood plugs will not be accepted.

G. EXCAVATION and BACKFILL:

1. Work to be performed by this contractor both inside and outside building. Run trenches and other excavations to accurate grades and remove disturbed earth. Install all buried lines on a 6" layer of sand, cover with a 6" layer of sand and water flood before remainder of "select" backfill is installed.
2. Install all conduit piping below slab a minimum of 24" below finished floor elevation, no exceptions
3. Install a 5'-0" length "plug" centered on exterior wall in all trenches which exit or enter building to reduce the potential for water migration beneath the building. The plug will consist of concrete or compacted clay filling the trench. Do not use sand at the plug.

END OF SECTION 16111

SECTION 16120 CONDUCTORS

1.01.GENERAL:

A. INCLUDES:

Work under this heading will include labor and materials necessary for the wiring system as shown on the plans and described here. Aluminum conductor not allowed unless noted on plans.

B. STANDARDS:

The conductors will meet the latest requirements of underwriters laboratories standards, NEMA, and the national electric code.

C. SUBMITTALS:

Submit product data of material and accessories in accordance with Section 16010.

2.01. PRODUCTS:

A. CONDUCTORS #8 and Smaller:

Use THHN/THWN insulated copper, 90°C, 600 volt insulation, UL approved solid conductor.

B. CONDUCTORS #6 and Larger:

Use THHN/THWN copper, 90°C, 600 volt insulation, UL approved stranded conductor.

C. ARMOR CABLE:

Not allowed.

D. CONTROL WIRING:

1. TFFN, 90°C, 600 volt insulation, UL approved stranded #16 conductor.
2. Exposed (not in conduit) in Return Air Plenums: Plenum rated, UL approved, extruded Teflon FEP per ASTM D-2116 600 volt at 400°F primary insulation, stranded or solid copper conductor.

E. SPLICES and TAPS:

Splices and taps for #8 connector and smaller wire with insulated wire nuts; ideal or scotchlock approved. Make splices and taps for #6 conductor and larger with solderless lugs and connectors, insulating with preformed rubber or thermoplastic boot or rubber and vinyl plastic tape.

3.01. EXECUTION:

A. SIZE:

Do not use any wire smaller than #12 except in control circuits. Do not use any wire smaller than #10 for outside below grade.

B. PHASE WIRES:

Color code as required by local authority; color of each phase and voltage classification will be

SECTION 16120 CONDUCTORS

established at the service entrance and continued throughout project. Neutral will be white.

C. CONDUCTOR INSULATION TEST:

After low voltage (to 600V) equipment and wiring is installed, and before it is energized, test all feeder circuits -100A and larger - for insulation resistance, phase-to-phase and phase-to-ground. Test systems rated above 240V with a 1000V MEGGER(R), test circuits rated 240V and below with a 500V MEGGER(R). Submit a written report of test results to engineer for approval.

D. GROUNDING:

Ground conduits, panelboards, switchboards, motors and motor equipment with green conductor sized per NEC minimum requirements or as shown on plans. Refer to Section 16450.

END OF SECTION 16120

SECTION 16140 WIRING DEVICES

1.01.GENERAL:

A. SCOPE:

Work under this heading will include labor and materials for all necessary wiring devices to be integrated into the electrical distribution systems as shown on the drawings and described here.

B. SUBMITTALS:

Submit product data of material and accessories in accordance with Section 16010.

C. SUBSTITUTION:

Request approval in writing of proposed equipment at least ten (10) calendar days prior to bid date in accordance with Section 16010.

D. MANUFACTURER:

All devices and plates to be of the same manufacturer, unless noted otherwise. Hubbell and P & S are approved manufacturers.

2.01. PRODUCTS:

A. WALL SWITCHES:

1. Single Pole (SPST): Leviton #1221-1, 20 amp.
2. Three Way (SPDT): Leviton #1223-1, 20 amp.
3. Single pole rotary dimmer: Leviton #6681-1, 600 watt.

B. RECEPTACLES:

1. Duplex Convenience: Leviton #5262-1, 15 amp; Red color body for emergency power receptacles.
2. Isolated Ground Duplex Convenience: Leviton #5262-IG, 15 amp.
3. Ground Fault Interrupter: Leviton #6598-HGI with plate, 15 amp.
4. Tamper Resistant duplex convenience: Leviton #5321-1, 15 amp.
5. Fire rated "poke-through" receptacle: U.L. classified for two hours, two piece unit, fully assembled and pre-wired receptacle. For floor thickness of 2 1/4" to 7". Include one 15 ampere duplex power receptacle and one Hubbell #TJ6 voice/data outlet (one spare outlet for owner provided data cabling). Hubbell #PT7F (Black).

C. TELEPHONE: Simplex receptacle with telephone outlet: Leviton type InfoTap TR Plus flush mount with 4 conductor modular telephone jack.

D. DATA: Data receptacle furnished and installed by owner, contractor to provide box, blank plate and conduit only (stub into ceiling space).

E. TV CABLE: Simplex receptacle with TV cable outlet: Leviton type bulkhead F connector, #40681-1 and matching plate.

F. PLATES and COVERS:

SECTION 16140 WIRING DEVICES

1. Receptacles and Switches: Stainless Steel, Type 302/304 non-magnetic, 0.04" thick.
 2. Weatherproof (raintight while in use) for modular receptacle, gray, polycarbonate vertical mount with self closing, hinged cover. Leviton #5977-GY.
- G. COLOR: Standard color for devices is ivory, use brown color with brown plates for paneled walls.
- H. MANUFACTURER: All devices and plates will be of the same manufacturer unless noted otherwise. Hubbell, P&S and General Electric are acceptable substitutes.
- I. MANUAL MOTOR SWITCHES:
Manual motor disconnect switches that provide "on" and "off" modes for single phase and three phase motor loads where overload protection is not required or is provided separately. Furnish all with NEMA 1 surface enclosure.
1. Two pole, 30 amperes, 600 volt switch. Leviton # MS302.
 2. Three pole, 30 amperes, 600 volt switch. Leviton # MS303.
 3. Two pole, 40 amperes, 600 volt switch. Leviton # MS402.
 4. Three pole, 40 amperes, 600 volt switch. Leviton # MS403.
 5. Two pole, 60 amperes, 600 volt switch. Leviton # MS602.
 6. Three pole, 60 amperes, 600 volt switch. Leviton # MS603.
- J. PHOTOCELL and TIME CLOCKS:
1. Flush Mounted Photocell - Intermatic #K4321 (120V).
 2. Surface Mounted Photocell - Intermatic #K4121 (120V).
 3. Time Clock (7 day, 4pst) - Intermatic #T7401BC.
 4. Tork approved substitute.

3.01 EXECUTION:

- A. MOUNTING HEIGHTS:
Switches @ 48" above floor and receptacles 18" above floor or 43" above floor when behind cabinets unless otherwise noted.
- B. INSTALLATION of SWITCH PLATES and ESCUTCHEONS:
Examine finished walls painting and other finishes before making this installation to make sure that accessories, when installed, will fit and cover properly and leave no open or unfinished surfaces showing. Do not make installation if faulty work by others is found, but promptly report trouble to general contractor and Architect/Engineer. Set plates plumb and parallel with wall. All device plates will match.
- C. ADJACENT DEVICES:
Devices as indicated on plans, will require multiple gang boxes with appropriate sectional dividers and multiple gang device plates. Do not group single gang devices with single gang boxes and plates together.

END OF SECTION 16140

SECTION 16170 SAFETY DISCONNECT SWITCHES

1.01. GENERAL:

A. INCLUDES:

Work under this heading will include labor and materials for all necessary fusible or non-fusible safety switches as shown on the plans and described here.

B. SUBMITTALS:

Submit product data of material and accessories in accordance with Section 16010.

C. SUBSTITUTION:

Request approval in writing of proposed equipment at least ten (10) calendar days prior to bid date in accordance with Section 16010.

D. MANUFACTURER:

Siemens, Square D, Cutler Hammer or General Electric is acceptable. Switches to be supplied by the same manufacturer as panelboards. All switches to be of the same manufacturer, unless noted otherwise.

2.01. PRODUCTS:

A. SWITCHES:

Heavy duty type, NEMA standard and bear UL listing. Switches to be furnished in NEMA 1 enclosure unless noted on plans (WP- NEMA3R). Switches shall be horsepower rated for 600V AC unless noted on plans. Switches to have a quick-make and quick-break single throw operating mechanism. The operating handle will be an integral part of the box, not the cover, with positive padlocking provisions in the "off" position. Each switch will include solid neutral lugs. Each switch will include equipment ground kit.

B. FUSES:

Equip each fuse circuit and set of fuse clips with the scheduled fuse size and type. Refer to Section 16181.

3.01. EXECUTION:

A. MOUNTING HEIGHT:

5'-0" to top.

B. SWITCHES WITHOUT NOTATION:

Switches without notation on plans will be sized equal to or next standard size above scheduled feeder overcurrent device, complete with fuse(s) the same size as feeder overcurrent device.

END OF SECTION 16170

SECTION 16181 FUSES

1.01. GENERAL:

A. INCLUDES:

Work under this heading will include labor and materials for equipping each fuse circuit and set of fuse clips with its scheduled size fuse as indicated on the plans and specified here.

B. SUBMITTALS:

Submit product data of material and accessories in accordance with Section 16010.

C. SUBSTITUTION:

Request approval in writing of proposed equipment at least ten (10) calendar days prior to bid date in accordance with Section 16010.

D. MANUFACTURER:

Products that match or exceed the performance of that specified as manufactured by Gould and Economy are approved. All fuses to be supplied by the same manufacturer, unless noted otherwise.

2.01. PRODUCTS:

A. FUSES 600 AMPERES and LESS:

Provide and install UL class RK1 with interrupting rating of 200,000 amperes RMS symmetrical, equal to Bussmann type low peak dual element fuses LPN-RK (250 volts) or LPS-RK (600 volts) unless noted otherwise on plans. UL class J with interrupting rating of 200,000 amperes RMS symmetrical, equal to Bussmann type hi-cap time delay fuses JHC (600 volts) are an approved substitute.

B. FUSES GREATER THAN 600 AMPERES:

Provide and install UL class L with interrupting rating of 200,000 amperes RMS symmetrical, equal to Bussman type hi-cap time delay fuses KRP-C (600 volts) unless noted otherwise on plans.

3.01. EXECUTION:

A. FUSE IDENTIFICATION LABEL:

Place fuse identification label showing type and size inside the door of each switch. (These labels are provided at no cost by manufacturer).

B. SPARES:

Provide and install 10% (minimum of 3) of each type and rating of installed fuses in spare fuse cabinet(s) equal to Bussmann SFC cabinet.

END OF SECTION 16181

SECTION 16450 GROUNDING

1.01. WORK INCLUDED:

A. INCLUDES:

Provide grounding for entire electrical installation as indicated below and described in Contract Documents.

1. Conduits and other conductor enclosures.
2. Neutral or identified conductor of interior wiring system.
3. Power and lighting panelboards.
4. Non-current-carrying metal parts of fixed equipment such as motors, starters, and controller cabinets, instrument cases, and lighting fixtures.
5. Metal structure of buildings.
6. Switchboards.
7. Motor Control Center.
8. Miscellaneous fixed mechanical equipment.
9. Process equipment.
10. Control cabinets.

B. REQUIREMENTS of REGULATORY AGENCIES:

Install complete grounding system in accordance with National Electrical Code.

2.01. PRODUCTS:

A. GROUND RODS:

Rods to be copper-clad steel rods, 3/4 inch diameter and ten feet long installed as indicated on drawings.

B. GROUND CONDUCTORS:

1. Ground conductors to be copper with THHN/THWN insulation, green color. Refer to Section 16120 for complete conductor specification.
2. Below grade grounding conductors to be bare copper stranded.
3. Ground conductor size to be as indicated on plans; minimum size requirements to be per NEC, article 250.

C. GROUNDING CLAMPS:

1. Provide grounding clamps of approved type, specifically designed for grounding. Where grounding conductor is enclosed in conduit, grounding clamp to be type which grounds both conductor and conduit. Copper-clad strap metal is not acceptable for grounding or bonding purposes.
2. All below grade connections to be power hydraulic compression fittings of copper alloy material. Exothermic reaction weld connections are not allowed unless noted.

3.01. EXECUTION:

A. SERVICE ENTRANCE GROUNDING:

Install ground wire and bonding jumpers sized as required on plans, as a minimum sized per

SECTION 16450 GROUNDING

NEC, latest edition for "Service Entrance. Provide ground wire from service ground rod directly to ground bus on main service disconnecting/overcurrent panel, disconnect switch or switchgear. Provide a PVC sleeve for all bare copper ground conductors penetrating a concrete slab. Bond from this main service grounding conductor to nearest structural column and to nearest horizontal concrete slab reinforcing rod of at least 20 foot length and ½" diameter as a minimum. Use same size ground conductor as required on plans for all bonding jumpers.

B. POWER SYSTEM GROUNDING:

1. Circuit Grounding:

Install grounding bushings, grounding studs, and grounding jumpers at distribution centers, pull-boxes, motor starters, panelboards, etc. All circuits to include a ground wire minimum sized per NEC, latest edition.

2. Bonding Jumpers:

Provide insulated ground conductor, size correlated with over-current device protecting the feeder, attach to grounding bushings on conduit to lugs on boxes and other enclosures to ground conductor.

3. Permanently and effectively ground metallic conduit, supports, cabinets, switchboards, equipment cases, motor frames, interior metal cold water piping system and system neutral conductors (at source only). Maintain continuity of equipment ground throughout the system.

C. LIGHTING SYSTEM GROUNDING:

1. Fixtures:

All metallic light fixture enclosures to be grounded.

2. Ballasts:

All ballasts to be grounded.

D. COMPUTER SYSTEM GROUNDING:

Grounding to comply with FIPS-94 (Federal information processing standards publication) as a minimum requirement. An electronic (pdf format) copy is available upon request of Engineer.

E. TESTS:

Measure ground grid resistance with earth test megger and install additional ground rods and conductors as required. Resistance from grounded surface of the electrical system to the ground electrode and to earth to not exceed 25 ohms. Provide written report to Engineer for approval.

END OF SECTION 16450

SECTION 16472 PANELBOARD, CIRCUIT BREAKER

1.01.GENERAL:

A. INCLUDES:

Work under this heading includes labor and materials for all necessary panelboards as indicated in the panelboard schedule and where shown on the plans. Provide FACTORY ASSEMBLED Panelboards that are dead front safety type equipped with thermal magnetic molded case circuit breakers of frame and trip ratings as shown on the schedule.

B. STANDARDS:

The panelboards will meet the latest requirements of underwriters laboratories standards, NEMA, and the national electric code. The panelboards will be furnished with an underwriters laboratories label.

C. SUBMITTALS:

Submit product data of material and accessories in accordance with Section 16010.

D. SUBSTITUTION:

Request approval in writing of proposed equipment at least ten (10) calendar days prior to bid date in accordance with Section 16010.

E. MANUFACTURER:

Products that match or exceed the performance of that specified as manufactured by General Electric, Siemens, Cutler Hammer and Square D are approved.

2.01. PRODUCTS:

A. CIRCUIT BREAKERS:

Provide Circuit breakers that are quick make, quick break, thermal magnetic, trip indicating, and have common trip on all multiple breakers. Trip indication to be clearly shown by the breaker handle taking a position between "ON" and "OFF" position when the breaker is tripped. All circuits designated for lighting are to have switch rated circuit breakers.

B. PANELBOARD BUS ASSEMBLY:

Bus bar connections to the branch circuit breakers to be the "distributed phase" or "phase sequence" type. Single phase 3-wire panelboard bussing to be such that any two adjacent single pole breakers are connected to opposite polarities in such a manner that 2-pole breakers can be installed in any location. Three phase 4-wire bussing to be such that any three adjacent single pole breakers are individually connected to each of the three different phases in such a manner that 2 or 3-pole breakers can be installed at any location. All current carrying parts of the bus assembly to be tin plated. Mains ratings to be as shown in the panelboard schedule on the plans.

C. GROUND TERMINAL BAR:

Provide a branch ground terminal bar with sufficient number of terminations to provide a ground for each branch circuit. The terminal bar to be bonded to the cabinet or panelboard

SECTION 16472 PANELBOARD, CIRCUIT BREAKER

frame and to not be connected to the neutral bar. Provide terminal bar with a feeder ground wire lug of sufficient size as scheduled on plans.

D. WIRING TERMINALS:

Provide terminals and branch conductors to the panelboard including neutral that are listed as suitable for stranded copper conductor.

E. CIRCUIT NUMBERING:

Panelboard circuit numbering to be such that starting at the top, odd numbers to be used in sequence down the left-hand side and even numbers to be used in sequence down the right-hand side. Numbers to be affixed on panelboard.

F. CABINETS and FRONTS:

The panelboard bus assembly to be enclosed in a steel cabinet. The size of the wiring gutters and gauge of steel to be in accordance with NEMA standards and NEC requirements. The box to be fabricated from galvanized steel or equivalent rust resistant steel. Fronts to include door and have flush, brushed stainless steel, cylinder tumbler-type locks with catches and spring-loaded door pulls. The flush lock to not protrude beyond the front of the door. All panelboard locks to be keyed alike. Doors to be mounted by completely concealed steel hinges. Fronts to not be removable with door in the locked position. A circuit directory frame and card with a clear plastic covering to be provided on the inside of the door.

3.01. EXECUTION:

A. MARK CIRCUITS:

Provide each branch circuit at panelboard with branch circuit number corresponding to number assigned on panel schedule. Mark each branch circuit with typewritten card designating exactly what it controls. Cover cards with transparent celluloid after circuits are connected. Connect circuits as shown on panel schedule.

B. NAMEPLATES:

Provide each panelboard with nameplate attached mechanically to panelboard front (not door). Nameplates to be laminated plastic 1-1/2" by 2-1/2" by 1/8" minimum and to have a white facing with black center core (white with black letters). Inscription to identify panel (1/2" lettering) and voltage (1/4" lettering).

C. MOUNTING HEIGHT:

6'-6" to the top.

END OF SECTION 16472

SECTION 16500 LIGHTING SYSTEM

1.01.GENERAL:

A. INCLUDES:

Work under this heading will include labor and materials for the lighting system shown on the plans and described here.

B. STANDARDS:

Lighting fixtures will meet the latest requirements of underwriters laboratories standards and the national electric code. Lighting fixtures will be furnished with an underwriters laboratories label.

C. SUBMITTALS:

Submit product data of material and accessories in accordance with Section 16010.

D. SUBSTITUTION:

Request approval in writing of proposed equipment at least ten (10) calendar days prior to bid date in accordance with Section 16010.

2.01. PRODUCTS:

A. LIGHTING FIXTURES:

Furnish and install all lighting fixtures and support accessories as indicated on plans and lighting fixture schedule.

B. LAMPS:

All incandescent lamps to be 130 volt unless noted otherwise. All fluorescent lamps to be high efficiency unless noted otherwise. General Electric, Osram Sylvania, Sylvania or North American Phillips are acceptable manufacturers.

C. FLUORESCENT BALLASTS:

Fluorescent fixtures to have rapid start electronic ballast with UL Listed, Class P label. All ballasts to have sound rating A, meet ANSI C62.41, Cat. A transient rating, power factor greater than 0.99, total harmonic distortion less than 10%, third harmonic distortion less than 6%, lamp crest factor less than 1.5, starting temperature less than 50°F unless noted on plans, greater than 40,000 start lamp rating and meet FCC Part 18, Subpart C EMI conditions. All rapid start ballasts to be manufactured by Advance, Universal or Osram Sylvania unless noted. Instant-Start ballasts are not allowed.

D. HIGH INTENSITY DISCHARGE BALLASTS:

High intensity discharge ballasts to have a power factor of 90% and above. Low power factor and normal power factor ballasts are not acceptable.

E. FLUORESCENT TROFFER LENS:

Lens to be 100% virgin acrylic, nominal 0.125" thickness, 8 ounce per square foot material, K-12 pattern. Exceptions will be noted on plans.

SECTION 16500 LIGHTING SYSTEM

F. RECESSED INCANDESCENT FIXTURES:

All recessed incandescent fixtures to be thermally protected. All recessed incandescent fixtures to be mounted in direct contact with insulation to be thermally protected and rated for direct contact with insulation.

3.01. EXECUTION:

A. SECURING FIXTURE:

All fluorescent fixtures used in tee-type lay-in ceiling will have 4 clips with minimum of two on the main tee runner securing the fixture to the grid.

B. LAMPS:

The Contractor will furnish and install all electric lamps for fixtures. All lamps broken or burned out during the course of construction to be replaced without additional cost to the Owner. The Contractor will replace all lamps installed on any fixture used for construction over 30 days.

C. SPARE LAMPS:

The Contractor will furnish spare lamps of each type used on the project for owners use. Quantity to be per standard shipping case for each type of lamp on the project.

D. CEILING FRAMES:

It is the responsibility of the Contractor to obtain from the manufacturer and to furnish the proper ceiling frames, and any special accessories required for the ceiling material in which recessed fixtures are to be installed. DO NOT SUPPORT FIXTURE FROM CEILING TILE OR SHEET ROCK.

E. POLE FOUNDATIONS:

Contractor to provide and install all concrete foundations for light fixture poles as detailed on plans; if no detail is indicated on plans, Contractor to provide manufacturer recommended size foundation as a minimum requirement.

END OF SECTION 16500

SECTION 16725 EXTENDED FIRE ALARM SYSTEM

1.01. GENERAL:

A. SCOPE:

The extended fire alarm system will be a fire and smoke detection, and alarm system engineered to provide the features and meet the requirements for a life alarm system. This system adds to and extends the existing fire alarm system. The specification for Fire Alarm System is a "performance" specification. It is intended to establish a design criteria for the work. Contractor shall assume full responsibility for the layout and details to meet the specific requirements of the National Fire Protection Association and subject to inspection and approval by the State Fire Marshal Office and local Fire Marshal. It is the contractor's responsibility to design and size the system to comply with the requirements specified herein. Work under this heading includes labor and materials for a complete fire alarm system. The fire alarm system will be a fire and smoke detection, and alarm system engineered to meet the requirements for a life safety alarm system. Fire alarm devices indicated on the plans are for coordination purposes and do not necessarily represent the total required quantity or locations.

B. CODES and STANDARDS:

1. The Fire Alarm Control to be listed by Underwriters Laboratories Inc and comply with the applicable provisions of the current NFPA standard and meet local building codes and all requirements of the local Authority having Jurisdiction.
2. The Fire Alarm System will be installed in according to NFPA-72, Article 210 and Article 760 of the National Electrical Code.

C. SUBMITTAL TO STATE FIRE MARSHALL OFFICE:

Installing contractor will prepare and submit submittal plans, specifications and calculations to the State Fire Marshal. The State Fire Marshal requires the following information:

1. Scaled drawings indicating device locations.
2. Battery calculations.
3. Voltage drop calculations.
4. Equipment specifications.
5. Annunciator locations.
6. Line wiring (riser diagrams).

D. SUBMITTALS:

Submit product data of material and accessories in accordance with Section 16010.

2.01. PRODUCTS:

New products will match existing installed component parts representing the quality and function expected of the essential system. Components are required to be compatible with existing system.

3.01. EXECUTION:

A. WIRING:

SECTION 16725 EXTENDED FIRE ALARM SYSTEM

1. All wiring will be in accordance with the manufacturer's recommendation and in compliance with all National and Local Building Codes.
2. All conductor entering or leaving any enclosure or cabinet will be connected to terminal blocks with each terminal marked in accordance with the wiring diagram for identification. All wiring within the panel will be readily accessible without removing any components parts.

B. INSPECTION:

The manufacturer will make an inspection of the equipment and verify that all (existing and new) devices and the system have been tested as follows:

1. Visually inspect each device for proper installation and electrical connections.
2. Activate each device and confirm that operation meets specifications.
3. Operate all control panel functions and confirm that operation meets specifications.
4. Perform functional tests of all wiring terminations to verify proper wiring supervision.
5. Verify operation of interlocks with other systems.
6. Furnish the owner's representative with a certificate of verification confirming that the inspection has been completed.

C. INSTRUCTIONS:

1. Instruct the owner's operating personnel and appointed agent(s) on how to operate the system and demonstrate each function prior to the final inspection.
2. Contractor to coordinate time and place of instruction session.

END OF SECTION 16725