SPECIFICATION MANUAL

NAVY FEDERAL Credit Union

ELIZABETHTOWN, KY

4021 N. DIXIE HIGHWAY
SUITES 111
ELIZABETHTOWN, KY 42701

MAY 26, 2014

PROJECT NO. 126-079

PREPARED FOR:
NAVY FEDERAL CREDIT UNION
820 FOLLIN LANE
VIENNA, VA 22180

PERUZZI ARCHITECTS
3048 N. THOMPSON LANE
MURFREESBORO, TN 37129
T. (615) 907-9955
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SECTION 00010 – INVITATION TO BID

PROJECT DESCRIPTION:

The interior construction of approximately 3,600 square feet of new tenant space for the Navy Federal Credit Union, Elizabethtown Member Service Center, at 4021 N. Dixie Highway, Suite 111, Elizabethtown, Kentucky. The work involves tenant improvement work with a new raw existing shell space in a strip type retail center with limited work to the exterior, such as doors, ATM mounting, and signage. The work includes but is not limited to steel stud partition and gypsum wallboard, ceiling and floor finish work, casework, and wall covering. There is associated electrical, HVAC, and plumbing work. The General Contractor shall provide temporary chain link fencing or other type barrier security to the area of work within the site.

The Owner will enter into a separate contract for the furnishings and installation of telephone and communications equipment, fire and security alarm system, Automatic Teller Machines (ATM's), and interior furnishings.

The Contractor shall be required to have work ready for installation of ATM units as directed by the Architect/Owner.

PROJECT COMPLETION DATE:

The work must be substantially complete by the following date:
September 5, 2014

The project must be complete and ready to open for business no later than the following date:
September 22, 2014

ARCHITECT:

PERUZZI ARCHITECTS
3048 N. Thomspon Lane
Murfreesboro, TN 37129
Tel: 615.907.9955

Contact: John Peruzzi

BID DATE:

Friday, June 13, 2014

Bids will be received at the Architects' office until 3:00PM Eastern Daylight Time

Bids must include a proposed schedule for execution and completion of work, a line item breakdown by trade for the cost of the complete job, and the contractor’s license number.

CONTRACT DOCUMENTS:

Electronic files (PDF format) of the Construction Documents and the Specification Manual will be sent made available via FTP to each select Bidder. Each bidding General Contractor must arrange for further distribution of the drawings to their subcontractors via their own FTP or other type of “Drop Box” site.

The owner reserves the right to waive informalities and to reject any or all bids.

END OF SECTION

SECTION 00100 – INSTRUCTIONS TO BIDDERS

PART 1 – GENERAL

1.01 GENERAL

A All proposals, in order to be entitled for consideration, must be made in accordance with the instructions of this section. Additional requirements may be provided under separate cover as well.

1.02 DEFINITIONS

A All definitions set forth in the Contract for Construction, Navy Federal Credit Union's revised version of the AIA Document A107 are applicable to these Instructions to Contractor.

B Bidding Documents include these Instructions, Contract Documents and Specifications, including any Addenda issued prior to the execution of contract.

C Addenda are written or graphic instruments issued prior to the execution of the contract which modify or interpret the bidding documents, including Drawings and Specifications, by additions, deletions, clarifications, or corrections. Addenda will become part of the Contract Documents when the Construction Contract is executed.

1.03 DOCUMENTS

A Electronic drawings and specifications will be provided to each Bidder. Each Bidder is responsible for printing any additional sets they may need.

1.04 EXAMINATION

A Bidders shall carefully examine the documents, visit the site, and fully inform themselves of all existing conditions and limitations prior to preparing their bid.

B Each bidder by making his bid represents that he has read and understands the bidding documents. Contractor will not be given extra payments for conditions which can be determined by examining the site and/or the Contract Documents prior to the bid presentation.

C Each bidder by making his bid represents that he has visited the site and familiarized himself with the local conditions under which the work is to be preformed. Examine the site, determine all conditions and circumstances under which the work must be done, and make all necessary allowances. The Contractor must be thoroughly familiar with the existing conditions prior to submitting his bid.

D Each bidder shall examine the bidding documents carefully and, in a fashion where time is of the essence, shall make written request to the Architect for interpretations or correction of any ambiguity, inconsistency, or discrepancy therein which he may discover. Only a written interpretation or correction will be issued as an Addendum shall be binding. No bidder shall rely upon any interpretation or correction given by any other method.

1.05 QUESTIONS

A Submit all questions concerning drawings and bidding documents in a written form to the Architect. Replies will be issued to all prime bidders of record as addenda and will become a part of the contract. Neither Owner nor Architect will be responsible for any oral instructions.

1.06 TAXES

A All Taxes, including sales tax, shall be included in the bid price and shall be listed in the schedule of values as a separate line item.

1.07 LICENSING

A Bidders and their subcontractors shall be licensed by and shall meet all requirements and regulations set forth by the State in which the project site is located. Each bidder shall include its current State Contractor License Number as a part of the bid.

1.08 PREPARATION OF BID

A. Each bidder shall submit a firm lump sum bid for the completion of all work described by the Contract Documents. Each bidder must provide a detailed line item break down for the complete job, with a guaranteed maximum price as the bottom line.

B. Each bidder's proposal shall cover complete work described in Contract Documents, including costs incidental thereto, unless specifically indicated otherwise.

C. Bids shall be submitted on a bid form approved by the Owner. Bids shall be complete, including each and every item. Bids shall be stated in text and figures. Bids shall be signed by the Bidder in longhand with the Bidder's name typed below the signature. Where Bidder is a corporation, bids must be signed with the legal name of the corporation followed by the name of the state of incorporation and the legal signature of an officer authorized to bind the corporation to a contract.

D. The bid must include:

1. A proposed schedule for execution and completion of work.

2. A line item breakdown by trade for the cost of the complete job

E. The thoroughness and detail of the schedule and line item breakdown will be a factor in awarding the contract.

F. The bid shall include the Bidder’s state contractor’s license number.

1.09 SUBSTITUTIONS

A. Each bidder represents that his bid is based upon the materials and equipment described in the bidding documents. **NO SUBSTITUTIONS WILL BE ACCEPTED**, unless otherwise noted..

B. All substitutions are subject to approval by the Architect and the Owner. To be considered, requests for substitutions must include a point-by-point comparison between the proposed substitute and the specified product. The comparison must confirm that the proposed substitute is equal to or exceeds the quality of the specified product. The burden of proof of quality rests with the Contractor. Incomplete submittals will not be considered.

C. Substitution requests resulting from failure to allow sufficient time to order and receive material will not be considered.

D. The contractor is responsible for all Architect and Consultant fees resulting from the review of proposed substitutions.

E. List the name of the substituted item, the manufacturer, model name or number, etc., together with the amount to be added or deducted from the base bid if the substitution is approved. Owner reserves the right to accept or reject any proposed substitution.

1.10 BONDS

A. The successful bidder may be required to furnish a labor and materials bond in the amount equal to one hundred percent (100%) of the contract price, and a performance bond in an amount equal to one hundred percent (100%) of the contract price. Said bonds, if required, shall be secured from a surety company satisfactory to the Owner, licensed by the state in which the project is located, and shall be filed with the Owner prior to execution of the contract. The costs of the above bonds shall be added to the contract price as a contract addenda if the Owner elects to require it.

1.11 SUBCONTRACTORS

A. The owner reserves the right to reject any and all subcontractors whose services may be used by the Contractor in the execution of the work. In the event that the owner exercises their right to reject a subcontractor, the contract price shall be adjusted as reasonably required by the substitution.

1.12 CONTRACT

A. Unless otherwise indicated, the Owner intends to execute a contract in the form of A.I.A. Document A107, 2007 Edition, Owner-Contractor Agreement, with Navy Federal induced revisions, where the basis for the agreement is a stipulated sum.

1.13 AWARD OF CONTRACT

A. The Owner reserves the right to select or reject any or all bids. Bidders may be required to submit further qualifications after the opening of bids. The quality, competence, and responsibility of Bidders and their proposed subcontractors will be considered in making awards.

B. The Bidder acknowledges the right of the Owner to reject any or all bids and to waive any informality or irregularity in any bid received. In addition, the bidder recognizes the right of the Owner to reject a bid if the bidder failed to submit a progress schedule and date of substantial completion, a line item cost breakdown, or if the bid is in any way incomplete or irregular.

C. The Owner reserves the right to negotiate with the successful bidder.

1.14 INSURANCE

A The Contractor shall file with the owner, before execution of the contract, all required certificates of insurance.

1.15 PROJECT START-UP AND SUBSTANTIAL COMPLETION

A The work shall be substantially complete by the date as set forth by the Owner.

B The Contractor shall commence with work immediately after the Building Department Permits are issued and shall maintain a rate of progress required to substantially complete subsequent phases of the work by the specified completion date specified, and in accordance with the interim completion dates projected by the approved Construction Schedule.

1.16 CONTRACT TIME AND LIQUIDATION DAMAGES

A See Section 01030 - ADMINISTRATIVE PROVISIONS

1.17 ADDITIONAL BIDDER REQUIREMENTS

A Bidders shall be required to adhere by the Standard Department of Transportation Title VI Assurances. A partial representation is as follows:

In accordance with title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42 U.S.C. 2000d to 2000-4 and Title 49, Code of Federal Regulations, Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally-Assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the ground of race, color, or national origin in consideration for an award.

Solicitations for Subcontractors, Including Procurements of Materials and equipment: In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or nation origin.

END OF SECTION

SECTION 00600 – CONTRACT FOR CONSTRUCTION

See attached AIA A107 Contract for Construction with Navy Federal modifications – 32 pages

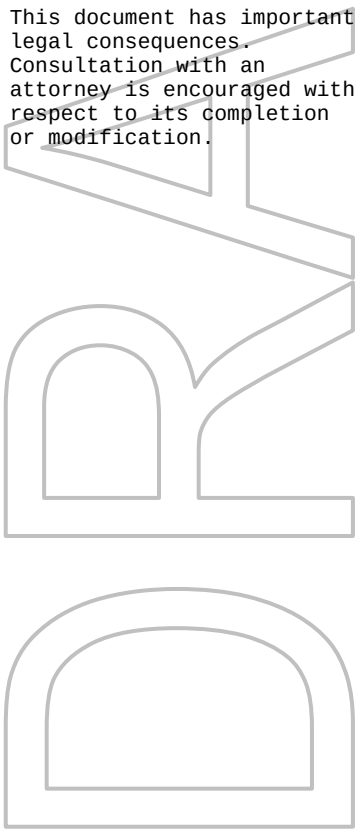
DRAFT AIA® Document A107™ – 2007

Standard Form of Agreement Between Owner and Contractor *for a Project of Limited Scope*

NOTE: THIS IS A DRAFT DOCUMENT ONLY AND REMAINS SUBJECT TO FURTHER REVISION BY NAVY FEDERAL CREDIT UNION.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.



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AGREEMENT made as of the ___ day of _____ in the year 201_.
(In words, indicate day, month and year)

BETWEEN the Owner:

Navy Federal Credit Union
820 Follin Lane, S.E.
Vienna, VA 22180

and the Contractor:

for the following Project:

The Architect:

(The use of the term "Owner" is part of the Standard Form of Agreement; Navy Federal Credit Union may or may not own the property.)

The Owner and Contractor agree as follows:

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ARTICLE 1 THE WORK OF THIS CONTRACT

The Contractor shall execute the Work described in the Contract Documents listed in Article 6 of this Agreement or reasonably inferable by the Contractor from the Contract Documents as necessary to produce the results intended by the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 2 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 2.1 The date of commencement of the Work shall be _____.

§ 2.2 The Contract Time shall be measured from the date of commencement.

§ 2.3 The Contractor shall achieve Substantial Completion of the entire Work not later than _____. The Contractor shall achieve Final Completion (as provided in Section 15.5) by _____, subject to adjustments of the Contract Time as provided in the Contract Documents.

§ 2.4 The Contractor acknowledges and agrees that the Owner will sustain extensive damages and serious losses as a result of the following acts or omissions on the part of the Contractor, its subcontractors, agents or employees: (1) failure to complete substantially or cause the Substantial Completion of any portion of the Work within the Contract Time; (2) failure to complete all Punch List Items (as defined in Section 19.6) within ten (10) days after Substantial Completion (the "Punch List Completion Date"); or (3) failure to obtain and deliver a certificate of occupancy to the Owner within ten (10) days after Substantial Completion (the "C/O Date"). Therefore, the Owner and the Contractor agree as set forth in this Section 2.4.

§ 2.4.1 Substantial Completion: If the Contractor fails to achieve Substantial Completion of the Work within the Contract Time, the Owner shall be entitled to retain or recover from the Contractor, as liquidated damages and not as a penalty, one thousand dollars ($1,000.00) per day commencing upon the first day following expiration of the Contract Time and continuing until the actual date of Substantial Completion. Such liquidated damages are hereby agreed to be a reasonable pre-estimate of damages the Owner will incur as a result of delayed completion of the Work.

§ 2.4.2 Punch List Completion: If the Contractor fails to complete all Punch List Items by the Punch List Completion Date, the Owner shall be entitled to retain or recover from the Contractor, as liquidated

damages and not as a penalty, one thousand dollars ($1,000.00) per day commencing upon the first day following the Punch List Completion Date and continuing until the actual date all Punch List Items are completed. Such liquidated damages are hereby agreed to be a reasonable pre-estimate of damages the Owner will incur as a result of delayed completion of the Punch List Items.

§ 2.4.3 Certificate of Occupancy: If the Contractor fails to obtain and deliver a certificate of occupancy by the C/O Date, the Owner shall be entitled to retain or recover from the Contractor, as liquidated damages and not as a penalty, one thousand dollars ($1,000.00) per day commencing upon the first day following the C/O Date and continuing until the actual date the certificate of occupancy is received by the Owner. Such liquidated damages are hereby agreed to be a reasonable pre-estimate of damages the Owner will incur as a result of delayed receipt of the certificate of occupancy.

§ 2.4.4 The Owner may deduct liquidated damages described in Subsections 2.4.1 through 2.4.3 from any unpaid amounts then or thereafter due the Contractor under this Agreement. Any liquidated damages not so deducted from any unpaid amounts due the Contractor shall be payable to the Owner at the demand of the Owner, together with interest from the date of the demand at a rate equal to the lower of the U.S. Prime Rate published in the Wall Street Journal on the date of such demand plus 2% or the highest lawful rate of interest payable by the Contractor.

ARTICLE 3 CONTRACT SUM

§ 3.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's proper performance of the Contract and the completion of the Work. The Contract Sum, including the Contractor's overhead and profits, shall be a Stipulated Sum, in accordance with Section 3.2 below.

§ 3.2 The Stipulated Sum shall be , subject to additions and deletions as provided in the Contract Documents.

§ 3.2.1 The Stipulated Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:
(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

N/A

§ 3.2.2 Unit prices, if any:
(Identify and state the unit price, and state the quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price Per Unit
None		

Such unit prices are considered complete and include (i) all materials, equipment, labor, delivery, installation, overhead, and profit and (ii) any other costs or expenses in connection with, or incidental to, the performance of that portion of the Work to which such unit prices apply.

§ 3.2.3 Allowances included in the stipulated sum, if any:
(Identify allowance and state exclusions, if any, from the allowance price.)

Item	Allowance
None	

ARTICLE 4 PAYMENTS

§ 4.1 PROGRESS PAYMENTS

§ 4.1.1 Based upon Applications for Payment submitted to the Owner and the Architect by the Contractor including all supporting documents as hereinafter provided, and Certificates for Payment properly issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents. In addition to other required items, each Application for Payment shall be accompanied by the following, all in form and substance satisfactory to the Owner and in compliance with all applicable laws.

.1 A current Sworn Statement from the Contractor setting forth all Subcontractors and any material suppliers with whom the Contractor has subcontracted, the amount of each such subcontract, the amount requested for any Subcontractor or material supplier in the Application for Payment and the amount to be paid to the Contractor from such progress payment, together with a current, duly executed waiver of mechanics' and material suppliers' liens from the Contractor establishing receipt of payment or satisfaction of the payment requested by the Contractor in the current Application for Payment.

.2 Commencing with the second (2nd) Application for Payment submitted by the Contractor, duly executed so-called "after-the-fact" waivers of mechanics' and material suppliers' liens from all Subcontractors, material suppliers and, where appropriate, lower tier subcontractors, establishing receipt of payment or satisfaction of payment of all amounts requested on behalf of such entities and disbursed prior to submittal by the Contractor of the current Application for Payment, plus sworn statements from all Subcontractors, material suppliers, and, where appropriate, lower tier subcontractors, covering all amounts described in this Subsection 4.1.1.2.

.3 Statements indicating the amount paid by the Owner to the Contractor pursuant to the previous Application for Payment, if any, and the total amount paid by Owner to Contractor to date.

.4 Such other information, documentation, and materials as the Owner or the Architect may require.

.5 All applications for payment submitted by the Contractor will provide the division, subdivision and description of each line item charge in accordance with the classifications for that line item as set forth in the Master Format of the Construction Specifications Institute (CSI).

.6 All applications for payment submitted by the Contractor will include satisfactory written evidence that each surety, bond provider, and/or guarantor of any of the Contractor's obligations under this Agreement has consented to the payment being requested. The Owner will have the right to accept or reject that evidence in its sole discretion.

§ 4.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

N/A

§ 4.1.3 Provided that an Application for Payment is received by the Architect not later than the fifteenth (15th) day of a month, the Owner shall make payment of the certified amount to the Contractor not later than the fifteenth (15th) day of the following month. If an Application for Payment is received by the Architect after the date fixed above, payment shall be made by the Owner not later than thirty (30) days after the Architect receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

§ 4.1.4 Retainage, if any, shall be withheld as follows:

Owner shall withhold up to ten percent (10%) of each progress payment as retainage (the "Retainage"). The Retainage shall be paid to the Contractor following the Owner's receipt of (i) the Architect's final

Certificate for Payment, and (ii) the issuance by the Owner or the Architect of an executed Punch List Close-Out (as defined in Section 19.6 of this Agreement).

§ 4.1.5 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

Four Percent (4%)

§ 4.2 FINAL PAYMENT

§ 4.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when:

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Section 18.2, and to satisfy other requirements, if any, which extend beyond final payment;

.2 the contractor has submitted a final accounting for the Cost of the Work, where payment is on the basis of the Cost of the Work with or without a guaranteed maximum price;

.3 a final Certificate for Payment has been issued by the Architect;

.4 issuance by the Owner or the Architect of an executed Punch List Close-Out; and

.5 all other conditions for final payment contained in this Agreement have been satisfied.

§ 4.2.2 The Owner's final payment to the Contractor shall be made no later than thirty (30) days after the issuance of the Architect's final Certificate for Payment, or as follows:

ARTICLE 5 DISPUTE RESOLUTION

§ 5.1 BINDING DISPUTE RESOLUTION

For any claim subject to, but not resolved by, mediation pursuant to Section 21.3, the method of binding dispute resolution shall be as follows:

(Check the appropriate box. If the Owner and Contractor do not select a method of binding dispute resolution below, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, claims will be resolved in a court of competent jurisdiction.)

[X] Arbitration pursuant to Section 21.4 of this Agreement

[ ] Litigation in a court of competent jurisdiction

[ ] Other *(Specify)*

ARTICLE 6 ENUMERATION OF CONTRACT DOCUMENTS

§ 6.1 The Contract Documents are defined in Article 7 and, except for Modifications issued after execution of this Agreement, are enumerated in the sections below.

§ 6.1.1 The Agreement is this executed AIA Document A107–2007, Standard Form of Agreement Between Owner and Contractor for a Project of Limited Scope.

§ 6.1.2 The Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

§ 6.1.3 The Specifications:

§ 6.1.4 The Drawings:

§ 6.1.5 The Addenda, if any:

Number	Date	Pages

Portions of Addenda relating to bidding requirements are not part of the Contract Documents unless the bidding requirements are enumerated in this Article 6.

§ 6.1.6 Additional documents, if any, forming part of the Contract Documents:

.1 Exhibit A - Bid Proposal
.2 Exhibit B - Insurance and Bonding Requirements
.3 Exhibit C - Contractor's Form Subcontract

ARTICLE 7 GENERAL PROVISIONS

§ 7.1 THE CONTRACT DOCUMENTS

The Contract Documents are enumerated in Article 6 and consist of this Agreement (including, if applicable, Supplementary and other Conditions of the Contract), Drawings, Specifications, Addenda issued prior to the execution of this Agreement, other documents listed in Article 6 of this Agreement and Modifications issued after execution of this Agreement. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results. In the event of inconsistencies within or between parts of the Contract Documents, or between the Contract Documents and applicable standards, codes, and ordinances, the Contractor shall (i) provide the better quality or greater quantity of Work or (ii) comply with the more stringent requirement, either or both in accordance with the Architect's interpretation, provided, that in the case of such inconsistency, the Contractor will promptly notify the Owner, in writing, of such inconsistency and the actions it took to resolve the inconsistency.

§ 7.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind between any persons or entities other than the Owner and the Contractor.

§ 7.3 THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 7.4 INSTRUMENTS OF SERVICE

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 7.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

§ 7.5.1 The Owner, the Architect and the Architect's consultants shall be deemed the authors and co-owners of their respective Instruments of Service, including the Drawings and Specifications. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Owner's, Architect's or Architect's consultants' reserved rights.

§ 7.5.2 The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.

§ 7.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmission, unless otherwise provided in this Agreement or in the Contract Documents.

§ 7.7 KNOWLEDGE

The terms "knowledge," "recognize," and "discover," their respective derivatives, and similar terms in the Contract Documents, as used in reference to the Contractor, shall be interpreted to mean that which the Contractor knows (or should know), recognizes (or should recognize), and discovers (or should discover) in exercising the care, skill, and diligence required by the Contract Documents. Analogously, the expression "reasonably inferable" and similar terms in the Contract Documents shall be interpreted to mean reasonably inferable by a contractor familiar with the Project and exercising the care, skill, and diligence required of the Contractor by the Contract Documents.

§ 7.8 CONFIDENTIALITY

§ 7.8.1 The Contractor warrants and represents that the Contractor shall not knowingly or negligently communicate or disclose at any time to any person or entity any information in connection with the Work or the Project except (i) with prior written consent of the Owner, (ii) information that was in the public domain prior to the date of this Agreement, (iii) information that becomes part of the public domain by publication or otherwise not due to any unauthorized act or omission of the Contractor, or (iv) as may be required to perform the Work or by any applicable law.

§ 7.8.2 The Contractor, at any time upon the request of the Owner, shall immediately return and surrender to the Owner all copies of any materials, records, notices, memoranda, recordings, drawings, specifications, and mock-ups and any other documents furnished by the Owner or the Architect to the Contractor.

§ 7.8.3 The Contractor shall cause all Subcontractors or any other person or entity performing any services or furnishing any materials or equipment for the Work to warrant and represent all items set forth in this Section 7.8.

§ 7.8.4 The representations and warranties contained in this Section 7.8 shall survive the complete performance of the Work or earlier termination of this Agreement.

ARTICLE 8 OWNER

§ 8.1 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 8.1.1 The Owner shall furnish all necessary surveys and a legal description of the site.

§ 8.1.2 The Contractor shall be entitled to reasonably rely on the information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work. The parties understand and agree, however, that Owner makes no representation, warranty or guarantee, either express or implied, as to the adequacy of efficacy of the information or documents provided or prepared by others, whether or nor furnished to Contractor by or through Owner.

§ 8.1.3 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 9.6.1, the Owner shall secure and pay for other necessary approvals, easements, assessments and charges required for the construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 8.2 OWNER'S RIGHT TO STOP THE WORK

If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents, or fails to carry out the Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order is eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

§ 8.3 OWNER'S RIGHT TO CARRY OUT THE WORK

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents, and fails within a ten (10) day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner, without prejudice to any other remedy the Owner may have, may correct such deficiencies and may deduct the reasonable cost thereof, including Owner's expenses and compensation for the Architect's services made necessary thereby, from the payment then or thereafter due the Contractor.

§ 8.4 EXTENT OF OWNER'S RIGHTS

§ 8.4.1 The rights stated in this Article 8 and elsewhere in the Contract Documents are cumulative and not in limitation of any rights of the Owner (i) granted in the Contract Documents, (ii) at law, or (iii) in equity.

§ 8.4.2 In no event shall the Owner have control over, charge of, or any responsibility for construction means, methods, techniques, sequences, or procedures or for safety precautions and programs in connection with the Work, notwithstanding any of the rights and authority granted the Owner in the Contract Documents.

ARTICLE 9 CONTRACTOR

§ 9.1 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

§ 9.1.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents. Prior to execution of this Agreement, the Contractor and each Subcontractor evaluated and satisfied themselves as to the conditions and limitations under which the Work is to be performed, including without limitation, (i) the location, conditions, layout, and nature of the Project site and surrounding areas, (ii) generally prevailing climatic conditions, (iii) anticipated labor supply and costs, (iv) availability and cost of materials, tools, and equipment, and (v) other similar issues. The Owner assumes no responsibility or liability for the physical condition or safety of the Project site or any improvements located on the Project site. Except as set forth

elsewhere in this Contract, the Contractor shall be solely responsible for providing a safe place for the performance of the Work. The Owner shall not be required to make any adjustment in either the Contract Sum or Contract Time in connection with any failure by the Contractor or any Subcontractor to have complied with the requirements of this Section 9.1.1.

§ 9.1.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 8.1.1, shall take field measurements of any existing conditions related to that portion of the Work and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the design information contained in the Contract Documents; however, the Contractor shall promptly report to the Owner and the Architect any errors, inconsistencies, or omissions discovered by or made known to the Contractor as a request for information in such form as the Owner and the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional unless otherwise specifically provided in the Contract Documents.

§ 9.1.2.1 The exactness of grades, elevations, dimensions, or locations on any Drawing or Specifications issued by the Architect, or the work installed by other contractors, is not guaranteed by the Architect or the Owner.

§ 9.1.2.2 The Contractor shall, therefore, satisfy itself as to the accuracy of all grades, elevations, dimensions, or locations. In all cases of interconnection of its Work with existing or other work, the Contractor shall verify at the site all dimensions relating to such existing or other work. Any errors due to the Contractor's failure to so verify all such grades, elevations, dimensions, or locations shall be promptly rectified by the Contractor without any additional cost to the Owner.

§ 9.1.2.3 All of Contractor's work shall conform to the Contract Documents. No change therefrom shall be undertaken without the prior review by the Architect and approval of the Owner. The Contractor shall be responsible for details of the Work necessary to carry out the intent of the Drawings and Specifications, or which are customarily performed. When more detailed information is required for performance of the Work or when an interpretation of the Contract Documents is requested, the Contractor shall submit a written request to the Architect and the Owner, and the Architect shall furnish such information or interpretation in the form of an Architect's Supplemental Instruction or other medium. Where only part of the Work is indicated, similar parts shall be considered repetitive. Where any detail is shown and components thereof are fully described, similar details not fully described shall be considered to incorporate the fully described details and components. In the case of inconsistency between any Drawings and Specifications or documents or drawings prepared by the Architect or the Owner, the better quality or greater quantity shall be provided in accordance with the Architect's interpretation at no extra cost to the Owner.

§ 9.1.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Owner and the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Owner and the Architect may require.

§ 9.1.4 The Contractor shall comply with all applicable Federal, state and local laws, statutes, rules, codes, orders, regulations, and ordinances including but not limited to all immigration, environmental, tax, social security, unemployment compensation, workers' compensation and safety laws, statutes, rules, codes, orders, and regulations (collectively, "Applicable Laws"). The Contractor shall also maintain at all times during the term of the prime contract (and for the time otherwise required by law) all records required by the United States Citizenship and Immigration Services ("USCIS"), including without limitation, the

completion and maintenance of the Form I-9 for each of the Contractor's employees and shall respond at all times during the term of the prime contract in a timely fashion to any inspection request related to such I-9 forms by the Contractor, the Owner or governmental agency or authority. Furthermore, during the term of this Agreement (and for the time otherwise required by law), the Contractor shall cause its officers, directors, managers, agents, and employees to cooperate fully in all respects with an audit, inquiry, inspection, or investigation that may be conducted by the USCIS of the Contractor or any of its employees or subcontractors. The Contractor shall immediately, and in any event within two (2) hours of the Contractor's first notice of an event described in this sentence, notify the Owner in writing and by in-person voice communications (not voicemail) of any unscheduled inspections, raids, investigations, inquiries, visits, or audits conducted by the USCIS, OSHA, or any other governmental agency or authority related to environmental, immigration, or employee safety issues of the Contractor, its agents, employees, subcontractors, or sub-subcontractors. The Contractor shall, on a monthly basis during the term of this Agreement, conduct an audit of the I-9 forms for its employees and shall promptly correct any defects or deficiencies that are identified as a result of such audit. The Owner may, in its sole discretion, terminate this Agreement immediately if, at any time during the term of this Agreement, the Contractor violates or is in breach of any provision of this Subsection, or the USCIS determines that the Contractor has not complied with any Applicable Laws or any other applicable law or ordinance, including without limitation the Immigration Reform and Contract Act of 1986, as amended, and the Illegal Immigration Reform and Immigration Responsibility Act of 1996, as amended, and any successor statutes thereto. If an employee of the Contractor or if the Contractor is later determined to not have valid I-9 information then that employee shall be removed and barred from the Project site at the Contractor's expense. The Contractor shall require all of its Subcontractors and Sub-subcontractors to make the representations and warranties set forth in this Subsection and to be bound by the same requirements set forth in this Subsection.

§ 9.2 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 9.2.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures, and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. The Contractor shall be responsible for providing full-time, on-site supervision for the duration of the Project.

§ 9.2.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for or on behalf of the Contractor or any of its Subcontractors.

§ 9.3 LABOR AND MATERIALS

§ 9.3.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 9.3.2 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

§ 9.3.3 The Contractor may make a substitution only with the consent of the Owner, after evaluation by the Architect and in accordance with a Modification. All materials are to be installed according to the manufacturer's recommendations, regardless of whether specific installation instructions are provided in the Contract Documents. If the Contractor desires to submit an alternative product or method in lieu of what has been specified or shown in the Contract Documents, the following provisions apply:

.1 The Contractor must submit to the Architect and the Owner (i) a full explanation of the proposed substitution and submittal of all supporting data, including technical information, catalog cuts, warranties, test results, installation instructions, operating procedures, and other

like information necessary for a complete evaluation of the substitution; (ii) a written explanation of the reasons the substitution is advantageous and necessary, including the benefits to the Owner and the Work in the event the substitution is acceptable; (iii) the adjustment, if any, in the time of completion of the Contract and the construction schedule in the event the substitution is acceptable; and (v) an affidavit stating that (a) the proposed substitution conforms and meets all the requirements of the pertinent Specifications and the requirements shown on the Drawings, and (b) the Contractor accepts the warranty and correction obligations in connection with the proposed substitution as if originally specified by the Architect. Proposals for substitutions shall be submitted in triplicate to the Architect in sufficient time to allow the Architect no less than three (3) days for review. No substitutions will be considered or allowed without the Contractor's submittal of complete substantiating data and information as stated hereinbefore.

.2 Substitutions and alternatives may be rejected without explanation and will be considered only under one or more of the following conditions: (i) the proposal is required for compliance with interpretation of code requirements or insurance regulations then existing; (ii) specified products are unavailable, through no fault of the Contractor; (iii) subsequent information discloses inability of specified products to perform properly or to fit in designated space; (iv) the manufacturer/fabricator refuses to certify or guarantee performance or specified product as required; and (v) when in the judgment of the Owner or the Architect, a substitution would be substantially in the Owner's best interests, in terms of cost, time, or other considerations.

.3 Whether or not any proposed substitution is accepted by the Owner or the Architect, the Contractor shall reimburse the Owner for any fees charged by the Architect or other consultants for evaluating the proposed substitute.

§ 9.4 WARRANTY

The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements shall be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation or normal wear and tear under normal usage. The Contractor agrees to assign to the Owner at the time of final completion of the Work any and all manufacturer's warranties relating to materials and labor used in the Work and further agrees to perform the Work in such manner so as to preserve any and all such manufacturer's warranties. The Contractor agrees to (i) send an authorized employee to the Project within five (5) business days after being notified that the Owner is making any claim under this Section 9.4 to discuss the claim with designated representatives of the Owner, and (ii) make any required repairs, replacements, corrections, or undertake any other measure in order to satisfy its obligations under this Section 9.4, within fifteen (15) days after it receives the claim notice from the Owner.

§ 9.5 TAXES

The Contractor shall pay sales, consumer, use and other similar taxes that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 9.6 PERMITS, FEES, NOTICES, AND COMPLIANCE WITH LAWS

§ 9.6.1 Except as set forth in Subsection 8.1.3, the Contractor shall secure, pay for, and, as soon as practicable, furnish the Owner with copies or certificates of all permits and fees, licenses, and inspections necessary for the proper execution and completion of the Work, including, without limitation, all building permits, site permits and all civil permits. All connection charges, assessments, or inspection fees as may be imposed by any municipal agency or utility company are included in the Contract Sum and shall be the Contractor's responsibility.

§ 9.6.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders and all other requirements of public authorities applicable to performance of the Work. If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 9.7 ALLOWANCES

The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. The Owner shall select materials and equipment under allowances with reasonable promptness. Allowance amounts shall include the costs to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts. Allowance amounts shall not include the Contractor's costs for unloading and handling at the site, labor, installation, overhead, and profit. The Contractor shall account for all allowances and report to the Owner when allowance amounts have reached the levels agreed to in the Contract Documents. Any remainder amounts in an allowance are to be provided to the Owner as a credit on the sums due to the Contractor.

§ 9.8 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 9.8.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 9.8.2 The Contractor shall perform the Work in general accordance with the most recent schedule submitted to the Owner and Architect.

§ 9.9 SUBMITTALS

§ 9.9.1 The Contractor shall review for compliance with the Contract Documents and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in coordination with the Contractor's construction schedule and in such sequence as to allow the Architect reasonable time for review. By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them; (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so; and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents. The Work shall be in accordance with approved submittals.

§ 9.9.2 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents.

§ 9.10 USE OF SITE

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 9.10.1 Only materials and equipment that are to be used directly in the Work shall be brought to and stored on the Project site by the Contractor. After equipment is no longer required for the Work, it shall be promptly removed from the Project site. Protection of construction materials and equipment stored at the Project site from weather, theft, damage, and all other adversity is solely the responsibility of the Contractor. The Contractor shall ensure that the Work, at all times, is performed in a manner that affords reasonable access, both vehicular and pedestrian, to the site of the Work and all adjacent areas. The Work shall be performed, to the fullest extent reasonably possible, in such a manner that public areas adjacent to

the site of the Work shall be free from all debris, building materials, and equipment likely to cause hazardous conditions.

§ 9.10.2 The Contractor and any entity for whom the Contractor is responsible shall not erect any sign on the Project site without the prior written consent of the Owner, which may be withheld at the sole discretion of the Owner.

§ 9.10.3 Without limitation of any other provision of the Contract Documents, the Contractor shall use best efforts to minimize any interference with the occupancy or beneficial use of (i) any areas and buildings adjacent to the site of the Work, and (ii) the Building, in the event of partial occupancy. Without prior approval of the Owner, the Contractor shall not permit any workers to use any existing facilities at the Project site, including, without limitation, lavatories, toilets, entrances, and parking areas other than those designated by the Owner.

§ 9.10.3.1 Without limitation of any other provision of the Contract Documents, the Contractor shall use its best efforts to comply with all rules and regulations promulgated by the Owner in connection with the use and occupancy of the Project site and the Building, as amended from time to time. The Contractor shall immediately notify the Owner in writing if during the performance of the Work, the Contractor finds compliance of any portion of such rules and regulations to be impracticable, setting forth the problems of such compliance and suggesting alternatives through which the same results intended by such portions of the rules and regulations can be achieved. The Owner may, in the Owner's sole discretion, adopt such suggestions, develop new alternatives, or require compliance with the existing requirements of the rules and regulations.

§ 9.10.3.2 The Contractor shall also comply with all insurance requirements and collective bargaining agreements applicable to use and occupancy of the Project site and the Building.

§ 9.11 CUTTING AND PATCHING

The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

§ 9.12 CLEANING UP

The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus material from and about the Project. The Contractor, at its expense, shall furnish a full and final cleaning of the entire Project site prior to acceptance by the Owner.

§ 9.13 ROYALTIES, PATENTS AND COPYRIGHTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

§ 9.14 ACCESS TO WORK

The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

§ 9.15 INDEMNIFICATION

§ 9.15.1 TO THE FULLEST EXTENT PERMITTED BY LAW, THE CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE OWNER (AND ITS OFFICERS, DIRECTORS, MANAGERS, BOARD MEMBERS AND EMPLOYEES), ARCHITECT, ARCHITECT'S CONSULTANTS AND AGENTS AND EMPLOYEES OF ANY OF THEM (COLLECTIVELY, THE "INDEMNITEES") FROM AND AGAINST CLAIMS, DAMAGES, LOSSES AND EXPENSES, INCLUDING BUT NOT LIMITED TO ATTORNEYS' FEES, ARISING OUT OF OR RESULTING FROM (I) ANY BREACH OF THIS AGREEMENT, AND/OR (II) THE PERFORMANCE OF THE WORK, PROVIDED THAT SUCH CLAIM, DAMAGE, LOSS OR EXPENSE IS ATTRIBUTABLE TO BODILY INJURY, SICKNESS, DISEASE OR DEATH, OR TO INJURY TO OR DESTRUCTION OF TANGIBLE PROPERTY (OTHER THAN THE WORK ITSELF) (INCLUDING LOSS OF USE RESULTING THEREFROM), BUT ONLY TO THE EXTENT CAUSED BY THE NEGLIGENT ACTS OR OMISSIONS OF THE CONTRACTOR, A SUBCONTRACTOR, ANYONE DIRECTLY OR INDIRECTLY EMPLOYED BY THEM OR ANYONE FOR WHOSE ACTS THEY MAY BE LIABLE, REGARDLESS OF WHETHER OR NOT SUCH CLAIM, DAMAGE, LOSS OR EXPENSE IS CAUSED IN PART BY A PARTY INDEMNIFIED HEREUNDER. SUCH OBLIGATION SHALL NOT BE CONSTRUED TO NEGATE, ABRIDGE, OR REDUCE OTHER RIGHTS OR OBLIGATIONS OF INDEMNITY WHICH WOULD OTHERWISE EXIST AS TO A PARTY OR PERSON DESCRIBED IN THIS SECTION 9.15.1.

§ 9.15.2 In claims against any person or entity indemnified under this Section 9.15 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 9.15.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

§ 9.15.3 The Contractor's indemnity obligations under this Section 9.15 shall also specifically include, without limitation, all fines, penalties, damages, liability, costs, expenses (including, without limitation, reasonable attorneys' fees) and punitive damages (if any) arising out of, or in connection with, any (i) violation of or failure to comply with any law, statute, ordinance, rule, regulation, code, or requirements of a public authority that bears upon the performance of the Work by the Contractor, a Subcontractor, or any person or entity for whom either is responsible, (ii) means, methods, procedures, techniques, or sequences of execution or performance of the Work, and (iii) failure to secure and pay for permits, fees, approvals, licenses, and inspections as required under the Contract Documents, or any violation of any permit or other approval of a public authority applicable to the Work by the Contractor, a Subcontractor, or any person or entity for whom either is responsible.

§ 9.15.4 The Contractor shall indemnify and hold harmless all of the Indemnitees from and against any costs and expenses (including reasonable attorneys' fees) incurred by any of the Indemnitees in enforcing any of the Contractor's defense, indemnity, and hold harmless obligations under this Agreement.

ARTICLE 10 ARCHITECT

§ 10.1 The Architect will provide administration of the Contract and will be an Owner's representative during construction, until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified in writing in accordance with other provisions of the Contract.

§ 10.2 The Architect will visit the site at intervals appropriate to the stage of the construction to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general, if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for, the construction means, methods,

techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 10.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Owner and the Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 10.4 Based on the Architect's evaluations of the Work and of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 10.5 The Architect has authority to reject Work that does not conform to the Contract Documents and to require inspection or testing of the Work.

§ 10.6 The Architect will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 10.7 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect will make initial decisions (recommendations) on all claims, disputes and other matters in question between the Owner and Contractor but will not be liable for results of any interpretations or decisions rendered in good faith.

§ 10.8 The Architect's decisions on matters relating to aesthetic effect, in connection with administration of the Contract, will be final if consistent with the intent expressed in the Contract Documents.

§ 10.9 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

§ 10.10 Notwithstanding anything to the contrary in this Article 10 or this Agreement, the Owner, at any time prior to the issuance of notice to proceed, may elect in writing to designate either a third party or a member of the Owner's management team to serve in the role of the Architect (the "Alternative Administrator"), in which case all references in to the Architect shall be deemed to refer to the Alternative Administrator.

ARTICLE 11 SUBCONTRACTORS

§ 11.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site.

§ 11.2 No later than five (5) days subsequent to the full execution of this Agreement, the Contractor shall furnish the Owner and the Architect, in writing, with (i) the name, trade, and subcontract amount for each Subcontractor or supplier and (ii) the names of all persons or entities proposed as manufacturers of the products identified in the Specifications (including those who are to furnish materials or equipment fabricated to a special design) and, where applicable, the name of the installing Subcontractor or supplier. The Contractor shall not contract with any Subcontractor or supplier to whom the Owner or Architect has made reasonable written objection within ten (10) days after receipt of the Contractor's list of

Subcontractors and suppliers. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 11.3 Contracts between the Contractor and Subcontractors shall (1) require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by the terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by the Contract Documents, assumes toward the Owner and Architect, and (2) allow the Subcontractor the benefit of all rights, remedies and redress against the Contractor that the Contractor, by these Contract Documents, has against the Owner.

§ 11.4 All subcontracts shall be in writing in form and substance substantially similar to the Contractor's standard form subcontract, attached to this Agreement and made a part hereof as Exhibit C, and shall specifically provide that the Owner is an intended third-party beneficiary of such subcontract.

§ 11.5 The Contractor shall include in its subcontracts and purchase orders the requirement that subcontractors and suppliers shall provide all lien waivers required by this Agreement.

ARTICLE 12 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 12.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under conditions of the contract identical or substantially similar to these, including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such claim as provided in Article 21.

§ 12.2 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's activities with theirs as required by the Contract Documents.

§ 12.3 The Owner shall be reimbursed by the Contractor for costs incurred by the Owner which are payable to a separate contractor because of delays, improperly timed activities or defective construction of the Contractor. The Owner shall be responsible to the Contractor for costs incurred by the Contractor because of delays, improperly timed activities, damage to the Work or defective construction of a separate contractor.

§ 12.4 The Contractor shall, as part of the Work, provide for the coordination of work to be performed by each separate contractor engaged by the Owner, if any, with the work to be performed by the Contractor or its Subcontractors of any tier. The Contractor shall use its best efforts to cooperate with the Owner and all separate contractors, their subcontractors, and any other entity involved in the performance by separate contractors to be completed in an expeditious manner, the Contractor agrees that it will ensure that such separate contractors have a reasonable opportunity to complete their work as and when required.

§ 12.5 If any part of the Work depends upon the proper performance of the work of a separate contractor, the Contractor shall, prior to proceeding with the Work, promptly report to the Owner any apparent discrepancies or defects in such other work that render it unsuitable and prevent the Contractor from proceeding expeditiously with the Work.

§ 12.6 If the Contractor wrongfully causes damage to the Work or property of the Owner, the Contractor shall promptly remedy such damage. If the Contractor wrongfully causes damage to the work or property

of any separate contractor, the Contractor shall promptly attempt to settle any resulting dispute or claim with such other contractor.

ARTICLE 13 CHANGES IN THE WORK

§ 13.1 By appropriate Modification, changes in the Work may be accomplished after execution of the Contract. The Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, with the Contract Sum and Contract Time being adjusted accordingly. Such changes in the Work shall be authorized by written Change Order signed by the Owner, Contractor and Architect, or by written Construction Change Directive signed by the Owner and Architect.

§ 13.2 Adjustments in the Contract Sum and Contract Time resulting from a change in the Work shall be determined by mutual agreement of the parties or, in the case of a Construction Change Directive signed only by the Owner and Architect, by the Contractor's cost of labor, material, equipment, and reasonable overhead and profit, unless the parties agree on another method for determining the cost or credit. Pending final determination of the total cost of a Construction Change Directive, the Contractor may request payment for Work completed pursuant to the Construction Change Directive. The Architect will make an interim determination of the amount of payment due for purposes of certifying the Contractor's monthly Application for Payment. When the Owner and Contractor agree on adjustments to the Contract Sum and Contract Time arising from a Construction Change Directive, the Architect will prepare a Change Order.

§ 13.3 The Architect will have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

§ 13.4 If concealed or unknown physical conditions are encountered at the site that differ materially from those indicated in the Contract Documents or from those conditions ordinarily found to exist, the Contract Sum and Contract Time shall be equitably adjusted as mutually agreed between the Owner and Contractor; provided that the Contractor provides notice to the Owner and Architect promptly and before conditions are disturbed. No adjustment in the Contract Time or Contract Sum shall be permitted, however, in connection with a concealed or unknown condition that does not differ materially from those conditions disclosed or that reasonably should have been disclosed by the Contractor's (i) prior inspections, tests, reviews, and preconstruction services for the Project, or (ii) inspections, test, reviews, and preconstruction services that the Contractor had the opportunity to make or should have performed in connection with the Project.

§ 13.5 Except as permitted in Section 13.1, a change in the Contract Sum or the Contract Time shall be accomplished only by Change Order. Accordingly, no course of conduct or dealings between the parties, nor express or implied acceptance of alterations or additions to the Work, and no claim that the Owner has been unjustly enriched by any alteration or addition to the Work, whether or not there is, in fact, any unjust enrichment to the Work, shall be the basis of any claim to an increase in any amounts due under the Contract Documents or a change in any time period provided for in the Contract Documents.

§ 13.6 Agreement on any Change Order shall constitute a final settlement of all matters relating to the change in the Work that is the subject of the Change Order, including, but not limited to, all direct and indirect costs associated with such change and any and all adjustments to the Contract Sum and the construction schedule.

ARTICLE 14 TIME

§ 14.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing this Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 14.2 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 14.3 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 14.4 The date of Substantial Completion is the date certified by the Architect in accordance with Section 15.4.3.

§ 14.5 If the Contractor is delayed at any time in the commencement or progress of the Work by changes ordered in the Work, by labor disputes, fire, unusual delay in deliveries, abnormal adverse weather conditions not reasonably anticipatable, unavoidable casualties or any causes beyond the Contractor's control, or by other causes which the Architect and Owner jointly determine may justify delay, then the Contract Time shall be extended by Change Order to the extent such delay will prevent the Contractor from achieving Substantial Completion within the Contract Time and if the performance of the Work is not, was not, or would not have been delayed by any other cause for which the Contractor is not entitled to an extension in the Contract Time under the Contract Documents. The Contractor further acknowledges and agrees that adjustments in the Contract Time will be permitted for a delay only to the extent such delay (i) is not caused, or could not have been anticipated, by the Contractor, (ii) could not be limited or avoided by the Contractor's timely notice to the Owner of the delay or reasonable likelihood that a delay will occur, and (iii) is of a duration not less than one (1) day.

§ 14.6 Notwithstanding anything to the contrary in the Contract Documents, an extension in the Contract Time, to the extent permitted under Section 14.5, shall be the sole remedy of the Contractor for any (i) delay in the commencement, prosecution, or completion of the Work, (ii) hindrance or obstruction in the performance of the Work, (iii) loss of productivity, or (iv) other similar claims (collectively referred to in this Section 14.6 as "Delays"), whether or not such Delays are foreseeable, unless a Delay is caused by acts of the Owner constituting active interference with the Contractor's performance of the Work, and only to the extent such acts continue after the Contractor furnishes the Owner with notice of such interference. In no event shall the Contractor be entitled to any compensation or recovery of any damages, in connection with any Delay, including without limitation consequential damages, lost opportunity costs, impact damages, or other similar remuneration. The Owner's exercise of any of its rights or remedies under the Contract Documents (including without limitation ordering changes in the Work, or directing suspension, rescheduling, or correction of the Work), regardless of the extent or frequency of the Owner's exercise of such rights or remedies, shall not be construed as active interference with the Contractor's performance of the Work.

§ 14.7 If the Contractor submits a progress report indicating, or otherwise expresses an intention to achieve, completion of the Work prior to any completion date required by the Contract Documents or expiration of the Contract Time, no liability of the Owner to the Contractor for any failure of the Contractor to so complete the Work shall be created or implied.

ARTICLE 15 PAYMENTS AND COMPLETION

§ 15.1 APPLICATIONS FOR PAYMENT

§ 15.1.1 Where the Contract is based on a Stipulated Sum or the Cost of the Work with a Guaranteed Maximum Price, the Contractor shall submit to the Architect, before the first Application for Payment, a schedule of values, allocating the entire Contract Sum to the various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Owner or the Architect, shall be used in reviewing the Contractor's Applications for Payment.

§ 15.1.2 With each Application for Payment where the Contract Sum is based upon the Cost of the Work, or the Cost of the Work with a Guaranteed Maximum Price, the Contractor shall submit payrolls, petty cash

accounts, receipted invoices or invoices with check vouchers attached, and any other evidence required by the Owner to demonstrate that cash disbursements already made by the Contractor on account of the Cost of the Work equal or exceed (1) progress payments already received by the Contractor, less (2) that portion of those payments attributable to the Contractor's Fee; plus (3) payrolls for the period covered by the present Application for Payment.

§ 15.1.3 Payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment stored, and protected from damage, off the site at a location agreed upon in writing.

§ 15.1.4 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or other encumbrances adverse to the Owner's interests.

.1 The Contractor further expressly undertakes to defend the Indemnitees under Section 9.15 of this Agreement, at the Contractor's sole expense, against any actions, lawsuits, or proceedings brought against the Indemnitees as a result of liens filed against the Work, the site of any of the Work, the Project site and any improvements thereon, payments due the Contractor, or any portion of the property of any of the Indemnitees (referred to collectively as "liens" in this Subsection 15.1.4). The Contractor hereby agrees to indemnify and hold the Indemnitees harmless against any such liens or claims of lien and agrees to pay any judgment or lien resulting from any such actions, lawsuits, or proceedings.

.2 The Owner shall release any payments withheld due to a lien or claim of lien if the Contractor obtains security acceptable to the Owner or a lien bond that is (i) issued by a surety acceptable to the Owner, (ii) in form and substance satisfactory to the Owner, and (iii) in an amount not less than one hundred fifty percent (150%) of such lien claim. By posting a lien bond or other acceptable security, however, the Contractor shall not be relieved of any responsibilities or to defend and indemnify the Indemnitees. The cost of any premiums incurred in connection with such bonds and security shall be the responsibility of the Contractor and shall not be part of, or cause any adjustment to, the Contract Sum.

.3 Notwithstanding the foregoing or any other provision contained herein, Owner reserves the right, at any time and for any reason, to settle any disputed mechanic's or material supplier's lien claim by payments to the lien claimant or by such other means as the Owner, in the Owner's sole discretion, determines is the most economical or advantageous method of settling the dispute. The Contractor shall promptly reimburse the Owner, upon demand, for any payments so made plus any and all fees (including attorneys' fees) incurred by the Owner in connection with its negotiation, payment and/or settlement of any disputed mechanic's or material supplier's liens.

§ 15.2 CERTIFICATES FOR PAYMENT

§ 15.2.1 The Architect will, within ten (10) days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 15.2.3.

§ 15.2.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluations of the Work and the data comprising the Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of

minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 15.2.3 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 15.2.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 15.2.1. If the Contractor and the Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 9.2.2, because of

.1 defective Work not remedied;
.2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
.3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
.5 damage to the Owner or a separate contractor;
.6 reasonable evidence that the Work will not be completed within the Contract Time and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
.7 repeated failure to carry out the Work in accordance with the Contract Documents; or
.8 the absence of any lien releases or waivers required by this Agreement.

§ 15.2.4 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 15.3 PROGRESS PAYMENTS

§ 15.3.1 The Contractor shall pay each Subcontractor, no later than ten (10) days after receipt of payment, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to sub-subcontractors in similar manner. Notwithstanding anything in this Subsection 15.3.1 to the contrary, the Owner may elect, in the Owner's sole discretion, to make any payment requested by the Contractor on behalf of a Subcontractor of any tier jointly payable to the Contractor and such Subcontractor. The Contractor and such Subcontractor shall be responsible for the allocation and disbursement of the funds included as part of any such joint payment. In no event shall any joint payment be construed to create any (i) contract between the Owner and a Subcontractor of any tier, (ii) obligations from the Owner to such Subcontractor, or (iii) rights in such Subcontractor against the Owner. In addition, the Owner may elect, in its sole discretion, to require that the Contractor make joint payments to each Subcontractor of any tier and their material suppliers.

§ 15.3.2 Neither the Owner nor Architect shall have an obligation to pay or see to the payment of money to a Subcontractor except as may otherwise be required by law.

§ 15.3.3 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 15.4 SUBSTANTIAL COMPLETION

§ 15.4.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use, provided, however, that as a condition precedent to Substantial Completion, the Owner shall have received all permits, approvals, licenses, and other documents (other than a certificate of occupancy which must delivered as required by Article 2) from any governmental authority having jurisdiction thereof necessary for the beneficial occupancy of the Project.

§ 15.4.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 15.4.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. When the Architect determines that the Work or designated portion thereof is substantially complete, the Architect will issue a Certificate of Substantial Completion which shall establish the date of Substantial Completion, establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 15.4.4 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 15.5 FINAL COMPLETION AND FINAL PAYMENT

§ 15.5.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. As a condition precedent to the Contractor receiving final payment, and in addition to any additional requirements set forth herein, including, but not limited to, Section 15.5.2, the Contractor shall also submit to the Architect and the Owner the following:

(i) all as-built drawings;
(ii) a complete list of Subcontractors and principal vendors on the Project, including addresses and telephone numbers;
(iii) an indexed, loose leaf binder containing complete installation, operation, and maintenance manuals, including all manufacturers' literature, of equipment and materials used in the Work;

(iv) an indexed, loose leaf binder containing all inspection reports, permits, and temporary and final certificates of occupancy and licenses necessary for the occupancy of the Project;
(v) the following completed and executed AIA documents, each of which must contain all exhibits or attachments required by such documents and each of which must be satisfactory to the Owner: AIA Document G706 - 1994, AIA Document G706A-1994, and AIA Document G707-1994;
(vi) any and all other items required pursuant to the Contract Documents or reasonably requested by the Owner or the Architect; and
(vii) one bound and indexed copy, and one electronic and indexed copy, of all submittals made by the Contractor, any Subcontractor, or any other party for which the Contractor is responsible under this Agreement, relating to the Work, the Project, the Contract Documents, or any other matter under this Agreement.

The Architect's final Certificate for Payment will constitute a further representation that conditions stated in Section 15.5.2 as precedent to the Contractor's being entitled to final payment have been fulfilled. All warranties and guarantees required under or pursuant to the Contract Documents shall be assembled and delivered by the Contractor to the Architect as part of the final Application for Payment. The final Certificate for Payment will not be issued by the Architect until all warranties and guarantees have been received and accepted by the Owner.

§ 15.5.2 Final payment shall not become due until the Contractor has delivered to the Owner a complete release of all liens arising out of this Agreement or receipts in full covering all labor, materials and equipment for which a lien could be filed, or a bond satisfactory to the Owner to indemnify the Owner against such lien. If any lien remains unsatisfied, or is filed, after final payment is made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including costs and attorneys' fees. In addition to the foregoing, final payment shall not become due until the Contractor furnishes the Owner with a certificate of occupancy, or equivalent, issued by the local jurisdiction.

§ 15.5.3 The making of final payment shall constitute a waiver of claims by the Owner except those arising from

.1 liens, claims, security interests or encumbrances arising out of the Contract and unsettled;
.2 failure of the Work to comply with the requirements of the Contract Documents; or
.3 terms of special warranties required by the Contract Documents.

§ 15.5.4 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 16 PROTECTION OF PERSONS AND PROPERTY

§ 16.1 SAFETY PRECAUTIONS AND PROGRAMS

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

.1 employees on the Work and other persons who may be affected thereby;
.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors;
.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction; and
.4 the Contractor shall maintain the site in a safe and clean condition at all times during performance of the Work.

The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on safety of persons and property and their protection from damage, injury or loss. The Contractor shall promptly remedy damage and loss to property caused in whole or in part by the Contractor, a Subcontractor, a sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 16.1.2 and 16.1.3, except for damage or loss attributable to acts or omissions of the Owner or Architect or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 9.15. When all or a portion of the Work is suspended for any reason, the Contractor shall securely fasten down all coverings and protect the Work, as necessary, from injury by any cause. The Contractor shall promptly report in writing to the Owner and Architect all accidents arising out of or in connection with the Work that cause death, personal injury, or property damage, giving full details and statements of any witnesses. In addition, if death, serious personal injuries, or series damages occur, the accident shall be reported immediately by telephone or messenger to the Owner and the Architect.

§ 16.2 HAZARDOUS MATERIALS

§ 16.2.1 The Contractor is responsible for compliance with the requirements of the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents, and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a hazardous material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shutdown, delay and start-up.

§ 16.2.2 Intentionally Deleted.

§ 16.2.3 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

ARTICLE 17 INSURANCE AND BONDS

§ 17.1 The Contractor shall purchase from, and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, insurance for protection from claims under workers' compensation acts and other employee benefit acts which are applicable, claims for damages because of bodily injury, including death, and claims for damages, other than to the Work itself, to property which may arise out of or result from the Contractor's operations and completed operations under the Contract, whether such operations be by the Contractor or by a Subcontractor or anyone directly or indirectly employed by any of them. This insurance shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater, and shall include contractual liability insurance applicable to the Contractor's obligations under Section 9.15. Certificates of Insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. Each policy shall contain a provision that the policy will not be canceled or allowed to expire until at least thirty (30) days' prior written notice has been given to the Owner. The Contractor shall cause the commercial liability coverage required by the Contract Documents to include: (1) the Owner, the Architect and the Architect's Consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

§ 17.1.1 The Contractor shall, for the protection and benefit of the Indemnitees and the Contractor and as part of the Contractor's efforts to satisfy the obligations set forth in this Article 17, procure, pay for, and maintain in full force and effect, at all times during the performance of the Work until final acceptance of the Work or for such duration as required, policies of insurance issued by a responsible carrier or carriers acceptable to the Owner, and in form and substance reasonably satisfactory to the Owner, which afford the coverages set forth in the Schedule of Insurance, attached to this Agreement and made a part thereof of as Exhibit B. All such insurance shall be written on an occurrence basis. Information concerning reduction of coverage shall be furnished by the Contractor promptly.

§ 17.1.2 The Contractor hereby agrees to deliver to the Owner, within three (3) days of the date of this Agreement and prior to bringing any equipment or personnel onto the site of the Work or the Project site, certified copies of all insurance policies procured by the Contractor under or pursuant to this Article 17 or, with consent of the Owner, Certificates of Insurance in form and substance satisfactory to the Owner evidencing the required coverages with limits not less than those specified in Exhibit B to this Agreement. The coverage afforded under any insurance policy obtained under or pursuant to this Article 17 shall be primary to any valid and collectible insurance carried separately by any of the Indemnitees. Furthermore, all policies and Certificates of Insurance shall expressly provide that no less than thirty (30) days' prior written notice shall be given the Owner in the event of a material alteration, cancellation, nonrenewal, or expiration of the coverage contained in such policy or evidenced by such certified copy or Certificate of Insurance.

§ 17.1.3 In no event shall any failure of the Owner to receive certified copies of or certificates of policies required under this Article 17 or to demand receipt of such certified copies or certificates prior to the Contractor's commencing the Work be construed as a waiver by the Owner or the Architect of the Contractor's obligations to obtain insurance pursuant to this Article 17. The obligation to procure and maintain any insurance required by this Article 17 is a separate responsibility of the Contractor and independent of the duty to furnish a certified copy or certificate of such insurance policies.

§ 17.1.4 If the Contractor fails to purchase and maintain, or require to be purchased and maintained, any insurance required under this Article 17, the Owner may, but shall not be obligated to, upon ten (10) days' written notice to the Contractor, purchase such insurance on behalf of the Contractor and shall be entitled to be reimbursed by the Contractor upon demand.

§ 17.1.5 When any required insurance shall expire, due to the attainment of a normal expiration date or renewal date, the Contractor shall supply the Owner with Certificates of Insurance and amendatory riders or endorsements that clearly evidence the continuation of all coverage in the same manner, limits of protection, and scope of coverage as was provided by the previous policy. In the event any renewal or replacement policy, for whatever reason obtained or required, is written by a carrier other than that with whom the coverage was previously placed, or the subsequent policy differs in any way from the previous policy, the Contractor shall also furnish the Owner with a certified copy of the renewal or replacement policy unless the Owner provides the Contractor with prior written consent to submit only a Certificate of Insurance for any such policy. All renewal and replacement policies shall be in form and substance satisfactory to the Owner and written by carriers acceptable to the Owner.

§ 17.1.6 Any aggregate limit under the Contractor's liability insurance shall, by endorsement, apply to this Project separately.

§ 17.1.7 The Contractor shall cause each Subcontractor to (i) procure insurance reasonably satisfactory to the Owner, and (ii) name the Indemnitees as additional insureds under the Subcontractor's comprehensive general liability policy. The additional insureds endorsement included on the Subcontractor's comprehensive general liability policy shall state that coverage is afforded the additional insureds with respect to claims arising out of operations performed by or on behalf of the Contractor. If the additional

insureds have other insurance that is applicable to the loss, such other insurance shall be on an excess or contingent basis. The amount of the insurer's liability under this policy shall not be reduced by the existence of such other insurance.

§ 17.2 OWNER'S LIABILITY INSURANCE

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

§ 17.3 PROPERTY INSURANCE

§ 17.3.1 The Contractor shall purchase and maintain, with a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, builder's risk property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus the value of subsequent modifications and cost of materials supplied and installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 15.5 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 17.3.1 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and sub-subcontractors in the Project. If the property insurance requires deductibles, the Contractor shall pay costs not covered because of such deductibles.

§ 17.3.2 If the Owner is damaged by the failure of the Contractor to purchase and maintain such insurance without so notifying the Owner in writing, then the Contractor shall bear all reasonable costs attributable thereto.

§ 17.3.3 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 12, if any, and any of their subcontractors, sub-subcontractors, agents and employees for damages caused by fire or other causes of loss to the extent of actual recovery of any insurance proceeds under any property insurance obtained pursuant to Section 17.3 or other property insurance applicable to the Work. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 12, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 17.3.4 A loss insured under this property insurance, if any is required to be maintained under this Agreement, shall be adjusted by the Contractor as fiduciary and made payable to the Contractor as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their sub-subcontractors in similar manner.

§ 17.3.5 If required in writing by a party in interest, the Contractor as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Contractor's duties. The Contractor shall deposit in a separate account proceeds so received, which the Contractor shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of

damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with the Contract Documents.

§ 17.3.6 The Contractor as fiduciary shall not adjust or settle a loss with insurers unless agreed to by the Owner.

§ 17.4 PERFORMANCE BOND AND PAYMENT BOND

§ 17.4.1 The Contractor shall furnish bonds to the Owner covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract. Such bonds shall also cover unpaid mechanic's liens for a period of six (6) months following Final Payment.

§ 17.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 17.5 GENERAL REQUIREMENTS

§ 17.5.1 All insurance coverage procured by the Contractor shall be provided by insurance companies having policy holder ratings no lower than "A" and financial ratings no lower than "XII" in the *Best's Insurance Guide*, latest edition in effect as of the date of the Contract, and subsequently in effect at the time of renewal of any policies required by the Contract Documents.

§ 17.5.2 If the Owner or the Contractor is damaged by the failure of the other party to purchase or maintain insurance required under Article 17, then the party who failed to purchase or maintain the insurance shall bear all reasonable costs (including attorneys' fees and court and settlement expenses) properly attributable thereto.

ARTICLE 18 CORRECTION OF WORK

§ 18.1 The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense. If prior to the date of Substantial Completion, the Contractor, a Subcontractor, or anyone for whom either is responsible uses or damages any portion of the Work, including, without limitation, mechanical, electrical, plumbing, and other building systems, machinery, equipment, or other mechanical device, the Contractor shall cause such item to be restored to "like new" condition at no expense to the Owner. In addition, the Contractor shall promptly remedy damage and loss arising in conjunction with the Project caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or anyone for whose acts they may be liable and for which the Contractor is responsible.

§ 18.2 In addition to the Contractor's obligations under Section 9.4, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 15.4.3, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor. The Contractor agrees to (i) send an authorized employee to the Project within five (5) business days after being notified that a correction to the Work, or any designated portion thereof, is required to discuss the correction with

designated representatives of the Owner, and (ii) make any required correction to the Work, or designated portion thereof, within fifteen (15) days after it receives the correction notice from the Owner.

§ 18.3 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct it in accordance with Section 8.3.

§ 18.4 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 18.5 Upon completion of any Work under or pursuant to this Article 18, the one-year correction period in connection with the Work requiring correction shall be renewed and recommence. The obligations under this Article 18 shall cover any repairs and replacement to any part of the Work or other property caused by the defective Work.

§ 18.6 In addition to the other provisions of this Article 18, the Contractor agrees to visit, inspect and, to the extent necessary, make any corrections to the Project at the following intervals: (i) once between the third and sixth month following the final completion of the Work, and (ii) once on or about the first yearly anniversary of the final completion of the Work. In each case, the Contractor will provide prior written notice to the Owner of such visit, inspection and, if necessary, corrections and will, if requested by the Owner, make such adjustments to the Contractor's schedule as required by the Owner.

ARTICLE 19 MISCELLANEOUS PROVISIONS

§ 19.1 ASSIGNMENT OF CONTRACT

Except as expressly provided in the Contract Documents, neither party to the Contract shall assign the Contract without written consent of the other, except that the Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment. The Contractor shall also not enter into any subcontracts or purchase orders without the written consent of the Owner.

§ 19.2 GOVERNING LAW

The Contract shall be governed by the law of the Commonwealth of Virginia (without regard to such jurisdiction's choice of law rules), except (i) that if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 21.4, or (ii) as otherwise set forth herein.

§ 19.3 TESTS AND INSPECTIONS

Tests, inspections and approvals of portions of the Work required by the Contract Documents or by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating the costs to the Contractor.

§ 19.4 COMMENCEMENT OF STATUTORY LIMITATION PERIOD

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in this Agreement within the period specified

by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all claims and causes of action not commenced in accordance with this Section 19.4.

§ 19.5 NOTICES

All notices to be provided under this Agreement shall be in writing. Written notice shall be deemed to have been duly served if delivered in person to the individual or member of the firm or entity for whom it was intended, or if delivered at or sent by registered or certified mail to the following addresses:

If to the Contractor: _____
_____
_____
Attn: _____

If to the Owner: Navy Federal Credit Union
820 Follin Lane
Vienna, Virginia 22180
Attn: AVP-BOFM

Copies to: Hunton & Williams LLP
1751 Pinnacle Drive, Suite 1700
McLean, Virginia 22102
Attn: Brian Tanenbaum, Esq.

If to the Architect: _____
_____
_____
Attn: _____

Notice shall be deemed effective (i) upon delivery, if personally delivered; (ii) upon one (1) business day following deposit with a national overnight courier service, fee prepaid; or (iii) upon two (2) business days following deposit in the Untied States mail, certified or registered mail, postage prepaid, return receipt requested.

§ 19.6 PUNCH LIST PROCEDURES

§ 19.6.1 Promptly after the date of Substantial Completion the Contractor, the Architect and the Owner shall perform a walk-through inspection of the Work and, within five (5) days after such inspection, the Contractor shall furnish an accounting ("Punch List") of all items noted as needing adjustment, repair or replacement ("Punch List Items"). All work by the Contractor to address the Punch List Items must be completed by the Punch List Completion Date.

§ 19.6.2 Within five (5) days following notice from the Contractor that all Punch List Items have been addressed, the Owner and/or the Architect shall verify that such Punch List Items have been adequately addressed. In the event that all Punch List Items have been adequately addressed by the Contractor, the Owner or the Architect shall execute a "Punch List Close-Out" indicating that there are no outstanding Punch List Items.

ARTICLE 20 TERMINATION OF THE CONTRACT

§ 20.1 TERMINATION BY THE CONTRACTOR

If the Architect fails to certify payment as provided in Section 15.2.1 for a period of thirty (30) days through no fault of the Contractor, or if the Owner fails to make payment as provided in Section 4.1.3 for a period of sixty-five (65) days, the Contractor may, upon fifteen (15) additional days' written notice to the

Owner and the Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 20.2 TERMINATION BY THE OWNER FOR CAUSE

§ 20.2.1 The Owner may terminate the Contract if the Contractor

.1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;

.3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of a public authority; or

.4 is otherwise guilty of substantial breach of a provision of the Contract Documents.

§ 20.2.2 When any of the above reasons exists, the Owner, upon certification by the Architect that sufficient cause exists to justify such action, may, without prejudice to any other remedy the Owner may have and after giving the Contractor thirty (30) days' written notice, terminate the Contract and take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor and may finish the Work by whatever reasonable method the Owner may deem expedient. Upon request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 20.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 20.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 20.2.4 If the unpaid balance of the Contract Sum is less than all costs of finishing the Work, including compensation for the Architect's and the Owner's representative's services and expenses made necessary thereby, the Contractor shall pay the difference to the Owner. If the unpaid balance of the Contract Sum is greater than all costs of finishing the Work, including compensation for the services and expenses of the Architect and the Owner's representative made necessary thereby, the Contractor shall receive payment for Work properly performed by the Contractor for which payment was not made previously; any excess amounts shall be retained by the Owner. This Section 20.2.4 shall survive termination of the Contract.

§ 20.3 TERMINATION BY THE OWNER FOR CONVENIENCE

The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 20.3.1 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall:

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 20.3.2 Upon such termination, the Contractor shall recover as its sole remedy payment for Work properly performed in connection with the terminated portion of the Work prior to the effective date of termination and for items properly and timely fabricated off the Project site, delivered, and stored in accordance with the Owner's instructions. The Contractor hereby waives and forfeits all other claims for payment and damages, including, without limitation, anticipated profits. Owner shall be credited for (i) payments previously made to the Contractor for the terminated portion of the Work, (ii) claims that the Owner has against the Contractor under the Contract, and (iii) the value of the materials, supplies, equipment, or other items that are to be disposed of by the Contractor that are part of the Contract Sum.

ARTICLE 21 CLAIMS AND DISPUTES

§ 21.1 Claims, disputes and other matters in question arising out of or relating to this Contract, but excluding those arising under Section 16.2, and those waived as provided for in Sections 15.5.3 and 15.5.4, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 21.2 If a claim, dispute or other matter in question relates to or is the subject of a mechanic's lien, the party asserting such matter may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 21.3 The parties shall endeavor to resolve their disputes by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with their Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to this Agreement, and filed with the person or entity administering the mediation. The request may be made concurrently with the binding dispute resolution but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 21.4 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any claim, subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association, in accordance with the Construction Industry Arbitration Rules in effect on the date of this Agreement. Demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 21.5 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation; (2) the arbitrations to be consolidated substantially involve common questions of law or fact; and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 21.6 Any party to an arbitration may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of a Claim not described in the written Consent.

§ 21.7 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 21.8 The parties agree that the forum for any mediation, arbitration or other dispute resolution procedure under this Agreement will take place in a mutually agreeable location in Fairfax County, Virginia.

§ 21.9 Intentionally deleted.

ARTICLE 22 OTHER CONDITIONS AND PROVISIONS

§ 22.1 All personal pronouns used in this Agreement, whether used in the masculine, feminine, or neuter gender, shall include all other genders; and the singular shall include the plural and vice versa. Titles of

articles, sections, and subsections are for convenience only and neither limit nor amplify the provisions of this Agreement. The use herein of the word "including," when following any general statement, term, or matter, shall not be construed to limit such statement, term, or matter to the specific items or matters set froth immediately following such word or to similar items or matters, whether or not non-limiting language (such words as "without limitation," "but not limited to," or words of similar import) is used with reference thereto, but rather shall be deemed to refer to all other items or matters that could reasonably fall within the broadest possible scope of such general statement, term, or matter.

§ 22.2 Wherever possible, each provision of this Agreement shall be interpreted in a manner as to be effective and valid under applicable law. If, however, any provision of this Agreement, or portion thereof, is prohibited by law or found invalid under any law, only such provision or portion thereof shall be ineffective, without in any manner invalidating or affecting the remaining provisions of this Agreement or valid portions of such provision, which are hereby deemed to be severable.

§ 22.3 Each party hereto agrees to do all acts and things and to make, execute, and deliver such written instruments as shall from time to time be reasonably required to carry out the terms and provisions of the Contract Documents.

§ 22.4 Any specific requirement in this Agreement that the responsibilities or obligations of the Contractor also apply to a Subcontractor is added for emphasis and is also hereby deemed to include a Subcontractor of any tier. The omission of a reference to a Subcontractor in connection with any of the Contractor's responsibilities or obligations shall not be construed to diminish, abrogate, or limit any responsibilities or obligations of a Subcontractor of any tier under the Contract Documents or the applicable subcontract.

§ 22.5 The provisions of the Contract Documents shall not be changed, amended, waived or otherwise modified in any respect except by a writing signed by the Owner. No person is authorized on behalf of the Owner to orally change, amend, waive, or otherwise modify the terms of the Contract Documents or any of the Contractor's duties or obligations under or arising out of the Contract Documents. Any change waiver, approval, or consent granted to the Contractor shall be limited to the specific matters stated in the writing signed by the Owner, and shall not relieve the Contractor of any other duties or obligations under the Contract Documents. No "constructive" changes shall be allowed.

§ 22.6 The Contractor shall provide all notices required or permitted by the laws of the state in which the Project is located for protection of the Owner from liens and claims of lien if permitted or required by applicable law. The Contractor shall be responsible for filing in the appropriate court or other governmental office records all such notices as required or permitted by the laws of the state in which the Project is located. The Contractor shall provide the Owner with copies of all notices received by the Contractor from subcontractors, sub-subcontractors, and/or suppliers to Contractor.

This Agreement entered into as of the day and year first written above.

OWNER *(Signature)*	CONTRACTOR *(Signature)*
(Printed name and title)	*(Printed name and title)*

SECTION 00700 – A107 SUPPLEMENTAL EXHIBIT B

See attached AIA A107 Exhibit B – 1 page

EXHIBIT B TO AIA CONTRACT DOCUMENT AIA A107-2007

At Contractor's sole cost and expense, Contractor shall procure the following types of insurance coverages at the minimum levels specified and shall maintain the same throughout the performance of the Work. Contractor shall notify Owner in writing with no less than thirty(30)days advance notice of any change or cancellation in the types or levels provided.

- Commercial General Liability Insurance per occurrence, with a combined single limit of Bodily Injury and Property Damage of $1,000,000 per occurrence and $2,000,000 general aggregate. Such insurance shall include contractual liability, advertising liability and personal injury coverage;
- Commercial Automobile Liability Insurance including all owned, leased, hired and non-owned vehicles, with a combined single limit for Bodily Injury and Property Damage of $1,000,000 per occurrence;
- Commercial Umbrella Liability Insurance with per occurrence and aggregate limits of $2,000,000 in excess coverage over the liability coverage required in other specified lines of coverage herein;
- Workers Compensation Insurance, Coverage A –statutory limits covering all employees in the state in which the services will be provided; Employer's Liability Insurance, Coverage B - with limits for bodily injury by accident of $1,000,000 per employee and bodily injury by disease of $1,000,000 policy limit;
- Commercial Crime Insurance covering employee theft and dishonesty with limits of $1,000,000 per occurrence;
- Errors & Omission Liability Insurance with per occurrence and aggregate limits of $1,000,000;
- Property Insurance valued at replacement cost covering (Contractor's)real and personal property(such insurance to include business interruption and extra expense)
- Builder's Risk Insurance from a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, in the amount of the initial Contract Sum, plus the value of subsequent modifications and cost of materials supplied and installed by others, comprising the total value for the entire Project at the site on a replacement cost basis without optional deductibles.
- In accordance with the requirements of Section 17.4 of the Contract, the Contractor shall furnish Payment and Performance bonds at 100% of project cost to the Owner covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or as specifically required in the Contract Documents on the date of execution of the Contract. Such bonds shall also cover unpaid mechanic's liens for a period of six (6) months following Final Payment.

Contractor shall indicate their agreement to and compliance with these requirements at all times during the performance of the work by execution of this AIA A107 Contract Document.

SECTION 00800 – BID FORM AND SPREADSHEET

See attached Bid Form and Spreadsheet – 5 pages

NAVY FEDERAL CREDIT UNION

BID FORM

June 13th, 2014

BRANCH: For Navy Federal Credit Union – Elizabethtown (Fort Knox #2) Elizabethtown, KY (the "**Branch**")

[*Name of bidding company*] (the "**Bidder**") proposes, agrees and certifies as follows:

I. SCOPE OF WORK; RECEIPT OF BID DOCUMENTS; NEGOTIATION

a) The Bidder will, if its Bid (defined below) is selected by Navy Federal Credit Union ("**NFCU**") (i) furnish, provide and supply all labor, supervision (to include full-time, on-site supervision for the duration of the project), services, materials, items, equipment, and supplies (collectively, the "**Labor and Materials**"), and (ii) perform all work associated with the ***New Construction*** of the Branch, all in strict accordance with the specifications, drawings, and the AIA A107 - 2007 contract (the "**Contract Form**") previously delivered to the Bidder (such materials, the "**Bid Documents**"), as any of the same may be amended, modified or supplemented by NFCU or its Architect to the extent permitted by applicable law or any contractual limitations (collectively the "**Work**"). Note that the Contract Form contains modifications made by NFCU.

b) The Bidder acknowledges that it has received and reviewed the Bid Documents.

c) The Bidder will, if selected by NFCU, enter into negotiations with NFCU to finalize a construction contract substantially in the form of the Contract Form. NFCU may cease negotiations with the Bidder at any time and for any reason until a contract is fully executed.

II. LUMP SUM BID

If selected by NFCU, the Bidder will provide and supply the Labor and Materials and undertake and complete the Work for the following lump sum price:

[$_____]

The lump sum price listed above may not, in any circumstance, be increased, altered, or modified regardless of the actual cost of the Labor and Materials and/or the Work unless otherwise specified in the Contract Form or agreed to by NFCU in its sole discretion.

III. BID DUE DATE; EFFECTIVENESS OF BID; CERTAIN BID REQUIREMENTS

a) The Bidder's written bid (the "**Bid**") must be received by **Peruzzi NO LATER THAN 3:00 P.M. (EST) on** Friday June 13th, 2014 (the "**Closing Date**"). You must send your Bid, and all required materials, to the following address:

Peruzzi
Attn: John Peruzzi
3048 N. Thompson Lane
Murfreesboro, TN 37129

b) The Bid will remain open and subject to acceptance by NFCU for **90 days** after bid opening or for such longer period of time as the Bidder may agree to in writing.

c) Any Bids received after the time specified above will not be reviewed or considered. It is the Bidder's responsibility to confirm that their Bid was received.

d) Bids must (i) be on this form, (ii) contain all required information, (iii) be typed or legibly handwritten, (iv) signed by an authorized representative of the Bidder, and (v) be securely sealed.

e) NFCU reserves the right to issue supplements to this Bid Form or the Bid Documents prior to the Closing Date. NFCU will provide copies of any supplements to the contact person listed on the last page of this Bid Form. The Bidder will be required to address any supplements in order for its Bid to be considered by NFCU.

IV. AWARD; REJECTION

NFCU reserves the right, which it may exercise in its sole and absolute discretion, at any time and for any reason, to (i) accept any Bid, and (ii) reject any and all Bids. If all Bids are rejected by NFCU, NFCU will have the right to negotiate with the lowest bidder.

V. PROJECT DURATION; COMPLETION; LIQUIDATED DAMAGES

a) All Work must be substantially completed within **Forty Five (45) Business Days** from the anticipated construction start date (which will be set forth in the Contract Form). The requirements for "substantial completion" are set forth in the Contract Form.

b) Final completion of the Work will be completed within **Ten (10) Business Days** from substantial completion.

c) The Bidder acknowledges that (i) the Contract Form contains liquidated damages

provisions that apply if certain conditions are not satisfied, and (ii) that those provisions have been reviewed and are acceptable.

VI. REPRESENTATIONS

The Bidder represents to NFCU that:

a) it has visited the site of the Branch and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, and performance of the Labor and Materials and the Work;

b) it is familiar with and is satisfied as to all applicable laws that may affect cost, progress and performance of the Labor and Materials and the Work;

c) it does not consider that any further examinations, investigations, explorations, tests, studies or data are necessary for the determination of the Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bid Documents;

d) it is aware of the general nature of work to be performed by NFCU or others designated by NFCU relating to the Branch, if any;

e) it has given NFCU and its designated architect written notice of all conflicts, errors, ambiguities, or discrepancies that it has discovered in the Bid Documents and that those matters have been satisfactorily resolved;

f) the Bid Documents are sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which the Bid is submitted.

g) the below listed addendums have been received, examined and considered in connection with the Bidder's submission of its Bid:

Addendum No. _____ Date _____

Addendum No. _____ Date _____

Addendum No. _____ Date _____

Addendum No. _____ Date _____

h) the Bid (i) is not a sham bid, (ii) has been authorized by all necessary actions of the Bidder, (iii) is a valid act of the Bidder, (iv) has not been submitted on behalf of any other party;

i) it has not colluded, conspired, or agreed, directly or indirectly, with any other

bidder, entity or person with respect to this Bid (including, without limitation, any matters relating to pricing, refusals or agreements to bid, or otherwise), and the Bidder has not directly or indirectly induced or solicited, or received any inducement or solicitation, from any other bidder to submit a false or sham bid;

j) all statements, representations and certifications contained in the Bid are true and accurate; and

k) it is registered as a general contractor in accordance with the laws and regulations of the State/ Commonwealth where the Branch is located.

VII. SPECIAL TERMS

a) The Bidder will, if selected by NFCU, and if required by any agreement entered into with NFCU, apply for and obtain, or if application has already been made, pick-up, any and all required permits for the Labor and Materials and/or the Work relating to the Branch.

b) The Bidder acknowledges that, if selected, it will provide a warranty to NFCU as provided in the Contract Form.

c) The Bidder acknowledges that, if selected, it will conduct post completion site evaluations of the Labor and Materials, the Work and the Branch at such times as provided in the Contract Form -- those evaluations will ensure, among other things, that the the Labor and Materials, the Work and the Branch have remained free of deficiencies.

d) The Bidder will, if selected by NFCU, submit all invoices within the time periods specified in the Contract Form.

e) The Bidder acknowledges that it will, if selected by NFCU, be fully responsible for all of its employees, agents, subcontractors and other parties for which it is responsible, in accordance with the Contract Form.

f) The Bidder has had the opportunity to, and has in fact, submitted any questions on this Bid From and the Bid Documents to NFCU or the architect for the Branch selected by NFCU.

g) NFCU will not provide reimbursement for any costs or expenses incurred in connection with any Bid or the preparation of any documents submitted with a Bid.

h) To the fullest extent permitted by applicable law, all materials submitted with the Bid will become the property of NFCU and will not be returned. Bidders may not submit any materials to NFCU that they do not have the legal right to submit.

VIII. BID SECURITY

The following security requirements must be complied with by each bidder: NONE.

IX. MANDATORY DOCUMENTS TO BE INCLUDED WITH A BID

The following documents and items must be submitted for review with each Bid:

	Document	Number of Pages
A.	Construction Cost Breakdown Form which must be fully completed with a specified dollar amount for each item. If an item does not apply to this specific project, write "N/A". The form is not to be modified in any manner.	
B.	A complete breakdown of General Conditions indicated on the Cost Breakdown Form.	
C.	List of Proposed Subcontractors (once approved by NFCU, no changes shall be made without written approval of NFCU).	
D.	A copy of your standard subcontractor agreement which must be approved by NFCU.	
E.	Proof of insurance coverage (which must be on industry standard forms) in compliance with all requirements of Exhibit "B" to the Contract Form.	
F.	Clarifications & Exclusions (any allowances or exclusions in the Did must be qualified and quantified).	
G.	Projected Schedule for completion of construction	
H.	General Contractor Project Team List and Individual Bios (Background & Experience)	

X. CONFIDENTIALITY

BIDDER AGREES THAT THE BID DOCUMENTS, AND ALL OTHER INFORMATION, DESIGNS, SCHEMATICS AND ITEMS THAT IT HAS RECEIVED RELATING TO THE BRANCH AND/OR NFCU (I) ARE FOR ITS SOLE AND EXCLUSIVE USE, (II) ARE CONFIDENTIAL AND PROPRIETARY, AND (III) EXCEPT AS MAY BE REQUIRED BY APPLICABLE LAW OR REGULATION, MAY NOT BE RELEASED,

DISTRIBUTED, TO ANY OTHER PARTY OR POSTED IN ANY PUBLIC FORMAT, INCLUDING, BUT NOT LIMITED TO, POSTINGS ON ANY PUBLIC WEBSITE, WITHOUT NFCU'S PRIOR CONSENT WHICH IT MAY WITHHOLD IN ITS SOLE DISCRETION. BY YOUR SUBMITTAL OF A BID, YOU ARE AGREEING THAT YOU WILL BE LIABLE TO NFCU FOR ANY DAMAGES IT MAY INCUR AS A RESULT OF ANY BREACH OF THIS PROVISION AND/OR THAT NFCU MAY SEEK, AND THAT YOU WILL NOT OBJECT TO, ANY INJUNCTIVE RELIEF WITH RESPECT TO SUCH BREACH.

[BID SUBMITTAL SIGNATURE PAGE FOLLOWS]

COMPANY NAME _____

ADDRESS _____

STATE REGISTRATION NUMBER _____

STATE OF FORMATION OR LIST OF PARTNERS: _____

NAME OR AUTHORIZED SIGNATORY_____

SIGNATURE _____

TITLE_____

TELEPHONE NUMBER _____

FAX NUMBER _____

EMAIL ADDRESS _____

DATE _____

EXHIBIT - "C"

BIDDERS MUST USE ATTACHED SPREADSHEET

Div.	Description	
1	General Conditions	
	Payment, Performance & Material Bond Premiums	
	General Liability, Commercial Auto & Works Comp Insurance	
	Builder's Risk Insurance Premium	
	Commercial Crime Insurance Premium	
	Errors & Omission Liability Insurance Premium	
	Overhead & Profit	
	Subtotal	$
2	Site Construction	
	Proposed Subcontractor:	
	Subtotal	$
3	Concrete	
	Proposed Subcontractor:	
	Subtotal	$
4	Masonry	
	Proposed Subcontractor:	
	Subtotal	$
5	Metals	
	Proposed Subcontractor:	
	Subtotal	$
6	Wood and Plastic	
	Proposed Subcontractor:	
	Subtotal	$
7	Thermal & Moisture Protection	
	Proposed Subcontractor:	
	Subtotal	$
8	Doors & Windows	
	Proposed Subcontractor:	
	Subtotal	$
9	Finishes	
	Proposed Subcontractor:	
	Subtotal	$

10	Specialties Proposed Subcontractor:	
	Subtotal	$
11	Equipment Proposed Subcontractor: Wittenbach:	
	Subtotal	$
12	Furnishings Proposed Subcontractor:	
	Subtotal	$
13	Fire Suppression Proposed Subcontractor:	
	Subtotal	
15	Plumbing Proposed Subcontractor:	
	Subtotal	$
15	Heating, Ventilation, and Air Conditioning Proposed Subcontractor:	
	Subtotal	$
16	Electrical Proposed Subcontractor:	
	Subtotal	$
16	Electronic Safety and Security Proposed Subcontractor:	
	Subtotal	$

TOTAL LUMP SUM PRICE	$

SECTION 01010 – GENERAL PROJECT REQUIREMENTS

PART I - GENERAL

1.01 GENERAL REQUIREMENTS

A. The Navy Federal provided contract form, AIA A107 with Navy Federal revisions shall be the controlling document for the project. If there are issues not covered in the A107 that arise, the "General Conditions of the Contract for Construction" AIA A201, latest edition may be referenced by either party, however, the A107 is the first and controlling document to this project. These documents and the General Requirements apply to the work and all specification sections and all are complimentary.

B. Miscellaneous requirements:

1. Provide a full-time, on-site construction superintendent who is dedicated full-time to this project.

2. Wholly or partially prefabricated buildings or structural systems are prohibited

3. Materials containing asbestos are prohibited.

4. Demolition activities required to prepare a site to receive the new construction shall remove all existing construction and improvements unless otherwise noted. Existing buildings shall be completely removed including foundations, footings, basements and utilities.

5. Dirt floors are prohibited in crawl spaces.

6. Abandoned spaces within existing structures, which are being converted to as a part of this construction, shall be free of all debris of any origin, and access shall be provided to permit inspection.

7. Construction, demolition or existing debris of any form, regardless of its origin, shall be completely removed from the site and shall be legally disposed of off site.

8. All required utilities shall run underground to the building. Overhead lines are prohibited. Exposed utility connections on the outside of the building are prohibited, with the exception of the gas meter/piping, which shall enter the building as low as possible and in as concealed a location as possible.

9. Protective pipe bollards shall be placed at any location where a vehicle could strike the building, columns, utility meters, equipment or other site improvements.

10. Permits and Certificates: All required permits, variances and certificates shall be obtained and paid for by the Contractor.

11. The Contractor shall arrange for, maintain and pay for all temporary utilities until final acceptance by the Owner. Responsibility for payment of permanent utilities shall not be put into the Owner's name until possession of the project is taken by the Owner.

12. The Contractor shall remove all rubbish regularly from the job-site.

1.02 INSURANCE

A. Indemnification Insurance: (Contractor's Expense).

1. The Contractor shall indemnify and hold the Owner, the Architect and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the work.

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

B. Contractor's Liability Insurance: (Contractor's Expense)

1. Contractor shall not commence work without obtaining all insurance hereunder. The insurance shall include the Owner and the Architect as "additional insured".

2. The Contractor shall submit to the Owner, before commencing work, evidence of the above required insurance, which shall contain certification by the insurance companies that such insurance shall not be canceled or materially changed without 30 days prior notification to the Owner.

C. Property Insurance: (Landlord's Expense)

1. Unless otherwise provided, the Owner shall purchase and maintain property insurance upon the entire work at the site to the full insurable value thereof. This insurance shall insure against the perils of Fire, Extended Coverage, Vandalism, and Malicious Mischief.

1.03 SUPPLEMENTARY CONDITIONS

A. Existing Conditions – The Contractor shall examine the project site, all drawings and specifications. If discrepancies or differences exist between drawings, specifications, and/or site conditions, the Contractor shall promptly notify the Architect for resolution. No later claims to the Owner shall be made for extra labor, equipment, or materials, which could have been foreseen by examination of site and project documents.

B. Code Compliance - All work must comply with all applicable codes and laws, shall be structurally sound and fit for the intended use. Deviation from the plans and specifications necessary for compliance shall be reported to the Architect. All changes are subject to the Architect's approval.

C. Workmanship and Installation - All work shall be performed by skilled experienced workman to properly complete the installation for a neat and finished appearance. The contractor shall replace or reinstall any materials or equipment not properly installed or finished in a manner satisfactory to the Owner, without additional cost to the Owner.

D. Guarantee/Warranty - The Contractor warrants that work performed conforms to the Contract documents and is free of any defect in equipment, materials or design furnished or workmanship performed by the Contractor or Subcontractor of any tier. This warranty shall last as long as permitted by the Statue of Limitations or Repose of the State in which the project is constructed, but in no case shall the warranty period be less than one year. Guarantees and Warranties shall commence on the date of possession by the Owner.

1.04 PROJECT COORDINATION

A. All Contractors shall review drawings and specifications of all trades and coordinate their work with others.

B. Large Equipment - When possible, equipment which is to be installed in the building that may be too large to pass through stairways, doorways, or shafts, shall be brought on the job and placed in the proper space before the enclosing structure is completed. Otherwise arrange with other Contractors to permit access at a later date, at no additional cost to the Owner.

1.05 WORK INCLUDED:

A. The Work under the Base Bid of the Contract shall include all Work indicated or specified within these construction documents, unless otherwise indicated by inclusion of a Contract Limit Line or by notation of "Not In Contract". Also included is all work which may be necessary to provide all water, gas, sewer, telephone, and electrical service to the site, including replacement of paving to meet the requirements of governing municipal authorities.

1.06 SPECIFICATIONS

A. In the preparation of the Specifications an effort has been made to segregate the various branches of the work under headings, by trades. This is done only for convenience and shall not relieve the Contractor of the responsibility of furnishing every item indicated or specified whether properly segregated or not.

B. Specification arrangement is in accordance with the "Uniform System for Construction Specifications, Data Filing and Cost Accounting," AIA Document K-103. The 5 digit section designation is in accordance with this document. No responsibility will be assumed by the Owner or the Architect for omissions or duplications by the Contractor in the completion of the Contract due to any alleged error in the arrangement of the material in there specifications nor shall any such segregation of work and materials operate to make the Architect an arbiter in defining limits to the Agreements between the Contractor and his subcontractors or suppliers.

C. The misplacement, addition or omission of any letter, word or punctuation mark, or lack of capitalization of a word, shall in no way damage the true spirit, intent, or meaning of these Specifications.

D. The word "shown", "noted", "scheduled", or words of like effect shall be understood to mean that reference is made to the Drawings accompanying these Specifications.

E. Where reference herein is made to colors of finishes "as selected" the reference is to the Architect.

F. Reference to known standards within these Specifications shall mean and intend the latest edition or amendment published prior to the date of these Specifications, unless specifically specified otherwise, and to such portions of it that relate and apply directly to the material or installation called for on the Project.

G. Throughout these specifications reference to a technical society, organization or body is by abbreviations. A partial list of abbreviations is provided in Section 1030 – "Administrative Provisions". A list of other abbreviations is available from the Architect.

H. All sections in this specification are listed in the index and indicate their end with "END OF SECTION." The Contract shall check for all sections against the index.

1.07 DISPOSITION OF UTILITIES

A. Observe rules and regulations governing the respective utilities in executing all work under this heading.

B. Adequately protect active utilities from damage, and remove or relocate only as indicated or specified.

C. Remove, plug or cap inactive and abandoned utilities encountered during the work. If there are no specific requirements, plug or cap such utility lines at least 3 feet outside of new building walls or as required by local regulations.

1.08 ARCHITECTURAL AND ENGINEERING FEES

A. It is understood that normal Architectural and Engineering liaison for the purpose of interpretation of the Contract Documents is provided by the Owner. Should any services of the Architect be required to assist in the corrections errors or omissions in construction by the Contractor, or services of the Architect be required because of change in structure or equipment where the Contractor has requested approval of substitute methods or materials, these services will be provided by the Architect to the Owner at his standard hourly rates.

B. The Owner shall be reimbursed by the Contractor for the Architect's additional services as described above, including, but not limited to, the following conditions.

1. Additional Shop Drawings review(s) by Architect as described elsewhere in these specifications.

2. Additional site visits, investigations, inspections, design work and/or reports by the Architect which are required due to damages to existing improvements or completed Work caused by the Contractor in his performance of the Contract.

3. Additional time spent by the Architect for Project Closeout Inspection as described elsewhere in these Specifications. Architectural Construction Phase Services rendered on the Project during the time the Project remains incomplete after the Contract Date of Final Completion.

4. Fees for additional Architectural and Engineering Services not otherwise paid by the Contractor shall be withheld from the Contractor's Final Payment by the Owner. Payment to the Architect shall be made by the Owner from the unpaid Contract Sum due the Contractor, and a Change Order shall be executed deleting the amount due from the Contract Sum and Final Payment.

1.09 SAFETY REQUIREMENTS

A. These Construction Documents, and the joint and several phases of construction hereby contemplated are to be governed, at all times, by applicable provisions of the local, state and federal laws, including but not limited to, the latest amendments of the following:

1. Williams-Steiger Occupational Safety & Health Act of 1970, Public Law, 91-596

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

3. Part 1518 – Safety and Health Regulations for Construction, Chapter XIII of Title 29, Code of Federal Regulations.

1.10 APPROVED APPLICATORS

A. Where specific instructions in these specifications require that a particular product and/or material(s) be installed and/or applied by an approved applicator of the manufacturer, it shall be the Contractor's responsibility to ensure that any Subcontractors used for such Work be approved applicators.

1.11 WATERTIGHT-WEATHER TIGHT

A. Anything in the Contract Documents not withstanding, the Contractor accepts the Responsibility of constructing a watertight, weather tight project.

1.12 EXTRA WORK

A. In accordance with the General Conditions and when authorized in writing by the Architect, extra work may be ordered. Claims for additional compensation, on account of extra work done, will not be recognized unless such extra work has been authorized in advance and in writing by the Architect and Owner. The Contractor shall perform such extra work and charge the owner at actual cost of labor and materials, plus contractor's reasonable overhead and profit as agreed upon between the Contractor and Owner.

B. For work omitted from Contract: If Contract Agreement has been previously increased by Change Order for additional work, then overhead and profit will be deducted for omitted work; if revised Contract Sum will be less than original Contract amount, then overhead expenses and profit will not be deducted as part of the deductive Change Order for work omitted.

C. Where extra work involves both added and omitted work, the overhead and profit figures specified above shall be added only to the increased amount over the original Contract sum. The Contractor shall provide with all proposal requests for extra and omitted work an itemized breakdown of labor, material, taxes, overhead and profit.

1.13 SIGNED DRAWINGS AND SPECIFICATIONS

A. Immediately upon signing the Contract for the work, the Contractor shall sign 2 complete sets of Drawings and Project Manual (for Project Manual, signature to be applied on Table of Contents sheet thereof) as additional evidence of his understanding of the work called for with such Alternates and Amendments as specifically mentioned in the Agreement. These shall become Contract Drawings and Contract Project Manual. File one set with the Owner and keep one set at the job site at all times during the progress of the work. The job site set shall be the Contractor's copy.

1.14 WORK BY OTHERS

A. Certain items of equipment and/or elements of the construction may be excluded from the Contract, and if so, are indicated on the Drawings and identified herein. Installation thereof may be performed while the contractor's work progresses. The contractor shall cooperate with the Owner to facilitate the expeditious installation of such items.

B. Other construction activities, under direct supervision of the Architect and/or Owner, are contemplated in the same area of work during the construction period established for this Agreement. All contractors on the work which may begin progress during the same period of time shall have equal rights to use the roads, grounds, areas, etc., and shall coordinate activities which come into conflict so as to determine the affect on his work of the additional activity, which is not a part of this Agreement; and shall adequately adjust his price accordingly. No request for additional compensation for any reason, in this connection, will be considered.

1.15 OWNER FURNISHED, CONTRACTOR INSTALLED ITEMS

A. Certain equipment, fixtures, etc. are indicated on the Drawings to be furnished by the Owner for assembly and installation by the Contractor. The Owner will be responsible for delivery thereof to the construction site. The Contractor shall assume responsibility for such acceptance of the new facility by the Owner. Assembly and installation shall include unloading, uncrating, setting in place, leveling, connection to utilities, the furnishing of required operating oils, and fluids, and such other procedures as may be required to render the equipment and fixtures serviceable and/or operative. Assembly and installation shall be performed in accordance with shop and manufacturer's assembly and installation drawings and the instructions of the Owner's representatives.

B. The Contractor shall obtain all shop and manufacturer's assembly and installation drawings from the equipment supplier.

C. The Contractor shall give the Owner written notice stating dates when the Owner-furnished items must be received at the job site to insure Project completion in accordance with established schedule. Such notice shall be on stationery bearing the General Contractor's letterhead and signature.

D. The Owner furnished items shall be received and stored at the construction site by the Contractor. The Contractor shall furnish the documents required by the Owner substantiating the receipt of Owner-furnished equipment.

1.16 OCCUPANCY PRIOR TO COMPLETION

A. The Owner shall have the right to occupy portions of the building that are completed on or after the specified completion date (even though the Contractor may not have completed the entire Project). Such occupancy by the Owner will not release the Contractor or his bonding agency from any warranties of guarantees and final completion of work in accordance with the Contract Documents.

1.17 CONTRACTOR USE OF PREMISES

A. The Contractor shall limit the storage of materials and equipment to the areas indicated.

B. At no time during the work under the Contract shall the Contractor place, or cause to be placed, any material or equipment, etc., at any location that would impede or impair access to or from the present or adjacent facilities for their customers, employees or delivery facilities.

C. The Contractor shall cooperate with the Owner to the fullest extent in providing traffic control during course of construction so as to provide a minimum of inconvenience to Owner's customers.

D. The Contractor shall send proper notices, make all necessary arrangements, and perform all services required in the care and maintenance of all public utilities. The Contractor shall, during the construction period and until final acceptance of the work as a whole by the Owner, assume all responsibility concerning the same for which the Owner may be liable.

END OF SECTION

SECTION 01025 – APPLICATION FOR PAYMENT

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

A. Procedures for preparation and submittal of Applications for Payment.

1.02 RELATED REQUIREMENTS

A. Owner-Contractor Agreement: CONTRACT SUM AND UNIT PRICES, AMOUNTS OF PROGRESS PAYMENTS AND RETAINAGES, AND TIMES FOR SUBMITTALS.

B. Section 00700 - GENERAL CONDITIONS

C. Section 00800 - SUPPLEMENTAL CONDITIONS

D. Section 01300 - SUBMITTALS

E. Section 01700 - PROJECT CLOSEOUT

1.03 FORMAT

A. The contractor shall use the AIA Document G 702, Application for Payment, and AIA Document G 701, Change Order. For each item, provide a column for listing: Item Number; Description of work; Scheduled Value, Previous Applications; Work in Place and Stored Materials under this Application; Authorized Change Orders; Total Completed and Stored to Date of this Application; Percentage of Completion; Balance to Finish; and Retainage.

1.04 PREPARATION OF APPLICATION

A. Retainage shall be withheld at 10%.

B. Type required information or use media-driven printout.

C. Execute certification by signature of authorized officer with seal and attestment.

D. List each authorized Change Order as extension on continuation sheet, listing Change Order number, description, and dollar amount as for an original item of Work.

E. Include Conditional Waiver and Release of Liens.

1.05 SUBMITTAL PROCEEDURES

A. Submit four copies of each Application for Payment at times stipulated in Agreement.

B. Submit under transmittal letter specified in Section 01300.

1.06 SUBSTANTIATING DATA

A. When Architect/Engineer requires substantiating information, submit data justifying line item amounts in question.

B. If the Owner elects to consider whether or not to make payments for materials stored offsite, provide copies of invoices, insurance documents, and other data as requested for all such materials, with each application for payment. Insurance shall be full value coverage with the Owner as "Loss Payee".

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

1.07 PAYMENT

A. Allow the Architect at least fifteen (15) working days to process Applications for Payment.

B. Payment to the Contractor of each Application will occur within 30 days of receipt of an approved Application for Payment by the Owner. Contractor shall be responsible for delivery of approved Application to the Owner.

END OF SECTION

SECTION 01030 – ADMINISTRATIVE PROVISIONS

PART 1 – GENERAL

1.01 WORK SEQUENCE AND PHASING

A. A Construction Project Schedule shall be submitted with the Bid Form. All major phases and trades of the work shall be shown. The Contractor may submit a revised phasing schedule upon review of the Contract Documents, for the Architects approval.

B. Certain items indicated will be provided to the General Contractor by the Owner/Tenant for installation by the General Contractor. The General Contractor shall state the required delivery dates to the project site for such items in the Initial Progress Schedule included with the Bid Form.

1.02 CONTRACT METHOD

A. Construct the work under a stipulated single lump sum contract unless otherwise required by the Owner.

B. Items noted "NIC" (Not in Contract) or "O.F.O.I." (Owner Furnished Owner Installed), will be furnished and installed by Owner (or Tenant).

1.03 CONTRACT TIME AND LIQUIDATED DAMAGES

A. The Contractor shall be required to substantially complete the Work on or before a date to be determined by the owner / developer.

1. In case of failure on the part of the Contractor to complete the work within the time fixed by the contract or any approved extensions thereof, the Contractor shall pay to the Owner as Liquidated Damages the sum of $1,000 per calendar day of delay.

1.04 CONTRACTOR USE OF PREMISES

A. Contractor may use the premises during times allowed by local construction ordinances, or 24 hours per day, weekends, and holidays, whichever is less, as required to complete the work in the Contract Documents.

B. Limit use of premises to that required to complete the work of these contract documents, and to allow for Work of Others.

1.05 COORDINATION

A. Coordinate work of the various sections of Specifications to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items which are to be installed later.

B. Verify characteristics of elements of interrelated operating equipment are compatible; coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

C. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on drawings. Follow routing shown for pipes, ducts, and conduits, as closely as practicable; make runs parallel with lines of building. Utilize

spaces efficiently to maximize accessibility for other installations, for maintenance, and or repairs.

D. Except as otherwise allowed for in the construction documents, conceal pipes, ducts, wiring and similar items within the construction. Coordinate locations of fixtures and outlets with finish elements.

E. Execute cutting and patching to integrate elements of Work, uncover ill-timed, defective and non-conforming work, provide openings for penetrations of existing surfaces, and provide samples for testing. Seal and finish penetrations through floors, walls, and ceilings.

1.06 REFERENCE STANDARDS

A. For products specified by association or trade standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. The date of the standard to be used is that in effect as of the date of Owner-Contractor Agreement, except when a specific date is specified.

C. Obtain copies of standards that are referenced by the Contract Documents. Maintain copy at job site during progress of the work.

D. The association and trade standards used in the Specifications include but are not limited to the following association abbreviations:

AA	Aluminum Association
AAMA	Architectural Aluminum Manufacturers Association
AASHTO	American Association of State Highway & Transportation Officials
ABPA	Acoustical and Board Products Association
ACI	American Concrete Institute
AGA	American Gas Association
AGC	Associated General Contractors
AHC	Architectural Hardware Consultant
AI	Asphalt Institute
AIA	American Institute of Architects
AIEE	American Institute of Electrical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute
APA	American Plywood Association
ARI	Air Conditioning and Refrigeration Institute
ARMA	Asphalt Roofing Manufacturers Association
ASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers.
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWSC	American Welding Society Code

AWI	American Woodworking Institute
BIA	Brick Institute of America
CRSI	Concrete Reinforcing Steel Institute
FGMA	Flat Glass Marketing Association
FM	Factory Mutual
FS	Federal Specification
GA	Gypsum Association
MIL	Military Specification
NFPA	National Fire Protection Association
NFPA	National Forrest Products Association
PS	U.S. Department of Commerce, Product Standards
SDI	Steel Deck Institute
SDI	Steel Door Institute
SIGMA	Sealed Insulation Glass Manufacturer's Association
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
TCA	Tile Council of America
U.L.	Underwriter's Laboratory

END OF SECTION

SECTION 01070 – CUTTING AND PATCHING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Execute cutting (including excavating), fitting or patching of work, required to:

1. Make parts fit properly.

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

3. Remove and replace defective work.

4. Remove and replace work not conforming to requirements of Contract Documents.

1.02 In addition to contract requirements, upon written instruction of Architect:

1. Under work to provide for Architect's observation of covered work.

2. Remove samples of installed materials for testing.

1.03 Do not endanger any work by cutting or altering work or any part of it.

1.04 Do not cut or alter work of another Contractor without written consent of Architect.

1.05 SUBMITTALS

1.06 Prior to cutting which affects structural safety of project, or work of another Contractor, submit written notice to Architect, requesting consent to proceed with cutting, including:

1. Identification of project.

2. Description of affected work.

3. Necessity for cutting.

4. Affect on other work, on structural integrity of project.

5. Designation of proposed work. Designate scope of cutting and patching, contractor and trades to execute work, products proposed to be used, and extent of refinishing.

6. Alternatives to cutting and patching.

7. Designation of party responsible for cost of cutting and patching.

1.07 Prior to cutting and patching done on instruction of Architect, submit cost estimate and obtain approval.

1.08 Should conditions of work, or schedule, indicate change of materials or methods, submit written recommendation to Architect including:

1. Conditions indicating change.

2. Recommendation for alternative materials or methods.

3. Submittals as required for Substitutions.

1.09 Submit written notice to Architect designating time work will be uncovered, to provide for observation.

1.10 PAYMENT OF COSTS

1.11 Costs caused by ill-timed or defective work, or work not conforming to Contract Documents, including costs for additional services of Architect, shall be paid by the party responsible for ill-timed, rejected or non-conforming work. Ultimately it is the responsibility of the General Contractor to provide the Owner with a finished product in good condition conforming to the Contract Documents.

1.12 Costs for work removed, comply with specifications for type of work to be done.

PART 2 - PRODUCTS

2.01 MATERIALS

A. For replacement of work removed, comply with specifications for type of work to be done.

PART 3 - EXECUTION

3.01 INSPECTION

A. Inspect existing conditions of work, including elements subject to movement or damage during:

1. Cutting and patching

2. Excavating and backfilling.

B. After uncovering work, inspect conditions affecting installation of new products.

3.02 PREPARATION

A. Provide shoring, bracing and support as required to maintain structural integrity of project.

B. Provide protection for other portions of project.

C. Provide protection from elements.

3.03 PERFORMANCE

A. Execute fitting and adjustment of products to provide finished installation to comply with specified tolerances, finishes.

B. Execute cutting and demolition by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs and new work.

C. Execute excavating and backfilling as specified elsewhere.

D. Restore work which has been cut or removed; install new products to provide completed work in accordance with requirements of Contract Documents.

E. Refinish entire surfaces as necessary to provide an even finish.

1. Continuous surfaces: Refinish to nearest intersections.

2. Assembly: Refinish entire assembly.

END OF SECTION

SECTION 01200 – PROJECT MEETINGS

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

A. Contractor participation in pre-construction conferences.

B. Contractor administration of progress meetings.

1.02 RELATED REQUIREMENTS

A. Section 01030 - ADMINISTRATIVE PROVISIONS

B. Section 01300 - SUBMITTALS

C. Section 01700 - CONTRACT CLOSEOUT

1.03 PRE-CONSTRUCTION CONFERENCE

A. Owner will administer a pre-construction conference at the Project site for clarification of Contractor responsibilities in use of site, for review of administrative procedures, and exchange of preliminary submittals. The Contractor's job superintendent and project manager shall both be in attendance.

1.04 PROGRESS MEETINGS

A. The Contractor shall schedule and administer Project Meetings throughout progress of the Work at a minimum of bi-weekly intervals, called meetings, and pre-installation conferences as needed.

B. The Contractor shall make physical arrangement for meetings, prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies within two days to Architect, Owner's representative, participant's, and those affected by decisions made at meetings.

C. Attendance: Job superintendent, major subcontractors and suppliers; Architect and Owner's representative as appropriate to agenda topics for each meeting and as contracted for between Architect and Owner. The Contractor shall notify the Owner and/or Architect in writing at least seven (7) days prior to the meeting if their attendance is requested.

D. Suggested Agenda; Review of Work progress, status of progress schedule and adjustments thereto, coordination of on-going and planned work, delivery schedules, submittals, maintenance of quality standards, pending changes and substitutions, and any other items affecting progress of work.

END OF SECTION

SECTION 01300 - SUBMITTALS

PART 1 – GENERAL

1.01 DESCRIPTION

A. As used herein, “submittals” shall include shop drawings, published product data, physical samples and any other items that the contractor submits to the Architects/Engineer for review.

1.02 RELATED REQUIREMENTS

A. General and Supplemental Conditions.

B. Section 01030 - ADMINISTRATIVE PROVISIONS.

C. Section 01400 - QUALITY CONTROL

D. Section 01600 - MATERIAL AND EQUIPMENT.

E. Section 01700 - CONTRACT CLOSEOUT

1.03 PROCEDURES

A. The Contractor shall allow time for the following: Submittal review by the Architect and its consultants will take a minimum of 10 working days (2 calendar weeks), beginning on the next working day following receipt of the submittal in the Architect’s office.

B. All submittals must be transmitted to the Architect by the General Contractor. Submittals will not be accepted directly from subcontractors, suppliers or other third parties, nor will they be accepted if sent directly to the Architect’s consultants. All materials received from parties other than the General Contractor will be returned without review.

C. The Contractor shall review, stamp and sign all submittals and shop drawings prior to submission to the Architect. Submittals not bearing the Contractor’s review stamp will be returned without review.

D. Transmit each item under Architect-accepted form. Identify project, contractor, subcontractor, major supplier; identify pertinent drawing sheet and detail number, and specification section number, as appropriate deviations from Contract Documents. Provide space for Contractor and Architect/Engineer review stamps.

E. Provide the number of submittal copies that Contractor requires back, plus two (2) additional copies which will be retained by the Architect (and Engineer as applicable).

F. Mark each submittal copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to the Work. Include manufacturers' applicable installation instructions and details.

G. Submit initial progress schedules with Bid Form. Submit schedule of values and list of subcontractors in duplicate within 5 days after Notice to Proceed. After review by Architect/Engineer revise and resubmit as required. Submit revised Schedule of Values and a revised Progress Schedule with each Application for Payment reflecting changes since previous submittal, and as required or requested by the Architect.

H. Comply with progress schedule for submittals related to Work progress. Coordinate submittal of related items.

I. After Architect review of submittal, revise and resubmit as required, identifying changes made since previous submittal.

J. Distribute copies of reviewed submittals to concerned persons, including the appropriate sub-contractor or material supplier. Instruct recipients to promptly report any inability to comply with provisions.

K. Specific submittal requirements for individual units of work are specified in the applicable specification sections. Comply with the requirements specified herein for each type of submittal. The Architects'/Engineer's review of submittals, and related comment or lack thereof, in no way limits or excuses the Contractor's responsibility to comply with the Contract Documents.

1.04 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial Progress Schedule with Bid Form.

B. Submit per General Conditions & Supplemental Conditions Article 4.10.

C. Show complete sequence of construction by activity, identifying work of separate stages and other logically grouped activities. Show projected percentage of completion for each item of Work at the time of each progress Application for Payment.

D. Submit revised progress schedule each month with Application for Payment.

E. Show submittal dates required for shop drawings, product data, and samples, and product delivery dates.

F. Show dates on which delivery of Owner-Furnished items is required.

1.05 SCHEDULE OF VALUES

A. See also Supplemental Conditions Article 9.2.1.

B. Format: Table of Contents of the Project Manual shall be the minimum of line items required. Breakdown Section line items further as requested by the Architect or Owner in order to facilitate identification of material and cost. Provide labor and materials cost for each line item with number and title of the major Specification Sections.

C. Include in each line item a directly proportional amount of Contractor's overhead and profit, unless otherwise approved by the Architect or Owner.

D. Revise schedule to list Change Orders and include with each Application for Payment.

1.06 LIST OF SUBCONTRACTORS

A. Submit a complete list of all proposed subcontractors and work each is to perform for approval by the Architect/Engineer and Owner, in accordance with the requirements set forth in the General Conditions and this section.

1.07 MANUFACTURER'S INSTRUCTIONS

A. When required in individual Specification Section, submit manufacturer's printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for product data.

1.08 SAMPLES

A. Submit full range of manufacturers' standard colors, textures, and patterns for Architect selection. Submit samples for selection and approval of finishes within 21 days after Notice to Proceed.

B. Submit samples to illustrate functional characteristics of the product, with integral parts and attachment devices. Coordinate submittal of different categories for interfacing work.

C. Include identification of each sample, giving full information.

D. Submit the number of copies which Contractor requires, plus two (2) additional copies which will be retained by the Architect (for distribution to Architect and Owner). Reviewed samples which may be used in the Work are indicated in the applicable Specification Section.

1.09 FIELD SAMPLES

A. Provide field samples of finishes as required by individual Specification Sections. Install sample complete and finished. Acceptable samples in place my be retained in completed Work.

1.10 SUBSTITUTIONS

A. Except where otherwise noted, substitutions will not be allowed for products indicated by Manufacturer’s name or specific product name without prior written consent of the Architect and/or Owner.

B. All substitutions are subject to approval by the Architect and the Owner. To be considered, requests for substitutions must include a point-by-point comparison between the proposed substitute and the specified product. The comparison must confirm that the proposed substitute is equal to or exceeds the quality of the specified product. The burden of proof of quality rests with the Contractor. Incomplete submittals will not be considered.

C. Substitution requests resulting from the Contractor’s failure to allow sufficient time to order and receive material will not be considered.

D. The contractor is responsible for all Architect and Consultant fees resulting from the review of proposed substitutions.

END OF SECTION

SECTION 01400 – QUALITY CONTROL - TESTING AND INSPECTION

PART 1 – GENERAL

1.01 DESCRIPTION

A. Required testing and inspection services do not relieve the Contractor of responsibility for compliance with these requirements or for compliance with the contract documents.

B. Quality Control services include inspections and tests and related actions, including reports, performed by independent agencies and governing authorities, as well as directly by the Contractor.

C. Specific testing and inspection requirements for individual units of work are specified in the sections that specify the individual element of the work. These requirements cover production of standard products, fabrication of customized work and quality control of installation procedures.

D. Provisions of this section do not limit requirements for the contractor to provide quality control services as required by the Architect/Engineer-Of-Record, the Owner, governing authorities or other authorized entities.

1.02 RESPONSIBILITIES

A. The Owner shall hire and pay for the testing and inspection services.

B. The Contractor shall be responsible for all arrangements and accommodations required to provide the quality control services with the sole exception of hiring and paying for such services. The Contractor's responsibilities shall include, but not be limited to:

1. Arranging for and scheduling the quality control services.

2. Cooperating fully with those performing the testing and inspection services.

3. Providing access to the work

4. Taking samples or assisting with the taking of samples

5. Delivery of samples to test laboratories.

6. Security and protection of samples and test equipment at the project site.

7. Making any patches or repairs necessary after quality control services have been performed.

C. The Contractor shall notify, coordinate and schedule with the Owner and the testing and inspection provider(s) to ensure that quality control services take place as required. Such notification shall be in writing and shall provide sufficient time for the arrangement of the quality control services.

D. The Contractor shall reimburse the Owner for costs incurred by:

1. Re-testing / re-inspecting work when original results of required inspections, tests, etc. prove unsatisfactory or do not comply with the requirements of the contract documents.

2. Re-testing / re-inspecting work revised or replaced by the Contractor, where required tests or inspections were previously performed on the original work.

1.03 SCHEDULE OF SERVICES

A. The following schedule of inspections, tests and similar services represents the minimum scope of quality control services to be performed. Provide additional services as required elsewhere in the Contract Documents, by the Architect/Engineer-Of-Record and by the governing codes and authorities.

Division 2 Sections
Verification of suitable soil bearing capacity.
Field density testing, compaction testing.
Optimum moisture/maximum density testing.
Pavement proof rolling.
Pavement surface smoothness testing.

Division 3 Sections
Concrete compressive strength testing.
Concrete slump testing.
Floor flatness/levelness testing.
Moisture vapor emission rate testing.

Division 4 Sections
Masonry mortars and grouts compression testing
Reinforced masonry grouting.

Division 5 Sections
Weld testing.
Moment connection weld testing (when applicable).
Bolt torque testing.

Division 7 Sections
Thermal scans of foamed-in-place insulation (when applicable).
Density, thermal conductivity and open cell content of foamed-in-place insulation. (when applicable)

Division 9 Sections
Moisture vapor emission rate testing.
Concrete alkalinity testing.

Division 15 Sections
Sprinkler system leak test.
Domestic water system leak tests.
Sewer system hydrostatic tests.
Leak, pressure and load testing of HVAC refrigerant piping.
HVAC Testing, Balancing, Adjusting and Commissioning

Division 16 Sections
Electrical wiring for short circuiting and proper grounding.

1.04 QUALIFICATION FOR SERVICE AGENCIES

A. Engage inspection and test service agencies, including independent testing laboratories, which comply with “Guidelines for Effective Practice for Materials Engineering

Laboratories" by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.

1.05 SUBMITTALS

A. Submit a certified written report of each inspection, test or similar service, directly to the Architect/Engineer-Of-Record. Copies of all test reports, inspection reports, etc. shall be kept on site at all times.

B. Report Data: Written reports of each inspection, test of similar service shall include, but not be limited to the following:

1. Name of testing agency or test laboratory.

2. Dates and locations of samples and test or inspections.

3. Names of individuals making the inspection or test.

4. Complete inspection or test data.

5. Test results.

6. Interpretations of test results.

7. Notation of significant ambient conditions at the time of sample taking and testing.

8. Comments or professional opinion as to whether inspected or tested work complies with requirements of the contract documents.

9. Recommendations on re-testing, if applicable.

C. Non-Compliant Inspection/Test Results: Within 24 hours of inspection/test being performed, notify Architect/Engineer-Of-Record of any non-conforming/non-compliant inspections/tests. Copies of the successful re-tests of the originally non-conforming/non-compliant work shall be submitted to the Architect/Engineer-Of-Record.

D. Project Close-out: The Contractor shall certify to the Architect/Engineer-Of-Record in writing that the required quality control services, as required by this section and the contract documents, have been performed and that all results indicate compliance with requirements.

PART II – PRODUCTS (Not Applicable)

PART III – EXECUTION

3.01 REPAIR AND PROTECTION

A. General: Upon completion of inspection, testing, sample-taking and similar services repair damaged work and restore substrates and finishes to eliminate all deficiencies. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

END OF SECTION

SECTION 01410 - QUALITY CONTROL - GENERAL

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

A. General Quality Control

B. Workmanship

C. Manufacturer's Instructions.

D. Manufacturer's Certificates.

E. Mock-ups

F. Manufacturer's Field Services

1.02 RELATED REQUIREMENTS

A. General Conditions of the Contract.

B. Section 01030 - ADMINISTRATIVE PROVISIONS.

C. Section 01300 - SUBMITTALS.

D. Section 01400 - QUALITY CONTROL SERVICES

1.03 QUALITY CONTROL, GENERAL

A. Maintain quality control over sub-contractors, 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 with persons qualified to produce workmanship of specified quality.

C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, racking, and seismic forces.

1.05 MANUFACTURERS' INSTRUCTIONS

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

1.06 MANUFACTURERS' 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 Specification Sections, arrange for supplier or 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.

B. Supplier’s or Manufacturer’s representative shall submit a written report to the Architect listing the observations and recommendations.

END OF SECTION

SECTION 01500 – CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Temporary Chain Link Fencing

B. Electricity, Lighting.

C. Heat, Ventilation.

D. Telephone, Fax, Mobile Phone Service.

E. Water.

F. Sanitary Facilities.

G. Barriers.

H. Enclosures.

I. Protection of Installed Work.

J. Security.

K. Water Control.

L. Cleaning During Construction.

M. Project Identification.

N. Field Offices and Sheds.

O. Digital Camera

1.02 RELATED REQUIREMENTS

A. Section 01030 - ADMINISTRATIVE PROVISIONS.

B. Section 01700 - CONTRACT CLOSEOUT.

1.03 CHAIN LINK FENCING

A. Provide temporary chain link fencing to secure entire site for duration of construction in accordance with Section 02830 – CHAIN LINK FENCE.

1.04 ELECTRICITY, LIGHTING

A. Provide service required for construction operations, with branch wiring and distribution boxes located to allow service and lighting by means of construction-type power cords.

B. Provide lighting for construction operations.

C. Permanent lighting may be used during construction. Maintain lighting and make routine repairs. Clean, touchup, or refinish and re-lamp as necessary, as approved by Architect.

1.05 HEAT, VENTILATION

A. Provide as required to maintain conditions for Navy Federal operations.

B. Prior to operation of permanent facilities for temporary purposes, verify that installation is approved for operation, and that filters are in place. Provide and pay for operation, maintenance, and utilities until date of Substantial Completion.

C. Provide ventilation of enclosed areas to cure materials, to disperse humidity, and to prevent accumulations of dust, fumes, vapors, or gases.

1.06 SANITARY FACILITIES

A. Provide and maintain required exterior, temporary facilities and enclosures. DO NOT USE NEWLY INSTALLED PROJECT FACILITIES.

1.07 TELEPHONE

A. Provide telephone in field office.

B. Provide a facsimile (fax) machine and designated telephone line on site for the duration of the contract.

C. Provide a pager or a cellular telephone to the Superintendent for the duration of the contract

1.08 BARRIERS

A. Provide as required to prevent public entry to construction areas and to protect existing facilities and adjacent properties from damage from dust, debris and construction operations.

B. Provide barriers around trees and plants designed to remain. Protect against vehicular traffic, stored materials, dumping, chemically injurious materials, and puddling or continuous running water.

1.09 ENCLOSURES

A. Provide temporary weather-tight closures of openings in exterior surfaces to provide acceptable working conditions and protection for materials, to allow for temporary air conditioning, and to prevent entry of unauthorized persons. Provide doors with self-closing hardware and locks.

1.10 PROTECTION OF INSTALLED WORK

A. Provide temporary protection for installed products. Control traffic in immediate area to minimize damage.

B. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings. Protect finished floors from traffic, movement of heavy objects, and storage.

C. Prohibit traffic and storage on waterproofed and roofed surfaces, on lawn and landscaped areas.

1.11 SECURITY

A. Provide a project security program to protect work, stored products and construction equipment from theft and vandalism.

B. Initiate security program promptly after job mobilization. Maintain security program throughout construction period.

C. Provide control of all persons and vehicles entering and leaving project site after work hours and on weekends.

1.12 WATER CONTROL

A. Control accumulation of waste materials and rubbish; weekly dispose of off-site. Clean up site daily; also clean dirt and mud from streets adjacent to Construction Entrances daily.

B. Clean interior areas daily and prior to start of finish work, maintain areas free of dust and other contaminants during construction operations.

1.13 PROJECT IDENTIFICATION AND TEMPORARY SIGNAGE

A. Provide Navy Federals construction sign as shown in the drawings.

B. Erect on site at location established by Architect the Contractor’s signage and the Architects signage as allowed by the owner and local ordinances.

C. Allow no other sign to be displayed.

1.14 FIELD OFFICE

A. Contractor's shall provide a weather tight field office for the use by the Contractor, Owner, and Architect. The office shall be provided with windows which operate, doors with locks, tables, benches, racks for the Drawings, electric lights, telephone and fax, and shall be air conditioned.

B. Provide adequate space for storage and reference of construction documents and samples.

C. Storage Sheds for Tools, Materials, and equipment: Weather-tight, with adequate space for organized storage and access, and lighting for inspection of stored materials.

1.15 REMOVAL

A. Remove temporary materials, equipment, services and construction prior to Substantial Completion inspection.

B. Clean and repair damage caused by installation or use of temporary facilities. Remove underground installations to a depth of 2 feet; grade site as indicated.

1.16 DIGITAL CAMERA

A. Contractor shall keep and maintain digital camera and equipment necessary to transfer digital images to architect and consultants

END OF SECTION

SECTION 01560 - ENVIRONMENTAL PROTECTION

PART 1 – GENERAL

1.01 DEFINITIONS OF CONTAMINANTS

A. Sediment: Soil and other debris that has been eroded and transported by runoff water.

B. Solid Waste: Rubbish, debris, garbage, and other discarded solid materials resulting from industrial, commercial, and agricultural operations, and from community activities.

C. Rubbish: A variety of combustible and noncombustible wastes such as paper, boxes, glass, crockery, metal, lumber, cans, and bones.

D. Debris: Includes combustible and noncombustible wastes, such as ashes, waste materials that result from construction or maintenance and repair work, leaves, and tree trimmings.

E. Chemical Wastes: Includes salts, acids, alkalies, herbicides, pesticides, and organic chemicals.

F. Sanitary Wastes:

1. Sewage: Wastes characterized as domestic sanitary sewage.

2. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

G. Oily Waste: Includes petroleum products and bituminous materials.

1.02 ENVIRONMENTAL PROTECTION REQUIREMENTS

A. Provide and maintain during the project environmental protection as required by ordinance or law and as defined herein. Provide environmental protection measures as required to control pollution that develops during normal construction practice. Provide also environmental protective measures required to correct conditions that develop during the construction of permanent or temporary features associated with the project. Comply with all federal, state, and local regulations pertaining to water, air and noise pollution.

B. Develop an environmental protection plan for the project prior to the commencement of the work. Communicate such plan to site personnel and sub-contractors working on the site.

PART 2 – EXECUTION

2.01 PROTECTION OF NATURAL RESOURCES

A. The natural resources within the project boundaries and outside the limits of permanent work performed under this contract shall be preserved in the existing condition or restored to an equivalent or improved condition upon completion of the work. Confine construction activities to areas defined by the work schedule, drawings, and specifications.

B. Land Resources: Except in areas indicated to be cleared, do not remove, cut, deface, injure, or destroy trees or shrubs without special permission from the Architect. Do not

fasten or attach ropes, cables, or guys or any existing nearby trees for anchorages unless specifically authorized. Where such special emergency use is authorized, the Contractor shall be responsible for any resultant damage.

C. Protection: Protect existing trees, landscape features and other natural resources which are to remain and which may be injured, bruised, defaced, or otherwise damaged by construction operation. Remove displaced rocks from un-cleared areas. Protect monuments, markers, and works of art.

D. Repair or Restoration: Repair or restore to their original condition all trees or other landscape features scarred or damaged by the equipment or operations. Obtain approval of the repair or restoration from the Architect prior to its initiation.

E. Temporary Construction: Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, and all other vestiges of construction. Temporary roads, parking areas, and similar temporary use areas shall be graded in conformance with surrounding areas, tilled, seeded, and mulched. Include topsoil or nutriment during the seeding operation as necessary to establish a suitable stand of grass.

2.02 CONTROL AND DISPOSAL OF SOLID, CHEMICAL, AND SANITARY WASTES

A. On a daily basis pick up solid wastes and place in containers that are emptied on a regular schedule. The preparation, cooking, and disposing of food are strictly prohibited on the project site. Conduct handling and disposal of wastes to prevent contamination of the site and other areas. On completion, leave areas clean and natural looking. Remove signs of temporary construction and activities incidental to construction of the permanent work in place.

B. Dispose of rubbish and debris in accordance with the requirements specified herein.

C. Remove rubbish and debris form the property and dispose of it in compliance with federal, state, and local requirements.

D. On a daily basis place garbage in appropriate containers that are emptied on a regular basis. The Contractor shall be responsible for providing pickup and disposal service of containers.

E. Provide and use chemical toilets or comparably effective units on-site and periodically empty wastes by a method approved by the local municipality. Include provisions for pest control and elimination of odors.

F. Store chemical waste in corrosion resistant containers labeled to identify type of waste and date filled. Remove containers from the project site.

G. Petroleum Products: Conduct fueling and lubricating of equipment and motor vehicles in a manner that affords the maximum protection against spills and evaporation. Dispose of lubricants to be discarded and excess oil in accordance with approved procedures meeting federal, state, and local regulations.

2.03 DUST CONTROL

A. Keep dust to a minimum at all times, including non-working hours, weekends, and holidays. Sprinkle or treat, with dust suppressors, the soil at the site, haul roads, and other areas disturbed by operations. No dry power brooming is permitted. Instead use

vacuuming, wet mopping, wet sweeping, or wet power brooming. Air blowing is permitted only for cleaning non-particulate debris, such as steel reinforcing bars. No sandblasting is permitted unless dust herefrom is confined. Only wet cutting of concrete blocks, concrete, and asphalt is permitted. No unnecessary shaking of bags is permitted where bagged cement, concrete mortar, and plaster is used.

END OF SECTION

SECTION 01570 – DEMOLITION FOR REMODELING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Remove designated portions of building for equipment and fixtures.

1.02 RELATED WORK

A. Section 01005 - ADMINISTRATIVE PROVISIONS

B. Section 01500 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS.

1.03 EXISTING CONDITIONS

A. Conduct demolition to minimize interference with adjacent building areas to remain.

PART 2 - EXECUTION

2.01 PREPARATION

A. Protect existing items which are not indicated to be altered.

2.02 EXECUTION

A. Demolish in an orderly and careful manner. Protect existing supporting structural members.

B. Except where noted otherwise, immediately remove demolished materials from site.

C. Remove materials to be re-installed or retained in manner to prevent damage. In case of doubt, obtain clarification from Architect before removal.

D. Remove and promptly dispose of contaminated, vermin infested, or dangerous materials encountered.

E. Do not burn or bury materials on site.

F. Remove demolished materials from site as work progresses. Upon completion of work, leave areas of work, leave areas of work in clean condition.

END OF SECTION

SECTION 01600 - MATERIAL AND EQUIPMENT

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

A. Products.

B. Workmanship.

C. Manufacturer's Instructions.

D. Transportation and Handling.

E. Storage and Protection

F. Substitutions and Product Options.

1.02 RELATED REQUIREMENTS

A. Section 01030 - ADMINISTRATIVE PROVISIONS.

B. Section 01300 - SUBMITTALS.

C. Section 01700 - CONTRACT CLOSEOUT.

1.03 PRODUCTS

A. Products include material, equipment, and systems.

B. Comply with Specifications and referenced standards as minimum requirements.

C. Components required to be supplied in quantity within a Specification Section shall be the same, and shall be interchangeable.

1.04 TRANSPORTATION AND HANDLING

A. Transport and handle products by methods to avoid product damage; deliver in undamaged condition in manufacturer's unopened containers or packaging, dry.

B. Provide equipment and personnel to handle products by methods to prevent soiling or damage.

C. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

D. Schedule all delivery of materials to coincide with installation, or provide a protected storage area in which to safely store materials.

1.05 STORAGE AND PROTECTION

A. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight enclosures; maintain within temperature and humidity ranges required by manufacturer's instructions.

B. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.

C. Store loose granular materials on solid surfaces in a well-drained area; prevent mixing with foreign matter.

D. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged, and are maintained under required conditions.

E. After installation, provide coverings to protect products form damage form traffic, weather and construction operations. Remove coverings when no longer needed.

1.06 SUBSTITUTIONS AND PRODUCT OPTIONS

A. All materials, equipment, products, etc... shall be as specified and as shown.

END OF SECTION

SECTION 01700 - CONTRACT CLOSEOUT

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

A. Closeout Procedures.

B. Final Cleaning.

C. Project Record Documents.

D. Operation and Maintenance Data.

E. Systems Demonstration.

F. Warranties and Bonds.

1.02 RELATED REQUIREMENTS

A. GENERAL CONDITIONS.

B. SUPPLEMENTARY CONDITIONS.

1.03 PROJECT CLOSE-OUT

A. Project close-out refers to certain requirements related to project completion that are to be fulfilled prior to final acceptance by the Owner.

B. Final inspection: Upon request from the Contractor, the Architect will perform a final visit to the job site. Results of the final visit will be the “punch-list”. All items on the punch-list and all other non-conforming or unsatisfactory work must be remedied before final acceptance. The punch-list shall not, by inclusion or exclusion of any item, limit or excuse the Contractor from any requirements of the Contract Documents or from correcting deficient work.

C. Cleaning – The project must be provided in clean condition at time of final acceptance. Remove all rubbish. Remove marks, stains, soil, and fingerprints from all completed work including plumbing, electrical, mechanical equipment and all finish surfaces and glass. Use power washing or other appropriate methods as necessary to provide the project in clean condition.

D. Submit final meter readings for utilities and coordinate transfer for future billings with the Owner.

1.04 CLOSEOUT PROCEDURES

A. Comply with procedures stated in General Conditions and Supplementary Conditions of the Contract for issuance of Certificate of Substantial Completion.

B. When Contractor considers Work has reached Final Completion, submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect's final visit and punch-list.

C. In addition to submittals required by the Conditions of the Contract, provide submittals required by governing authorities.

1.05 FINAL CLEANING

A. Execute prior to final acceptance by the Owner.

B. Clean interior and exterior surfaces exposed to view; remove temporary labels, marks, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces. Clean equipment and fixtures to a sanitary condition, clean or replace filters of mechanical equipment. Clean roofs and drainage systems. Verify that roof drains, scuppers and downspouts flow freely and are not blocked by debris.

C. Clean site; sweep paved areas, rake clean other surfaces.

D. Remove waste and surplus materials, rubbish, and construction facilities from the Project and from the site. Contractor shall provide a final cleaning after final acceptance.

1.06 PROJECT RECORD DOCUMENTS

A. Store record documents required in General Conditions separate from those used for construction.

B. Keep documents current; do not permanently conceal any work until required information has been recorded.

C. Prior to Final Payment, submit documents to Architect with transmittal letter containing date, Project title, Contractor's name and address, list of documents, and signature of Contractor.

1.07 OPERATION AND MAINTENANCE DATA

A. Provide data for:

1. Mechanical equipment and controls - Division 15.

2. Electrical equipment and controls - Division 16.

3. All other equipment which may require such data.

B. Submit two sets prior to Substantial Completion, bound in 8 1/2 x 11 three-ring side binders with durable plastic covers.

C. Provide a separate section for each system with a table of contents and index tabs.

D. Part 1: Directory, listing names, addresses, and telephone numbers of: Architect, Contractor and subcontractors.

E. Part 2: Operation and maintenance instructions, arranged by system. For each system, give names, addresses, and telephone of subcontractors and suppliers. List:

1. Appropriate design criteria.

2. List of equipment.

3. Parts list.

4. Operating instructions.

5. Maintenance instructions, equipment.

6. Maintenance instructions, finishes.

7. Shop drawings and product data.

8. Warranties.

1.08 SYSTEMS DEMONSTRATION

A. Prior to final inspection, demonstrate operation of each system to Architect and Owner.

B. Instruct Owner's personnel in operation, adjustment, and maintenance of equipment and systems, using the operation and maintenance data as the basis of instruction.

1.09 WARRANTIES AND BONDS

A. Provide duplicate, notarized copies. Execute Contractor's submittals and assemble documents executed by subcontractors, suppliers, and manufacturers. Provide table of contents and assemble in binder with durable plastic cover.

B. Submit material prior to final application for payment. For equipment put into use with Owner's permission during construction, submit within 10 days after first operation. For items of Work delayed materially beyond Date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

C. Submit required warranties in three ring two-inch vinyl binders organized into the appropriate divisions.

1.10 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide products, spare parts, and maintenance materials in quantities as specified in each Section, in addition to that required for completion of Work. Coordinate with Owner, deliver to Project site and obtain receipt prior to final payment.

B. Turn over the following attic stock to the Owner for storage at the facility. See specification section for quantity:

1. Acoustic Ceiling Tiles

2. Resilient Flooring

3. E.I.F.S. Finish Coat

4. Any additional attic stock required by other sections in these specifications.

END OF SECTION

SECTION 01720 - PROJECT RECORD DOCUMENTS

1.01 MAINTENANCE OF DOCUMENTS

A. Maintain at the job site office, one copy of the Project Record Documents, including:

1. Contract Drawings, Specifications, and Addenda.

2. Reviewed Shop Drawings.

3. Change Orders and other modifications to contract.

4. Field test Records.

5. Notations of actual construction conditions and departures from the Contract Documents

B. Provide files and racks for storage of Documents.

C. File Documents in accordance with Project Filing Format of Uniform Construction Index.

D. Maintain Documents in clean, dry legible condition.

E. Do not use Record Documents for construction purpose.

F. Make documents available at all times for inspection by Architect and Owner.

1.02 RECORDING

A. Label each document "PROJECT RECORD".

B. Keep Record Documents current.

C. Do not permanently conceal any work until required information has been recorded.

D. Contract Drawings: Legibly mark to record actual construction:

1. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.

2. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.

3. Field changes of dimensions and detail.

4. Changes made by Change Order or Field Order.

5. Details not on original Contract Drawings.

E. Specifications and Addenda: Legibly mark up each Section to record:

1. Manufacturer's, trade name, catalog number, and Suppliers of each product and item of equipment actually installed.

2. Changes made by Change Order or Field Order.

3. Other matters not originally specified.

F. Shop Drawings: Maintain as Record Documents; legibly annotate drawings to record changes made after review.

1.03 SUBMITTAL

A. At completion of project, deliver Project Record Documents to the Owner for their records and use in maintaining and operating the project.

B. Accompany submittal with transmittal letter, in duplicate, containing:

1. Date, Project title and number, Contractor's name and address.

2. Title and number of each Record Document.

3. Certification that each document as submitted is complete and accurate.

4. Signature of Contractor, or his authorized representative.

END OF SECTION

01800 - CLEANING AND MAINTENANCE

PART 1 – GENERAL

1.01 SUMMARY

A. Keep the buildings and site well-organized and clean throughout the construction period.

B. Provide general clean up daily and complete weekly pickup and removal of all scrap and debris from the site. Exception: Reusable scrap shall be stored in a neatly maintained, designated storage area.

C. Weekly pickup shall include a thorough broom-clean sweep of all interior spaces. Also, each week, sweep paved areas on the site and public paved areas adjacent to the site. Completely remove swept dirt and debris. Daily and weekly cleanings will not replace required clean up after the work of specific trades such as specified herein.

D. At completion of the Work, remove from the job site all tools and equipment, surplus materials, equipment, scrap and debris.

E. Exterior of building: Inspect exterior surfaces and remove all waste materials, paint droppings, marks, spots, stains or dirt. Power wash or use other appropriate methods as necessary to provide a clean project.

F. Interior of building: Inspect interior surfaces and remove all waste materials, paint droppings, spots, stains or dirt.

G. Glass: Clean inside and outside so there are no spots or dirt, and no smudges or streaks remain from the cleaning process.

H. Schedule final cleaning as approved by the Owner to enable Owner to accept a completely clean Work.

I. Final cleaning shall be comparable to that provided by professional, skilled cleaners using commercial grade cleaning materials. Cleaning materials shall be used with care and shall be compatible with building materials and finishes. Final cleaning shall include removal of scraps or waste in landscaped areas and thorough cleaning of walkways, desks, paved areas and public paved areas adjacent to the site.

END OF SECTION

SECTION 02190 – SITEWORK / EXCAVATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. The extent of site work is shown on drawings.

B. Site work may include, but is not limited to:

1. Demolition (if required) of existing structures, walks & pavements, utilities and miscellaneous improvements.

2. Site clearing of trees, irrigation, topsoil stripping, clearing and grubbing.

3. Earthwork: preparation of subgrade for building slabs, foundations walks, drainage fill, structural fill and backfilling.

4. Termite Control - Provide site treatment for termite control in those geographic locations where termites are present.

C. Identify location of above ground & below ground remediation equipment.

1.02 QUALITY ASSURANCE.

A. Maximum permitted slope on site shall be 1:20 (5%). Minimum permitted slope on site shall be 1.5% to insure positive drainage. Maximum entrance slab slope up to doorway shall not exceed 2.0%.

B. Testing: Employ a testing laboratory, acceptable to the Owner, to perform soil and quality control testing as required. Copies of test reports shall be submitted to the Architect/Engineer-of-Record upon request.

1. Soil reports of actual unconfined compressive strength of each strata tested. Verify soil/fill-bearing capacity conforms to design requirements. Perform one test at each column pad and per each 50 lft. of foundation

2. Field density tests. Perform at least one test per each 2,500-sq. ft. per lift of fill.

3. Trench Backfill: Perform at least one test per each 100 lineal feet of trench. Re-compact and retest density and compaction of any trench installed after building pad testing has been performed.

4. Foundation wall backfill inside and outside shall have compaction tests made every 50lft. Tests shall be performed on each 12” lift.

5. Provide subgrade modulus tests, one for each 2,500 square feet of pavement placed on natural soils.

6. Optimum moisture/maximum density tests. Perform one test per each type fill and each 1,000 cu. yds. of material.

7. Final building pad verification letter, submitted by the Geotechnical Engineer at the completion of grading operations, summarizing satisfactory completion of all tests performed prior to slab placement.

C. Warranty/Termite Control: Furnish written warranty certifying that soil poisoning treatment will prevent infestation of termites for five years from date of treatment. Provide installer certification that three applications have been applied as required.

1. Contractor will pretreat soil and repair/replace any damage caused by infestation.

1.03. JOB CONDITIONS

A. Existing Utilities: Locate, disconnect, cap and remove existing utilities within the site.
1. Make arrangements as required to relocate/re-route those utilities serving others off-site.

PART II - PRODUCTS

2.01 MATERIALS

A. Satisfactory soil materials are defined as those complying with ASTM D2487-00 soil classification groups, GW, GP, GM, SM, SW and SP. On sites where specific conditions cause any of the listed soils to be unsatisfactory, the Soils Engineer shall specify alternate satisfactory materials.

B. Subbase Material: Provide CA-6, naturally or artificially graded mixture of natural or crushed gravel, crushed stone, crushed slag, natural or crushed sand conforming to ASTM D-2940-03 with at least 95% passing a 1-1/2 inch sieve and not more that 8% passing a No. 200 sieve

C. Drainage Fill: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, with 100% passing a 1-1/2" sieve and not more than 5% passing a No. 4 sieve.

D. Backfill and Fill Materials: Satisfactory soil materials free of clay, rock or gravel larger than 2" in any dimension, debris, waste, frozen materials, vegetable and other deleterious matter.

2.02. SOIL TREATMENT

A. All solutions must be environmentally friendly. Consult the structural pest control regulatory agency of your State prior to use of any product. Provide a solution of one of the following. Fuel oil is not permitted as a diluent. Mix with water at the manufacturers prescribed rate for the conditions encountered.
1. Permethrin; 36.8% combined with 63.2% inert ingredients in water emulsion.

2. Bifenthrin; 25.1% combined with 74.9% inert ingredients in water emulsion.

3. Cypermethrin; 24.8% combined with 75.2% inert ingredients in water emulsion.

Acceptable manufacturers: Dragnet ® SFR, Prevail ® FT manufactured by FMC Corporation.

PART III - EXECUTION

3.01 SITE CLEARING

A. Clearing and Grubbing: Clear site of trees, shrubs and other vegetation, except for those indicated to remain.
1. Completely remove stumps, roots, and other debris protruding through ground surface.

2. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, meeting compaction requirements, unless further excavation or earthwork is indicated.

B. Removal of Improvements: Remove existing above-grade and below grade improvements necessary to permit construction including abandoned underground piping or conduit interfering with construction. Fill resulting excavations with satisfactory materials meeting compaction requirements.

3.02. EXCAVATION

A. Earth Excavation includes excavation of pavements and obstructions visible on ground surface; underground structures, utilities and other items indicated to be demolished and removed; together with earth and other materials encountered.

B. Excavation for Structures: Conform to elevations and dimensions shown. For footings and foundations extend excavation below frost line and do not disturb bottom of excavation.

C. Excavation for Pavements: Cut surface to comply with cross-section, elevations and grades as shown.

D. Excavation for Trenches: Grade bottoms of trenches as required/indicated, notching under pipe bells to provide solid bearing for entire pipe.

E. Shoring/Bracing: Provide shoring, bracing required to support adjoining soils, buildings, etc.

F. Pumping: Keep excavations, and entire subgrade area free of water. Do not operate any system that will loosen existing soils or cause the subsoils to be removed or shifted from their original position.

3.03 COMPACTION

A. Percentage of Maximum Density Requirements: Compact soil to not less than the following percentages of maximum density for soils exhibiting a well-defined moisture density relationship (cohesive soils) in accordance with ASTM D 1557 current edition; or in accordance with ASTM D4253 current edition, for soils which not exhibit a well-defined moisture-density relationship (cohesionless soils).

1. Structures, Foundation Wall Backfill, Building Slabs and Steps, Pavements: Compact each layer at 90% maximum density for cohesive material or 95% relative density for cohesionless material.

2. Lawn or Unpaved Areas: Compact each layer at 85% maximum density for cohesive soils and 90% relative density for cohesionless soil.

3. Walkways: Compact each layer at 90% maximum density for cohesive material or 95% relative density for cohesionless material.

4. Trenches: Compact fill to conform to requirements of area in which trench is installed.

3.04 BACKFILL AND FILL

A. General: Place acceptable soil material in not greater than 8” uncompacted layers to required subgrade elevations, for each area classification listed below.

1. In excavations, use satisfactory excavated, borrow or import material.

2. Under Landscaped areas, use satisfactory excavated, borrow or import materials.

3. Under walks and pavements, use subbase material, or satisfactory , borrow or import material.

4. Under steps, use subbase material.

5. Under building slabs, use drainage fill material.

6. Under piping and conduit, use subbase material; shape to fit bottom 90 degrees of cylinder.

3.05 GRADING:

A. General: Uniformly grade areas, including adjacent transition areas. Smooth finished surface, compact with uniform levels or slopes between points where elevations are indicated and existing grades.

B. Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding.

C. Grading Surface of Fill under Building Slabs: Grade smooth, free of voids, compacted as specified, to required elevation.

D. Compaction: After grading, compact subgrade surfaces to the depth and indicated percentage of maximum of relative density for each area classification.

3.06 TERMITE CONTROL TREATMENT

A. Apply treatment in strict compliance with manufacturers written instructions. Do not disturb treated areas. Provide a blue “spray indicator” mixed with termiticide to indicate treated areas.

B. Apply treatment in three applications.

1. First Application: pre-treat general slab areas and around utility entry points.

2. Second Application: pre-treat against exterior foundation walls, beneath sidewalks and driveways.

3. Third Application: treat adjacent to exterior walls after landscaping is complete.

C. Reapply treatment to areas disturbed by construction activity following application.

D. Treat foundation walls and areas under building slabs. Termiticide must come in contact with the foundation wall. Applying the termitcide to the outer surface of foundation insulation boards of protection boards is not acceptable.

END OF SECTION

SECTION 02500 - PAVING & SURFACING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Extent of paving and surfacing is shown on the drawings and includes but is not limited to:

1. Asphalt paving.

2. Heavy duty paving at all truck traffic areas.

3. Pavement markings.

4. Wheel stops.

5. Signs and posts for handicapped parking required by ADA.

1.02 QUALITY ASSURANCE

A. Continuous inspection is required during placement of all asphalt concrete. Contractor shall provide continuous inspection by a third party testing/inspection company acceptable to the Owner.

B. Comply with and perform all paving work in accordance with the Standard Specifications for Road Construction (latest edition) of the Department of Transportation (Highway) of the state in which the store is located and the Asphalt Institute "Specifications for Paving and Industrial Applications (SS-2), information series documents IS 91 and IS 87.

C. Design Requirements: (Based on 20-year pavement life)
Daily Traffic: 1200 passenger vehicles, 10 single unit trucks,
2 multi-unit trucks

D. Pavement to be designed and sealed by a professional engineer, using design requirements above and soil sub grade modulus recommended by soil consultant.

E. Provide compaction tests of soil subgrade at not less than 1 test per each 2,500 s.f. around the building

F. Asphalt cement materials shall conform to ASTM D-3515.

G. Obtain materials from same source throughout project.

H. At Owners discretion “suspect” installation will be tested for conformance to State D.O.T. Specifications by:

1. Using proper rolling equipment for: Breakdown, compaction and finishing.

2. Coring, extraction and gradation for compliance with approved job mix formula.

3. Density testing to verify conformance to State Department of Transportation Standards.

Non complying installations will be replaced at the contractor’s expense.

1.03. JOB CONDITIONS

A. Establish grades, lines and elevations to drain water away from buildings, prohibit ponding and accommodate adjoining work and property.

B. Subgrade Conditions: Provide subgrade improvements as required to correct adverse conditions caused by permeability, frost potential and unstable soils.

1.04 GUARANTEE

A. Contractor shall guarantee in writing, the materials and workmanship in accordance with Section 01010, for a period of two (2) years, beginning on the date of substantial completion or Owner's possession, which ever comes later. This provision also applies to concrete pavements.

1.05 SUBMITTALS

A. Submit the following to the Architect of Record

1. Laboratory reports of compaction tests and proof rolling of soil sub-grade.

2. Pavement Surface Smoothness tests.

3. Approved pavement design mix.

PART II - PRODUCTS

2.01 MATERIALS

A. Asphalt Aggregate Mix: Plant-mixed, medium volume, hot laid asphalt-aggregate mixture AC 10 or AC 20 complying with ASTM D 3515 and as recommended by local paving authorities to suit project conditions and as follows:

ASPHALT GRADE	TEMPERATURE CONDITION
Use AC 10 for:	Cold, mean annual air temperature $\leq$ 7 degree C (45 degree F)
Use AC 10 or AC 20 for:	Warm, mean annual air temperature between 7 degree C (45 degree F) and 24 degree C (75 degree F)
Use AC 20 for:	Hot, mean annual air temperature $\geq$ 24 degree C (75 degree F)

B. Plant Mixed Asphalt Base/Binder Course: Provide one course laid to a compacted thickness of 2 inches.

C. Plant Mixed Asphalt Surface Course: Provide one course laid to a compacted thickness of 1-1/2 inches.

D. Prime Coat: Cut back asphalt type; AASHTO M82, MC-30, MC-70 or MC-250. Apply material over compacted subgrade to penetrate and seal. Slow cure (SC) or rapid cure (RC) liquid asphalt may be used depending on weather/climate conditions. Cure as necessary.

E. Tack Coat: Emulsified asphalts AASHTO M 140 or M 208: SS-1, SS-1h, CSS-1, CSS-1h, diluted with one part water to one part emulsified asphalt. Apply to contact surfaces of previously constructed asphalt.

2.02 MISCELLANEOUS PRODUCTS

A. Pavement Marking Paint: FS-TT-P-1952D (waterborne), Type II (adverse conditions), color; as indicated on drawings or as required by local codes.

B. Wheel Stops: Precast of 3,500 psi air-entrained concrete, approximately 6" high 9" wide, and 7'-0" long, with chamfered corners and drainage slots on underside. Color: Paint two coats blue at accessible parking stalls, yellow at all other parking stalls.

C. Delineation Post: FlexStake model SM-703-Y-W-W, 36” high, yellow, by FlexStake (800) 348-9839, 2150 Andrea Lane, Ft. Myers, FL 33912

D. Security Bollar Cover: Polyethylene thermoplastic bumper post sleeve by Ideal Shield® (313-842-7290) or equal, color; as shown on the drawings

E. Stormwater Management Grates/Catch Basin Covers: Provide cast iron units with bicycle safe grates that will not allow bicycle tires to drop down into opening.

F. Bicycle Racks (when required): Provide undulating tubular steel by the following manufacturers or equal as approved by the Architect-of-Record:

“Ribbon Rack” # RB 07 by AAA Ribbon® Rack Co.
“CycLoop” #2170-7 by Columbia Cascade
“Thunderbolt” #TB-7 by Creative Pipe, Inc.
“Heavy Duty Winder” #HW 238-7 by Madrax

Finish: Hot-dipped galvanized,
Mounting: Permanent in ground mount.
Capacity: 7 bicycles

PART III - EXECUTION

3.01 SURFACE PREPARATION

A. Compact soil subgrade to 95% of standard proctor density. Proof roll and repair all unstable areas of the prepared subgrade.

B. Compact subbase to 95% of standard proctor density. Proof roll and repair all unstable areas of the prepared subbase.

C. Install pavement markings with mechanical equipment after pavement has been properly cured. Apply to 10.3 mil wet film thickness, 6.0 mil dry film thickness.

D. Secure wheel stops to pavement with galvanized steel dowels.

3.02 FIELD QUALITY CONTROL:

A. General: Repair or remove and replace unacceptable or non-compliant paving, as determined by an independent testing laboratory.

B. Surface Smoothness: Surfaces will not be acceptable if exceeding the following tolerances for smoothness when tested with a 10' straight edge.

1. Wearing Course Surface: 3/16".

2. Pavement variation from true design elevation : 1/4”.

3. Areas which pond water for longer than 24 hours will be cut out and replaced with hot mixed asphalt.

END OF SECTION

SECTION 02830 - CHAIN LINK FENCING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Furnish and install fence materials.
   1. Provide temporary chain link fencing as required to secure entire site for duration of construction.

   2. Provide additional chain link fencing as indicated on the drawings.

   3. Install privacy slats when opaque screening is required by municipality.

1.02 QUALITY ASSURANCE

A. All work to be performed by a single firm specializing in chain link fences.

B. All fence materials shall be manufactured by a single source.

C. Comply with the recommendations of the Chain Link Manufacturers Institute and ASTM F 668.

D. Install fencing in compliance with ASTM F-567.

PART II PRODUCTS

2.01 FENCE FABRIC

A. Fabric: 9 gage (0.148") steel wires, 2" mesh with top selvages knuckled and bottom selvages twisted and barbed.
   1. Breaking strength: 1,290-lb minimum.

   2. Weight of metallic coating; 0.30 oz./ft^2 minimum zinc or zinc-5% aluminum alloy coating.

B Fabric Finish: Class 2a PVC coated steel chain link.
   1. PVC coating: 0.015-in. minimum thickness at any point, 0.025-in. maximum thickness at any point.

   2. Color: Black.

2.02 FRAMING AND ACCESSORIES

A. Steel Framework, General: Galvanized steel, ASTM A-123.
   1. Pipe: Type 1 or Type 2 round galvanized pipe.

   2. Zinc Coating: ASTM A-90
      Type 1 not less than 1.8 oz./ft^2 .
   3. Type 2 not less than 2 oz./ft^2 .

B. Terminal, Corner, Pull and Gate Posts: 2.375" dia. (nom. o.d.) pipe.

C. Rails and Post Braces: Not less than 1.66" dia. (nom. o.d.) pipe. Top rails in a continuous run shall not be less than 18 ft. long.

D. Intermediate Posts: Not less than 1.90" dia. (nom. o.d.) pipe, spaced not exceeding 8'- 0" o.c.

E. Gate Frames: Not less than 1.90" dia. (nom. o.d.) pipes with welded corners.

F. Post Tops: Weathertight ornamental closure caps, fitting over each post, provide caps with loop to receive top rails.

G. Tension Bars: Not less than $\frac{3}{16}$" x $\frac{3}{4}$" and not less than 2 " shorter than normal height of fabric being attached. Provide one for each end and gatepost, two at each corner of pull post.

H. Tension Wire: 9 gage (0.148 in.) metallic coated core wire, breaking strength 1,290 lb, with class 2a PVC coating, color to match fence fabric.

I. Ties or Clips: Sufficient quantity and strength to support fabric, but not exceeding 15 " intervals at posts nor 24" intervals at top rails. Tie wire shall be 11 gage galvanized steel wire, finish to match fabric.

J. Bands or Clips: ASTM F-626 galvanized steel in sufficient quantity to attach fabric and stretcher bars to all terminal posts at intervals not exceeding 15 ".

1. Tension bands shall be flat or beveled steel, min. thickness after galvanizing of 0.078", min. width of $\frac{3}{4}$" for posts 4"o.d. or less. Min. thickness after galvanizing of 0.108", min. width of $\frac{7}{8}$" for posts larger than 4"o.d.

2. Brace bands shall be flat or beveled steel, min. thickness after galvanizing of 0.108", min. width of $\frac{3}{4}$". Attachment bolts shall be $\frac{5}{16}$" x 1 $\frac{1}{4}$" galvanized carriage bolts with nuts.

K. Top Rail Couplings: Galvanized, 6" min. length.

L. Privacy Slats; Semi-rigid fiberglass inserts, nom. thickness 0.06", installed horizontally or vertically and secured with pop rivets at each slat end.
Width: 1.20" at horizontal installation, 1.06" at vertical installation.
Color: To be selected by Navy Federal.

2.03 GATES

A. Frames: Zinc coated conforming to ASTM F-1043 and/or ASTM F-1083. Coat welded joints in accordance with ASTM A 780. Install diagonal cross bracing to ensure rigidity.

B. Gate fabric shall match fence fabric.

C. Gate Hinges shall structurally support gate without sag, and allow gate to swing 180^0 without binding. Provide 1 $\frac{1}{2}$ pair per leaf.

D. Gate Latches: Fork or plunger bar type for operation from either side of gate, with integral padlock eye. Single latch shall retain gate in closed position. Double gate latches shall be a drop rod or plunger bar, designed to engage a gate stop. Both leafs to be locked with single padlock.

PART III EXECUTION

3.01 INSTALLATION

A. Terminal Posts (end, corner and gate): shall be set at beginning and end of each continuous length of fence or horizontal alignments.

B. Post Foundations: concrete, with hole diameters as shown, but not less than four times the largest cross section of post and hole bottom not less than 48" below finish grade. Crown concrete to shed water.

1. Concrete: 2500 psi at 28 days
   Portland Cement: ASTM C-150.
   Aggregates: ASTM C-33, I" max. size.
   Water: Drinkable.
   Slump: 3"

   Air Entrainment: 2% to 4%.

2. Set bottom of posts 3" above bottom of hole.

C. Posts: Set vertically, plumb and properly aligned.

D. Top Rails: Run continuously through post caps, support at each end to form continuous brace from end to end, provide expansion couplings as necessary.

E. Fence Fabric: Place on outside of enclosed area. Provide tension to remove slack and create a smooth uniform, sag free appearance. Secure to posts at intervals not exceeding 15" o.c. and to rails at intervals not exceeding 24" o.c. Install fabric bottom 4" above finished grade. Fabric shall be continuous between terminal posts.

F. Brace Assemblies: Install so posts are plumb when diagonal rod is under proper tension.

G. Stretcher Bars: Thread through or clamp to fabric at 4" o.c. and secure to posts with metal bands spaced 15" o.c. max.

H. Tie Wires: U-shaped conforming to diameter of pipe to which attached. Firmly clasp pipe and fabric and twist ends 2 full turns. Bend wire ends to minimize hazard to persons/clothing.

END OF SECTION

SECTION 02900 – LANDSCAPING / IMPROVEMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Furnish and install landscape materials and a landscape irrigation system as shown in drawings. The extent of landscaping shall be the minimum amount required for municipal approval. Provide materials, which require minimal maintenance and are geographically suited to their local and surrounding conditions.
   1. The extent of landscaping is shown on the drawings.

   2. Furnish and install the landscape irrigation system at all landscaped areas complete with all valves, controls, accessories and electrical components.

B. Include all excavation, filling and grading required.

C. Provide a separate, municipally monitored water meter for the landscape irrigation system.

1.02 QUALITY ASSURANCE

A. All works to be performed by a single firm specializing in landscape work.

B. All landscape materials shall be free of defects, disease, insects/larvae/eggs, injuries and disfigurement. Provide plant materials rated between 1 and 4 per OPALS (Ogren Plant Allergy Scale).

C. Landscape Irrigation: a person licensed in the state in which the store is located shall design System. The system designer shall perform hydraulic and friction loss calculations to provide balanced pressure and flow and optimum operating efficiency.

1.03 SUBMITTALS

A. Landscaping Plan; indicating placement of all materials including legends describing plant name and size.

B. Irrigation Plan and Zone Map; Wall mounted 8 ½" x 11" or 11" x 17", indicating location of all controls, piping, heads (including type), valves and connection to water service.

C. Maintenance Manuals; indicating proper care of plant material and operation/maintenance of irrigation system.

1.04 GUARANTEE

A. Warranty lawns after installation and for 30 days following acceptance of site by the Owner.

B. Warranty trees and shrubs for one year following acceptance of site by the Owner. Maintain materials after installation and for 30 days following acceptance of site by the Owner.

C. Replace all unhealthy or dead plant materials found during warranty period.

D. Warranty irrigation system materials and labor for one year following acceptance of site by the Owner.

PART II - PRODUCTS

2.01 PLANT MATERIALS

A. Topsoil: Provide friable natural loam, free from rocks, stones, weeds, brush, clay lumps, roots, twigs, litter and environmental contaminants.

B. Trees and shrubs as indicated on the landscape plan.

C. Sod: Provide strongly rooted drought resistant sod, not less than 2 years old, free of weeds and undesirable native grasses and machine cut to pad thickness of 3/4" (+ 1/4"), excluding top growth and thatch. Provide only sod capable of vigorous growth and development when planted (viable, not dormant).

D. Weed Barrier Fabric: Provide black polypropylene sheet 27 mils thick, 4 oz./sq. yd., grab tensile strength per ASTM D-4632; 90LB (machine direction) 50 lbs. (cross machine direction). Provide DeWitt “Weed Barrier” or approval equal.

E. Mulch: Provide minimum 2" thick layer of shredded bark mulch or Pro-Mulch™ by Rubber Impact Technologies (813-635-0545). Pine straw mulch is prohibited
   1. Rubber Mulch: 95% passing a 1-1/2 inch sieve and not more than 5% passing a ½ inch sieve.

F. Pre-Emergent: Provide a mixture with active ingredients consisting of "a-a-a-trifluoro-2, 6-dinitro-n, n-dipropyl-p-toluidine" (1.75% of total mixture) and inactive ingredients (98.25% of total mixture). Manufacturer: "Green Gold" by Lebanon Chemical Corp. or equal.

2.02 IRRIGATION SYSTEM:

A. Manufacturer: Provide products of one of the following:
   Hunter Industries, Inc.
   Muellermist Irrigation Co.
   LR Nelson Corp.
   Rain Bird Sprinkler Mfg. Corp.
   The TORO Co., Irrigation Div.
   Weather-Matic Div./Telso Industries

B. Pressure Pipe: PVC plastic pipe complying with ASTM-D 1785, Schedule 40.

C. Circuit Pipe (downstream from circuit valves): with PVC plastic pipe, ASTM D 2241, SDR 26, 160 psi or ASTM D 1785, Schedule 40.

D. Valves: Toro 252 Series solenoid valves, flow range 5.0 to 180.0 gpm.

E. Backflow Preventer: Manufacturers standard to suit project conditions.

F. Sprinkler Heads: Manufacturers standard, to provide uniform coverage at available water pressure.

G. Drip Tubing/Accessories: Manufacturers standard, self cleaning, self flushing pressure compensating components and polyethylene tubing with 12” or 18” dripper spacing.

H. Automatic Controls: Provide exterior/interior boxes with locking covers.
   1. Transformers as required for low voltage system.

2. Wiring: Not less than 14 gauge. Provide direct burial type for buried wire. Use waterproof wire nuts throughout.

3. Circuit Control with switch for manual or automatic control of each circuit.

4. Timing Device: 24 hour, 7 day and even/odd interval watering adjustment, with provision for manual or semi-automatic operation and rain sensor which will suspend watering when ground is wet from rain.

PART III - EXECUTION

3.01 PLANTING TREES/SHRUBS AND GROUND COVER

A. Place materials in properly prepared holes, plumb, staked as required for proper growth. Dish back soil as required to receive mulch collar.

B. Plant ground cover not more than 24" O.C. Plant ground cover in areas too narrow or impractical for mowing grass or in areas where grass will not thrive.

C. Topsoil: Install 4 inches minimum depth at planting beds and lawn areas, 12 inches minimum below trees. In locations with high clay content, apply gypsum additives to break down the clay.

D. Mulch: Install 2 to 3 inch thick in planting beds recessed 2 inches. Mulch shall be used only as tree collars and around shrubbery, but not to extend greater than 12 inches beyond the drip line of shrubbery unless specifically approved by the Landscape Architect. Do not install mulch on slopes exceeding 10:1 (horiz.: vert.)

E. Weed control: Apply pre-emergent to mulch in planting areas to prohibit weed growth. If weeds appear in treated areas during the first year, landscaper shall return to remove all weeds at no cost to the Owner.

F. Weed Barrier Fabric: Apply to planting beds below mulch and to un-mulched areas to receive decorative cover (rock is prohibited). Do not install weed barrier fabric in areas to receive ground cover plantings.

G. Remove and replace improperly pruned or mis-formed stock.

3.02 PLANTING SOD

A. Do not install if sod is dormant or ground is frozen.

B. Lay sod with tightly fitting joints, no overlaps with staggered strips to offset joints.
1. Anchor sod on slopes to prevent slippage. Do not exceed 3:1 slope.

2. Water thoroughly immediately after planting.

3.03 IRRIGATION SYSTEM

A. Provide minimum water coverage as follows:
1. Turf area 100%.

2. Other planting areas 100%.

B. Run under pavements and walks. Do not cut pavements or walks. All water lines under sidewalks or paving shall be sleeved. All wiring under paving shall be installed in conduit.

C. Use dielectric fittings whenever dissimilar metals are joined.

D. Testing: Perform operational testing and train store personnel on proper use.

E. Place copy of zone map, with all zone valve locations shown and approved irrigation plan, in protective jacket, with the main control panel.

F. Use pressure compensating dripper systems or pressure compensating low trajectory nozzles only in locations where water has high iron content and only at areas adjacent to buildings to prevent water spray and rust from staining buildings.

G. Provide a ¾" dia. blow down drain tee to allow water to be blown from irrigation system.

END OF SECTION

SECTION 03310 - CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

A. The extent of concrete work is shown on drawings.

B. Concrete curbs, gutters, pavement and walkways may be included, see drawings.

C. Concrete curing and sealing is included.

D. Concrete equipment bases as required.

1.02 QUALITY ASSURANCE

A. Comply with the current edition of the following codes, specifications and standards:

1. ACI 301 "Specifications for Structural Concrete for Buildings".

2. ACI 302.1R “Guide for Concrete Floor and Slab Construction”.

3. ACI 304 "Guide for Measuring, Mixing, Transporting and Placing Concrete".

4. ACI 318 “Building Code Requirements for Reinforced Concrete”.

5. ACI 117 “Specifications for Tolerances for Concrete Construction and Materials.

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

7. Floor slabs must be designed to support a minimum 100 PSF live load and shall not be less than 4 inches thick.

8. ASTM C-94 “Standard Specification for Ready Mix Concrete”.

9. ASTM C-157 “Standard Test Method for Length Change of Hardened Hydraulic-Cement, Mortar and Concrete”.

10. ASTM E 1155-96 “Standard Test Method for Determining Floor Flatness and Levelness Using the F-Number System”.

11. ASTM F-710 “Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring”.

12. ASTM F-1869-98 “Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride”

13. ASTM C979-99 Pigments for Integrally Colored Concrete.

14. ASTM E 96-00 “Standard Test Methods for Water Vapor Transmission of Materials”.

15. ASTM E 154-99 “Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs”.

16. ASTM E 1643-98 “Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under concrete Slabs”.

17. ASTM E 1745-97 “Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs”.

18. AASHTO T318 “Standard Method of Test for Water Content of Freshly Mixed Concrete Using Microwave Oven Drying”.

B. Testing: Employ a testing laboratory, acceptable to the Owner, to perform the following testing. Slump, air content and temperature tests must be performed with each set of compression test cylinders.

1. Compressive strength testing. Comply with ASTM C 31, ASTM C172-99, ASTM C39, and as follows:

a. Provide 4 cylinders minimum from each day’s pour.

b. Provide 4 cylinders for each fifty- (50) cubic yards or fraction thereof poured on each date for slabs and foundations. Provide 4 cylinders for each one-hundred fifty (150) cubic yards or fraction thereof poured on each date for concrete paving and sidewalks.

c. Samples shall be tested and reports provided for concrete samples, 1 sample at 7 days, 2 at 28 days and 1 to hold.

2. Concrete Shrinkage testing: Comply with ASTM C-157.

3. Slump testing: Comply with ASTM C143.

4. Water content testing: Comply with AASHTO T318.

5. Flatness/Levelness Testing. Comply with ASTM E-1155, but provide a minimum of one line of sampling in two perpendicular directions through each structural bay.

a. Perform testing using a “Dipstick Profiler” within 72 hours of concrete placement.

6. Concrete not conforming to the Construction Documents or which fails required Quality Assurance testing, including Flatness/Levelness requirements, shall be removed and replaced at the Owner’s discretion, at no additional cost to the Owner.

1.03 SUBMITTALS

A. Submit concrete mix designs to Architect/Engineer of Record for approval with copies to the Quality Control Testing Consultant.

PART II - PRODUCTS

2.01 FORMWORK

A. Construct formwork for all concrete with plywood, metal or other panel-type materials to provide continuous, straight, smooth surfaces. Provide form materials with sufficient stability to withstand pressure of placed concrete without bow or deflection.

B. For site concrete: Use steel, wood or other suitable materials, free of distortion/defects of size/strength to resist movement and maintain vertical and horizontal alignment during placement.

1. Curves shall be uniform and free of form marks.

C. Form coatings: Use non-staining release agents that will not discolor, deface or impair finish or treatment of concrete.

D. Construct formwork so that concrete members and structures are of correct size, shape alignment, elevation and position.

E. Provide openings in formwork to accommodate work of other trades. Accurately place and securely support items built into forms.

F. Clean and adjust prior to concrete placement. Apply form release agents or wet forms, as required. Retighten forms during concrete placement if required to eliminate mortar leaks.

G. Install welded wire fabric in as long of lengths as practicable, lapping at least one mesh.

2.02 REINFORCEMENT

A. Reinforcing Bars: ASTM A 615, grade 60, deformed.

B. Epoxy - Coated Reinforcing Bars: ASTM A 775.

C. Welded Wire Fabric Reinforcement: ASTM A 185 welded steel wire fabric, sheets only, rolled fabric prohibited.

H. Reinforcement supports: Use chairs, spacers & bolsters complying with CRSI

1. For slabs on grade use reinforcing support to ensure proper clearance/cover. Do not lift or pull reinforcing through placed concrete.

E. Joint Filler: Provide preformed joint filler at slab expansion joints, joints between floor slabs and walls and other isolation joints. Provide one of the following:

1. Pre-compressed, impregnated open cell foam.

2. Asphalt saturated fiberboard complying with ASTM D 1751.

3. Granulated cork between saturated felt or glass fiber felt complying with ASTM D 1752 type H.

2.03 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I or Type II.

B. Fly Ash: ASTM C 618, Type C or F, not to exceed 20% of cement content by weight. Do not use when ambient air temperatures are expected to be below 35 degrees F during the first 48 hours after placement.

C. Aggregates: Normal weight: ASTM C 33 Light weight: ASTM C 330. Combined aggregate gradation shall be 8% to 18% for large topsize aggregates (1 ½ inches) or 8% to 22% for smaller topsize aggregates (1 in. or ¾ in.) retained on each sieve below the topsize and above the No. 100.

D. Water: Drinkable

E. Air Entraining Admixture: ASTM C 260.

F. Calcium Chloride: Any admixtures containing more than 0.1% chloride ions content by weight are not permitted.

G. Water Vapor Retarder: Decay resistant materials complying with ASTM E 96 not exceeding 0.04 perms, ASTM E 154 and ASTM E 1745 Class A. Provide polyethylene sheet not less than 15 mils thick, Raven Industries "VaporBlock 15, Stego Industries 15 mil "Stego Wrap™" or W.R. Meadows Sealtight 15 mil "Vapor-Mat"

H. Chemical Hardener: Colorless solution of magnesium fluosilicate, zinc fluosilicate and wetting agent containing not less than 2 lb. fluosilicates per gallon.
Acceptable Products: Sonneborn, Lapidolith®, Dayton Superior, and Day-Chem Hardener™.

I. Chemical Admixtures: Type A water-reducing, Type F and Type G high-range water-reducing admixtures shall comply with ASTM C494. Do not use in cold weather conditions.

2.04 CONCRETE DESIGN/PROPORTIONING

A. Submit written report to Architect for each proposed concrete mix at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed and acceptable to Architect.

B. Provide normal weight concrete as required by drawings as follows:

1. 3,000 PSI minimum 28 day compressive strength or stronger as required by architect/engineer of record.

2. At interior slabs, provide concrete with ultimate shrinkage less than 0.05% as tested per ASTM C-157.

B. Air Entrainment: Use air-entraining admixture resulting in concrete with air content at point of placement as follows:

1. Concrete exposed to freezing/thawing, deicer chemicals, or hydraulic pressure:

4.5% (moderate exposure); 5.5% (severe exposure) 1-1/2" max. aggregate.

4.5% (moderate exposure); 6.0% (severe exposure) 1" max. aggregate.

5.0% (moderate exposure); 6.0% (severe exposure) 3/4" max. aggregate.

5.5% (moderate exposure); 7.0% (severe exposure) 1/2" max. aggregate.

2. Other Concrete/Steel troweled interior floors: 3% maximum air.

C. Water-Cementitious Ratio: Provide concrete with maximum water-cementitious (W/Cm) ratios as follows: Interior floor W/Cm 0.45.

D. Slump Limits: Provide concrete with slump at point of placement as follows:

1. Ramps and sloping surfaces: Not more than 3".

2. Reinforced foundation systems: Not less than 2" and not more than 5".

3. Slabs and other concrete: Not more than 5".

4. Concrete containing HRWR admixture shall have a minimum slump of 6". The concrete shall arrive at the job site at a slump of 2: to 3", be verified, then high-range water-reducing admixture added to increase slump to approved level.

D. Portland Cement Paving, Sidewalks and Curbs:

1. 3,000 psi after 28 days curing.

2. Air Entrainment: 4% to 7%.

3. Slump: 4".

4. Water/Cement Ratio: Per article 2.04.C above.

2.05 MISCELLANEOUS MATERIALS

A. Accessible Ramps (Detectable Warning): Pre-cast concrete truncated dome detectable warning pavers by Pavestone (or equal) with integral red color, mortar set over depressed 6" thick concrete base slab. Lay pavers in running bond pattern, long side perpendicular to primary direction of curb ramp travel.

B. Decorative, stamped concrete as indicated for driveways, drive aisles, pathways, and/or sidewalks: integrally colored concrete with stamped pattern

1. Acceptable Products: Davis Colors Mix-Ready®, color "Yosemite Brown" (2lbs) unless noted otherwise on the plans. Install per manufacturer's guideline specifications. Use integral color only on textured concrete – bordering bands to be natural gray concrete unless noted otherwise on the plans.

2. Pattern: Stamped pattern as indicated on drawings (compliant with accessible design standards of ADA and California Building Code when used in a pedestrian walkway)

3. Texture: Stamped pattern and bordering bands to receive a slip-resistant broom finish.

4. Quality Assurance: Submit 6"x6" sample for each finish, color and texture.

PART III - EXECUTION

3.01 REINFORCEMENT

A. Clean reinforcement of rust, mill scale, ice or materials that will reduce bond with concrete.

B. Place reinforcement to obtain proper concrete coverage in top third of slab or 2 inches below top surface.

3.02 CONCRETE PLACEMENT

A. Site Concrete: Place concrete on/in properly prepared sub-base or forms. Provide not less than 6 inches of compacted free-draining granular sub-base between the concrete slab and compacted sub-grade.

B. Building Slabs: Place concrete on/in properly prepared sub-base or forms. Place concrete slabs directly on vapor retarder. Provide not less than 6 inches of compacted free-draining granular sub-base between the water vapor retarder and the compacted sub-grade.

1. Install water vapor retarder in compliance with ASTM E 1643.
2. Lap joints 6 in. and seal with manufacturers adhesive or tape.
3. Seal around all penetrations with manufacturers pipe boot or by wrapping with vapor retarder and taping.
4. Repair all punctures and cuts using vapor retarder material lapped 6 inches beyond damaged area and taped.
5. Provide photo documentation of proper installation of vapor retarder.

C. Construct slabs to correct level, maintain reinforcing in proper position.
1. Float slabs with a highway straight edge in lieu of a conventional bull float.

D. Do not place concrete on/in frozen sub-base or forms.

E. Pumping Concrete: Concrete may be placed by pumping if first approved in writing by the Architect/Engineer of Record for the proposed location. Pumped concrete shall only be placed in the presence of the Landlords Testing/Inspecting Agent.

1. Equipment: Pumping equipment shall be of the size and design that ensures a continuous flow of concrete at the delivery end without separation of materials. Do not pump concrete through aluminum pipes.

2. Concrete Mix: Shall conform to the architect of record's specified design requirements, except that mix may contain chemical admixtures to allow proper pumping. Include the specified high-range or mid-range water reducing admixture in the mix. Unless strictly controlled and anticipated in the development of the design mix, the addition of admixtures at the job should be prohibited.

F. Place concrete in thicknesses as indicated in the drawings and soils report, but in no case less than 6" thick for site concrete (eg: sidewalks, driveways, receiving area slab) and 4" for interior floor slabs.

G. Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placement and curing.

3.03 JOINTS

A. Provide construction, isolation, and control joints, as indicated or required. Locate construction joints so as not to impair strength and appearance of structure. Place isolation and control joints in slab-on-ground to stabilize differential settlement and random cracking.

B. Contraction joints at interior slabs shall be formed by saw cuts within 4 to 12 hours after finishing and before random shrinkage cracks form. Concrete surface shall not be torn or damaged by the blade. Joint spacing shall not exceed 30 times the slab thickness in feet. Joint patterns shall be generally square. Joint depth shall be ¼ slab thickness.

C. Isolation joints; provide full depth at all locations where slabs adjoin walls, columns, foundations, drain piping, sprinkler mains, existing concrete or pavement. and other immovable objects. Provide “pinwheel” isolation joints at columns.

D. Site concrete; at concrete pavements and curbs, provide contraction joints at 12’ O.C. max. Joint patterns in pavements and sidewalks shall be generally square. At curbs provide full depth expansion joints at 20-ft. O. C. max. At sidewalks provide weakened plane contraction joints not more than 5'-0" max. and expansion joints at 20-ft. O.C max. Tool all edges. Install self-leveling sealant at all isolation/expansion joints.

3.04 INSTALLATION OF EMBEDDED ITEMS

A. Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting diagrams, templates and instructions provided by others for locating and setting.

B. Consolidate placed concrete with hand rodding and tamping so that concrete is worked around embedded items and into forms.

3.05 FINISHING/CURING

A. Provide a floor surface which is true and level and achieves “F Numbers” of $F_F = 30$ and $F_L = 20$ minimum overall composite and $F_F = 20$ and $F_L = 15$ minimum at any individual section, when tested in accordance with ASTM E 1155. Remove surface irregularities to provide a continuous smooth finish.

B. All interior slabs to receive a smooth trowel finish. Consolidate concrete surfaces by finish troweling, free of trowel marks, uniform in texture and appearance.

C. Provide moisture retaining covered curing of interior slabs for 3 days minimum using cover materials that limit moisture loss to not more than 0.055 g/cubic cm in 72 hours when tested per ASTM C-156. Use cover materials that will not stain or impart any texture to the concrete surface.

D. Apply non-slip broom finish to exterior platforms, walks, steps, ramps and curbs. Tool all edges to 1/2" radius unless noted otherwise.

E. Apply concrete hardener to exposed interior floors and exterior slab at recessed entrance.

F. Floors to receive resilient flooring shall limit moisture vapor emission to not more than 3 pounds or 5 pounds per 1,000 square feet per 24 hours, depending on type of floor finish being installed, in compliance with ASTM F-1869.

G. Patch all form holes resulting from removal of form ties. Form ties ends shall be sealed or coated to prevent future rusting from spalling the concrete patch.

H. Provide a smooth finish for exposed concrete surfaces and surfaces that are to be covered with a coating or covering material applied directly to concrete. Remove fins and projections, patch defective areas with cement grout, and rub smooth.

I. Begin initial curing as soon as free water has disappeared for concrete surfaces. Where possible, keep continuously moist for not less than 72 hours. Continue curing by the use of moisture-retaining cover or membrane-forming curing compound. Cure formed surfaces by moist curing until forms are removed. Provide protection as required to prevent damage to exposed concrete surfaces.

3.06 REPAIRS

A. Repair or replace broken, defective and stained concrete, and replace non-conforming concrete, all as directed by the Owner, at no additional cost to the Owner.

END OF SECTION

SECTION 04450 – STONE COUNTERTOPS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Fabrication and installation of stone vanities and countertops.

2. Accessories necessary to complete work.

B. Related Sections:

1. Section 05500 - Metal Fabrications: Support framing.

1.02 SUBMITTALS

A. General: Submit in accordance with Section 01300.

B. Shop Drawings:

1. Provide half-scale or full-scale details of construction.

2. Indicate profiles of members, jointing, fastening, cut-outs for mechanical services, sinks, accessories, and related items.

C. Samples:

1. Submit 12 inch by 12 inch samples of stone with appropriate finish for acceptance before proceeding with Work.

2. Indicate maximum range of stone variation.

3. Include stone samples indicating joining and edging.

1.03 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating work specified in this Section with minimum 5 years documented experience in type work required for Project.

B. Provide stone from one quarry to ensure consistent color and patterns.

C. Provide sound, hard, durable, and well seasoned stone of uniform strength, color and texture, free of quarry sap, flaws, cracks, seams, starts, sand holes, iron pyrites, or other mineral or organic defects which affect visual appearance or structural integrity.

D. Stones with cracks will be rejected.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of Section 01600.

B. Handle, transport, and store units to prevent damage to materials or structure. Handle with care to prevent damage to corners.

C. Broken, cracked, chipped, stained or damaged stone will be rejected, whether built-in or not.

PART 2 - PRODUCTS

2.01 MATERIAL

A. Acceptable Products: As indicated on plans

1. Color: As indicated on plans

2. Surface finish: Polished.

3. Grade: Building granite; selected for color and texture consistency; free of defects.

4. Thickness: 1-1/4 inches minimum.

5. Provide Granite Complying with ASTM C615.

B. Adhesives and Cements:

1. Non-staining, type as recommended by manufacturer of stone.

2. Waterproof, permanent material which will not induce mildew and fungus growth.

C. Impregnator/Sealer:

1. 96 - 100 percent breathable silicone material formulated for protection of natural stone.

2. Penetrates, impregnates, and chemically bonds to stone pores to harden surface without change to natural stone appearance.

3. UV resistant and non-yellowing.

4. Material and primer as recommended by impregnator manufacturer and by stone producer for application indicated.

5. Acceptable Products:

a. 511 Pre-Treat and 511 Impregnator, Miracle Sealants Company, Azusa, CA.

b. HMK S34 Impregnator, HMK Stone Care Products, San Francisco, CA.

2.02 FABRICATION

A. Assemble work at shop and deliver to Project ready for installation.

B. Fabricate with backsplash, end splashes, and aprons to profiles indicted; these items may be shipped loose for installation of site. Comply with MIA recommendations for stone lavatories and countertops.

C. Recess and conceal fasteners, connections, and reinforcing.

D. Design construction and installation details to allow for expansion and contraction of materials. Properly frame material with tight, hairline joints held rigidly in place.

E. Comply with adhesive and cement manufacturer's recommendations for shelf life, pot life, working life, mixing, spreading, assemble time, time under pressure and ambient temperature.

F. Provide cut-outs for sinks, mechanical services, and related items. Drill holes and fabricate cut-outs from templates. Provide polished finish for cut-out edges where exposed due to underhung vanity bowl.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine conditions and proceed with work in accordance with Section 01700.

3.02 INSTALLATION

A. Install countertops at locations indicated level, square, true, rigid and secure.

B. Install in accordance with MIA recommendations for lavatories and countertops.

3.03 CLEANING

A. Keep installed work clean as work progresses.

B. Leave clean and free from blemishes.

C. Clean and repair surfaces soiled or otherwise damaged in connection with work of this Section. Pay cost of replacing materials that cannot be satisfactorily cleaned or which have been damaged by improper cleaning materials and techniques.

3.04 IMPREGNATOR/SEALER

A. Apply impregnator to cleaned interior stone in compliance with impregnator manufacturer's instructions.

END OF SECTION

SECTION 05120 - STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work includes but is not limited to structural steel, steel studs, and miscellaneous fabrications.

B. Miscellaneous Fabrications include but are not limited to railings, ladders, elevator hoisting beams (if applicable), and roof opening frames.

1.02 QUALITY ASSURANCE

A. Comply with AISC "Code of Standard Practice for Steel Buildings and Bridges", latest edition. AWS D1.1 "Structural Welding Code".

B. Comply with AISI “Specification for the Design of Cold-Formed Structural Members”.

C. Comply with requirements of architect of record.

D. Field alterations of structural steel is not allowed without written approval of the Engineer of Record.

E. Quality Control Testing: A certified AWS Weld Inspector shall inspect 100% of welded moment connections and 10% of all other welded connections. Manually torque test 10% of all bolted connections to verify correct tightness.

1.03 SUBMITTALS

A. Submit shop drawings to architect of record.

PART II - PRODUCTS

2.01 MATERIALS

A. Structural Steel Shapes, Plates, Bars; ASTM A36.

B. Steel Pipe; ASTM A53, Type E or S, grade B

C. Steel Tubing; Cold-Formed ASTM A 500, grade B; hot-formed ASTM A 501.

D. Anchor bolts and fasteners, ASTM A 325 as required by architect of record. ASTM A 307 anchor bolts are acceptable in non-tension applications.

E. Primer; Fabricators standard rust inhibiting primer.

F. Steel studs and C joists, ASTM A653, Structural Quality, grade 33.

PART III - EXECUTION

3.01 ERECTION

A. Set frames accurately to lines and elevations indicated. Level and plumb individual members within AISC tolerances. Comply with AISC specifications for bearing, alignment and welds.

B. Touch-up paint all exposed and/or abraded areas after erection.

C. Welds of all metal fabrications shall be ground smooth and prepared for final painting.

D. All structural steel encased in concrete, masonry or in contact with earth shall be painted with bituminous paint.

E. Hoisting beams for elevators shall be furnished and installed by General Contractor.

END OF SECTION

SECTION 05500 – METAL FABRICATIONS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Shop fabricated ferrous metal items, prime painted.

B. Shop fabricated or manufactured non-ferrous metal items, prime painted.

C. Refer to Schedule at end of this Section.

1.02 RELATED WORK

A. Section 03310 – CONCRETE

B. Section 09910 – PAINTING

1.03 REFERENCES

A. ASTM A36 - Structural Steel.

B. ASTM A325 - Low-Carbon Steel Externally and Internally Threaded Fasteners.

C. ASTM A325 - High Strength Bolts for Structural Steel Joints.

D. ASTM A386 - Zinc-Coating (Hot-Dip) on Assembled Steel Products.

E. AWS D1.1 - Structural Welding Code.

F. FS TT-P-31 - Paint, Oil; Iron Oxide, Ready Mix, Red and Brown.

G. FS TT-P-641 - Primer Coating, Zinc Dust-Zinc Oxide (for Galvanized Surfaces).

H. FS TT-P-645 - Primer, Paint, Zinc Chromate, Alkyd Type.

1.04 SHOP DRAWINGS

A. Comply with requirements of Section 01300 - Submittals.

B. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Steel Sections: ASTM A36.

B. Bolts, Nuts, and Washers: ASTM A307

C. Welding Materials: AWS D1.1; type required for materials being welded.

D. Primer: FS TT-P-31, red; for shop application and field touch-up.

E. Touch-up Primer for Galvanized Surfaces: FS TT-P-641.

2.02 FABRICATION

A. Verify dimensions on site prior to shop fabrication.

B. Fabricate items with joints tightly fitted and secured.

C. Fit and shop assemble in largest practical sections, for delivery to site.

D. Grind exposed welds flush and smooth with adjacent finished surface. Ease exposed edges to small uniform radius.

E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of structure, except where specifically noted otherwise. Provide non-corroding fasteners at aluminum and stainless steel materials.

F. Make exposed points butt tight, flush, and hairline.

G. Supply components required for anchorage of metal fabrications to the appropriate Sections. Fabricate anchorage and related components of same material and finish as metal fabrication, except where specifically noted otherwise.

2.03 FINISH

A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

B. Do not prime surfaces in direct contact bond with concrete or where field welding is required.

C. Apply one coat of bituminous paint to concealed aluminum surfaces in contact with cementitious materials or dissimilar metals.

D. Prime paint items scheduled with one coat.

E. Galvanize ferrous items indicated to minimum 1.25 oz/sq ft zinc coating in accordance with ASTM A386. Exterior masonry lintels shall be galvanized.

F. Provide factory-finish coatings as indicated.

PART 3 - PREPARATION

3.01 PREPARATION

A. Obtain Architect approval prior to site cutting or making adjustments not scheduled.

B. Clean and strip site primed steel items to bare metal where site welding is scheduled.

C. Make provision for erection loads with temporary bracing. Keep work in alignment.

D. Supply items required to be cast into concrete with setting templates, to appropriate sections.

3.02 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Perform field welding as applicable in accordance with AWS D1.1.

C. Grind exposed welds smooth and flush with adjacent surfaces.

D. After installation, touch-up welds, scratched or damaged surfaces with primer.

3.03 SCHEDULE

A. General

1. Provide and install items listed in Schedule and shown on Drawings with anchorage and attachments necessary for installation. Substitutions see Section 01600.

2. The Schedule is a list of principal items only. Refer to Drawing details for items not specifically scheduled.

B. Schedule

1. Miscellaneous angles, lintels, channels, plates, etc..

END OF SECTION

SECTION 06100 – ROUGH CARPENTRY

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work includes but is not limited to rough carpentry, wood trusses, blocking for accessories and other attached items, and exposed exterior woodwork.

1.02 QUALITY ASSURANCE

A. Wood Trusses; Comply with Truss Plate Institute recommendations and publications as applicable.

B. Lumber: Identify with grade stamp of an agency certified by NFPA.

1.03 SUBMITTALS

A. Wood trusses; submit shop drawings to architect of record.

B. Fire Retardant Treatment for Wood: Submit to architect of record; manufacturer, name of process and warranty terms.

1.04 REFERENCES

A. AWPB LP-S - Softwood Lumber, Timber, and Plywood Pressure Treated with Water Borne preservatives for Above Ground Use.

B. NFPA - National Design Specification for Stress Grade Lumber and its Fastening.

C. PS 1 - Construction and Industrial Plywood.

D. PS 20 - American Softwood Lumber Standard.

PART II - PRODUCTS

2.01 LUMBER AND TRUSSES

A. Comply with PS 20 "American Softwood Lumber Standard".

B. Factory mark each piece of lumber with grade stamp evidencing compliance with grading rules and moisture content.

C. Dress lumber; dressed S4S.

D. Provide lumber with 19% moisture content at time of dressing.

E. Provide grade and species as required by the drawings.

F. Provide treated lumber for exterior framing and as required by local codes. Provide treated lumber for blocking for roof penetrations, wood in contact with concrete or masonry, and all other locations where wood may be exposed to moisture.

G. Provide fire retardant treated wood for blocking in gypsum board walls and where shown on plans or required by code.

H. All wood framing, blocking, nailers, etc.: No. 2 or better, Douglas Fir, surfaced dry, unless noted otherwise on the drawings.

2.02 EXPOSED EXTERIOR WOODWORK (PAINTED OR STAINED):

A. Provide appearance grade lumber with rough sawn texture

B. Back-prime and end-prime concealed faces prior to installation. Prime all faces prior to painting.

C. Bevel cut mid-span joints (butt joints not acceptable)

D. Miter cut corner joints (exposed ends of lumber not acceptable)

2.03 SHEATHING & PANELS

A. Roof Sheathing: APA rated plywood for exterior use, 5/8” minimum thickness unless noted otherwise in the drawings. Oriented Strand Board (OSB) is not acceptable.

B. Wall Sheathing:

1. Plywood: APA rated for exterior exposure, 5/8” minimum thickness unless noted otherwise in the drawings. Oriented Strand Board (OSB) is not acceptable.

2. Glass Mat Gypsum Boards: Dens-Glass Gold or Dens-Glass Gold Fireguard, by Georgia-Pacific Corp., or GlasRock™ by BPB America, Inc., 5/8” minimum thickness unless noted otherwise in the drawings.

3. Fiberock® Brand Sheathing, 5/8” minimum thickness unless noted otherwise in the drawings, by U.S. Gypsum Company.

C. Plywood backing for telephone/electrical, APA C-D plugged - in with exterior glue 3/4" minimum thickness, install with “C” face exposed.

2.04 WOOD TREATMENT

A. Preservation Treatment: Comply with applicable standards of AWPA C2 (lumber) and C9 (plywood) and AWPB listed below

1. Pressure-treat above ground items with water-borne preservatives complying with AWPB LP-2. After treatment, kiln-dry lumber and plywood to a maximum moisture content, respectively, of 19% and 15%.

2. Pressure-treat ground or water contacting members complying with AWPB LP-22.

B. Fire Retardant Treatment: Comply with AWPA C-27 as applicable. Process shall not promote premature degradation of wood products in the conditions in which fire-treated lumber/panels will be installed.

1. Provide materials with maximum moisture content, after treatment, of 15% or less.

2. Manufacturer: Provide "Dricon FRT", with current warranty.

C. Fasteners: Provide stainless steel or hot-dipped-galvanized connectors/fasteners. Hot-dipped fasteners/connectors shall be continuous galvanized G185 or G90 HDG per ASTM A-653, batch/post HDG per ASTM A-123 (connectors) ASTM A-153 (fasteners) or mechanical galvanizing per ASTM B-695, class 55 or better.

2.05 ACCESSORIES

A. Nails, Spikes, and Staples: Galvanized for exterior locations, high humidity locations, and treated wood; plain finish for other interior locations; size and type to suit application.

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

C. Fasteners: Embedded anchor bolts for anchorage to concrete and hollow masonry, bolts or power activated type for anchorage to steel.

D. Adhesive Tape: Polyethylene reinforced fiber type as recommended by building paper manufacturer.

2.06 MISCELLANEOUS

A. Miscellaneous wood trim; Comply with AWI 300, custom grade, paint finish.

B. Building Paper: ASTM D 226, Type I, 15 LB, non-perforated asphalt saturated felt.

C. Hardboard: Opaque, grade II, tempered smooth one side, 1/4” thick.

PART III - EXECUTION

3.01 GENERAL

A. Securely and properly support and anchor all work to accurate fit, lines, level, and plumb without distortion.

B. Install miscellaneous blocking, nailing strips, sheathing, and anchors as required for all wall mounted items. Fasten wood blocking securely to structural steel members with through blots as indicated, screw blocking to steel studs.

C. Install members true, plumb, and level. Secure in place.

D. Construct members of continuous pieces of longest practical lengths.

E. Install fire-retardant treated materials in environments and with proper ventilation to prevent degradation of wood materials.

F. Do not cut or alter wood trusses members.

G. Prime paint surfaces in contact with cementitious materials.

END OF SECTION

SECTION 06200 – FINISH CARPENTRY

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Finish hardware, shelving supports/brackets and attachment accessories.

B. Countertops, casework, and shelving.

C. Prepare casework and countertops for electrical rough-ins.

D. Installation of wood door and window frames.

E. Refer to schedule at end of this Section.

1.02 RELATED WORK

A. Section 06100 - ROUGH CARPENTRY.

B. Section 08200 - WOOD DOORS.

C. Section 09250 - GYPSUM WALLBOARD SYSTEMS.

D. Section 09910 - PAINTING.

1.03 QUALITY ASSURANCE

A. Perform finish carpentry work in accordance with AWI Quality Standards, custom grade.

B. Fire retardant treatment to conform to requirements of Underwriters' Laboratories (UL).

1.04 REGULATORY REQUIREMENTS

A. Conform to UBC Code for fire retardant treatment of wood surfaces for flame/fuel/smoke ratings.

1.05 REFERENCES

A. AWI - Quality Standards.

B. FS L-P-508 - Plastic Sheet, Laminated, Decorative and Non-decorative.

C. FS MM-L-736 - Lumber - Hardware.

D. FS TT-W-550 - Wood Preservative, Chromate Copper Arsenate Mixture.

E. FS TT-W-568 - Wood Preservative, Creosote - Petroleum Solution.

F. FS TT-W-570 - Wood Preservative, Pentachlorophenol.

G. FS TT-W-571 - Wood Preservative, Treating Practices.

H. FS TT-W-572 - Wood Preservative, Water Repellent.

I. FS MMM-A-130 - Adhesive, Contract.

J. PS 1 - Construction and Industrial Plywood.

K. PS 20 - American Softwood Lumber Standard.

L. PS 51 - Hardwood and Decorative Plywood.

M. PS 58 - Basic Hardwood.

1.06 SHOP DRAWINGS

A. Submit Shop Drawings in accordance with Section 01300.

B. Indicate materials, component profiles, fastening methods, jointing details, finishes, accessories, and hardware to a minimum scale of 1 1/2 inch to one foot (1:8).

C. Submit manufacturer's instructions for use of adhesive.

1.07 SAMPLES

A. Submit Samples in accordance with Section 01300.

B. Submit minimum 3 x 6 inch sized sample of selected laminate finishes for approval.

C. Submit 6 inch long sample of each type of trim and wood molding.

1.08 DELIVERY AND STORAGE

A. Deliver wood materials in accordance with Section 01600.

B. Store indoors, in ventilated areas with constant minimum temperature of 60 degrees F and maximum relative humidity of 55 percent.

C. Casework shall not be delivered to site until area of installation is ready for installation.

PART 2 - PRODUCTS

2.01 LUMBER MATERIALS

A. Softwood Lumber: PS 20, custom grade in accordance with AWI; maximum moisture content of 6 percent for interior work and 10 percent for exterior work.

B. Hardwood to receive paint finish at window and door frames, birch or poplar, max moisture content 6%.

2.02 SHEET MATERIALS

A. Wood Fiberboard: Composed of wood fiber made with waterproof resin binders of medium density; sanded faced. Conform to AWI.

B. Plywood: Veneer grades as shown, meet requirements of APA and AWI.

2.03 PLASTIC LAMINATE

A. Plastic Laminate: 0.050" general purpose for horizontal and vertical applications, high-pressure laminated plastic.

B. Cabinet Liner: Low pressure plastic laminate LPL; 0.20 inch thick, smooth surface finish, white color, unless otherwise noted or approved by architect.

C. Primer: (for painted wood) Alkyd primer sealer type.

2.04 ADHESIVE

A. Contact Adhesive: solvent release contact cement type as recommended by laminate manufacturer.

2.05 ACCESSORIES

A. Nails, Size and type to suit application.

B. Bolts, Nuts, Washer, Lags, and Screws: Size and type to suit application; non-corrosive for exterior, high humidity, and treated wood locations; plain finish at other interior locations.

2.06 CABINET HARDWARE

A. Manufacturer: Provide hardware as manufactured, except as noted, by Hafele American, High Point, North Carolina (919) 889-2322 or approved equal as indicated. Substitutions see Section 01600.

B. Self Supports and Brackets: KNAPE & VOGT MFG adjustable standard #255NP with bracket #256NP.

C. Drawer and Door Pulls: Stanley #4484, finish to be determined.

D. Drawer Slides: 50 lb. capacity per pair, equal to Grant #337.

E. Hinges: All metal, self-closing, concealed type; 95 degree opening for flush overlay construction, manufactured by Hafele, Metallmat/metalla as approved by Architect.

F. Catches: Provide Stanley #SP46 at all swing cabinet doors, 2 per door.

2.07 CASEWORK AND COUNTERTOP FABRICATION

A. Fabricate casework in accordance with AWI's Custom Grade For laminate clad casework, flush overlay style with plastic laminate countertops and backsplashes, Custom Grade as indicated. Door and drawer faces shall cover the body members or face frames of the cabinet, creating reveals of one-eighth (1/8) inch wide.

1. Semi-exposed surfaces shall be finished with low pressure plastic laminate, LPL cabinet liner. At all exposed surfaces plastic laminate shall be high pressure plastic laminate, HPL.

B. Countertops: AWI custom grade: plastic laminate on fiberboard core with laminate clad veneer plywood core front and back ledgers.

C. Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.

D. Finish door and drawer front edges with matching laminate edging. Use full length pieces only.

E. Door and Drawer Fronts: AWI Custom Grade.

F. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

G. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Make corners and points hairline. Slightly bevel arises.

H. Cap exposed plastic laminate edges with material of same finish and pattern.

I. Mechanically fasten backsplashes to countertops with steel brackets at 16 inches on center.

J. Apply laminate backing sheet to reverse side of Plastic laminate finish surfaces.

K. Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes, and other fittings. Verify locations of cutouts from on-site dimensions. Seal contact surfaces of cut edges.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Verify adequacy of backing and support framing.

B. Set and secure materials and components in place, plumb, and level.

C. Verify mechanical, electrical, and building items affecting this Section are placed and ready to receive this work.

D. Prime paint surfaces of items or assemblies in contact with cementitious materials.

E. Apply plastic laminate finishes where indicated. Adhere with adhesive over entire surface. Make joints and corners hairline. Match patterns. Slightly bevel arises. Cap exposed edges with plastic laminate of same finish and pattern. Apply laminate backing on reverse side of plastic laminate finished surfaces.

F. Standing and running trim: Cope inside corners and miter outside corners of trim.

G. Condition woodwork/casework to average prevailing humidity conditions in installation area prior to installing.

3.02 PREPARATION FOR FINISHING

A. Sand work smooth and set exposed nails. Apply wood filler in exposed nail indentations.

B. Back prime all trim prior to installation.

3.03 CASEWORK INSTALLATION

A. Set and secure casework in place rigid, plumb and level.

B. Use purpose designed fixture attachments at concealed locations for wall mounted components.

C. Use threaded steel concealed joint fasteners to align and secure adjoining cabinet units and counter tops.

D. Carefully scribe casework which is against other building materials, leaving gaps of 1/32 inch maximum. Do not use additional overlay trim for this purpose.

E. Secure counter bases to floor using concealed angles and anchorages as appropriate.

3.04 ADJUSTING AND CLEANING

A. Adjust doors, drawers, hardware, fixtures and other moving or operating parts to function smoothly and correctly.

B. Clean casework, counters, shelves, hardware, fittings and fixture.

END OF SECTION

SECTION 07200 – RIGID INSULATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section includes:

1. Rigid board-type wall insulation, concealed

2. Glass fiber batt insulation is specified in section 07210.

3. Sound attenuating batts are specified in section 09250

4. Roof deck insulation is specified in section 07500

5. EIFS insulation is specified in section 07240.

1.02 QUALITY ASSURANCE

A. Comply with code required fire-resistance, flammability and insurance ratings.

B. Source Limitations: Obtain each type of building insulation through one source.

1.03 SUBMITTALS

A. Product Data for each type of product indicated.

B. Product Test Reports based on evaluation of comprehensive tests performed by a qualified testing agency

C. Research/Evaluation Reports

1.04 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

B. Protect insulation as follows:

1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.

2. Protect against ignition at all times. Do not deliver insulating materials to Project site before installation time.

3. Complete installation and concealment of insulation as rapidly as possible in each area of construction.

PART II - PRODUCTS

2.01 MATERIALS

A. Bead board insulation is not acceptable.

B. Rigid Board Insulation (Walls): Dow TUFF-R (Commercial) polyisocyanurate foam board insulation, 1-1/2” thickness, with the following properties:

1. Minimum "R" value of R-9.8 (unless required otherwise in the drawings)

2. Compressive Strength: 25 psi minimum

3. Water vapor permeance: <0.03 perm

2.02 AUXILIARY INSULATING MATERIALS

A. Polyethylene Vapor Retarder: Film of thickness shown on drawings with vapor transmission rating of 0.2 perms.

PART III - EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for Sections in which substrates and related work are specified and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean substrates of substances harmful to insulations or vapor retarders, including removing projections capable of puncturing vapor retarders or of interfering with insulation attachment.

3.03 INSTALLATION

A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.

B. Extend insulation full thickness over entire area to be insulated. Cut and fit tightly around obstructions.

C. Set vapor barrier faced units with vapor barrier to warm side of construction, except as otherwise shown. Do not obstruct ventilation spaces, except for firestopping. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure airtight installation.

D. Insulation applied to back of suspended ceiling system is prohibited.

E. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice and snow.

F. Water-Piping Coordination: If water piping is located on inside of insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.

G. Apply single layer of insulation to produce thickness indicated, unless multiple layers are otherwise shown or required to make up total thickness.

H. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

I. Seal joints between closed-cell (non-breathing) insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.

J. Rigid board insulation shall be installed only in concealed locations.

3.04 VAPOR RETARDERS

A. Extend vapor retarders to extremities of areas to be protected. Secure in place. Extend vapor barriers to cover miscellaneous voids in insulated substrates.

B. Repair punctures and tears in vapor retarders before concealment by other work.

3.05 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION

SECTION 07210 – BATT INSULATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section includes includes:

1. Glass fiber thermal batt insulation

2. Rigid board-type wall insulation, concealed, is specified in section 07200

3. Sound attenuating batts are specified in section 09250

4. Roof deck insulation is specified in section 07500

5. EIFS insulation is specified in section 07240.

1.02 QUALITY ASSURANCE

A. Comply with code required fire-resistance, flammability and insurance ratings.

B. Source Limitations: Obtain each type of building insulation through one source.

C. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

1. Surface-Burning Characteristics: ASTM E 84.
2. Fire-Resistance Ratings: ASTM E 119.
3. Combustion Characteristics: ASTM E 136.

1.03 SUBMITTALS

A. Product Data for each type of product indicated.

B. Product Test Reports based on evaluation of comprehensive tests performed by a qualified testing agency

C. Research/Evaluation Reports

1.04 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

B. Protect insulation as follows:

1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.

2. Protect against ignition at all times. Do not deliver insulating materials to Project site before installation time.

3. Complete installation and concealment of insulation as rapidly as possible in each area of construction.

PART II - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. CertainTeed Corporation.
2. Johns Manville Corporation.
3. Knauf Fiber Glass.
4. Owens Corning.

2.02 MATERIALS

A. Glass Fiber Batt Insulation: Inorganic (non asbestos) fibers formed into semi-rigid batts; ASTM C665, Type III, Class A, FSK-25 faced, with the following properties:

1. Minimum "R" values as follows (unless required otherwise in the drawings):

a.	3-1/2” to 4” stud framed wall:	R-13
b.	6” stud framed wall:	R-19
c.	Roof:	R-30

2. Water vapor permeance $\leq$ 0.05 perms per ASTM E 96,

3. Water vapor absorption , 0.5% max. by weight ASTM C1104, R-value 11.

4. Flame-Spread Rating/Smoke Developed: Provide rating of 25/50 respectively, ASTM E 84.

Fire-Resistance Ratings: Where units are included in rated wall/ceiling/floor construction, provide mineral wool units, which have been tested and rated as required for the indicated assembly.

2.02 AUXILIARY INSULATING MATERIALS

A. Polyethylene Vapor Retarder: Film of thickness shown on drawings with vapor transmission rating of 0.2 perms.

PART III - EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for Sections in which substrates and related work are specified and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean substrates of substances harmful to insulations or vapor retarders, including removing projections capable of puncturing vapor retarders or of interfering with insulation attachment.

3.03 INSTALLATION

A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.

B. Extend insulation full thickness over entire area to be insulated. Cut and fit tightly around obstructions.

C. Set vapor barrier faced units with vapor barrier to warm side of construction, except as otherwise shown. Do not obstruct ventilation spaces, except for firestopping. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure airtight installation.

D. Insulation applied to back of suspended ceiling system is prohibited.

E. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice and snow.

F. Water-Piping Coordination: If water piping is located on inside of insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.

G. Apply single layer of insulation to produce thickness indicated, unless multiple layers are otherwise shown or required to make up total thickness.

H. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

I. Seal joints between closed-cell (non-breathing) insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.

J. Install mineral-fiber blankets in cavities formed by framing members according to the following requirements:

1. Use blanket widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.

2. Place blankets in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.

3. For metal-framed wall cavities where cavity heights exceed 96 inches (2438 mm), support unfaced blankets mechanically and support faced blankets by taping stapling flanges to flanges of metal studs.

4. For wood-framed construction, install mineral-fiber blankets according to ASTM C 1320 and as follows:

a. With faced blankets having stapling flanges, secure insulation by inset, stapling flanges to sides of framing members.

b. With faced blankets having stapling flanges, lap blanket flange over flange of adjacent blanket to produce airtight installation after concealing finish material is in place.

3.04 VAPOR RETARDERS

A. Extend vapor retarders to extremities of areas to be protected. Secure in place. Extend vapor barriers to cover miscellaneous voids in insulated substrates.

B. Repair punctures and tears in vapor retarders before concealment by other work.

3.05 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION

SECTION 07500 – MODIFIED BITUMEN MEMBRANE ROOFING

PART I - GENERAL

1.01 PROJECT REQUIREMENTS

A. Provide an APP or SBS mineral surfaced modified bitumen membrane roofing system suitable for use in a hurricane region, to meet the following criteria:

1. Roofing system shall be Class A fire rated

2. Roofing system shall be installed over ¾" perlite cover board

3. Roofing system shall meet 140 MPH hurricane requirements and the following criteria, which are based upon I.B.C. section 1605.3 and do not include the 1.3 Omega factor:

a. Roof Zone 1 (field): 42 PSF negative

b. Roof Zone 2 (perimeter): 58 PSF negative

c. Roof Zone 3 (corners): 96 PSF negative

4. Roofing installation shall include preparation of the roof deck, installation of roofing insulation, installation of a new membrane system, flashing, sheet metal, expansion joints, counter-flashing and other related items

1.02 QUALITY ASSURANCE

A. Installer Certification: Provide written certification from roofing system manufacturer that installer is approved by manufacturer to install the specified roofing system.

B. Provide complete systems which are listed for UL (Underwriter Laboratories) Class A external fire exposure and FM (Factory Mutual) Class I wind resistance and internal fire construction.

C. Fabrication of sheet metal roofing accessories shall conform to applicable SMACNA, NRCA and membrane manufacturer's published details and requirements.

D. Slope: Roof shall slope at 1/4" per foot minimum, achieved in the deck structure. All saddles shall be constructed at twice the slope of the deck.

1.03 SUBMITTALS

A. Furnish complete roof system submittals to the Architect of Record for review and approval, including all membrane materials, insulations, mechanical fasteners, bitumen types, sheet metal, accessories, related components and contractor's Certification from the membrane manufacturer. A copy of the warranty shall also be submitted for approval. No roofing work shall commence until the General Contractor, Developer and Roofing Contractor have received approved roofing system submittals.

1.04 JOB CONDITIONS

A. Install roofing work in strict compliance with manufacturer's requirements.

B. The contractor shall prepare and coordinate roofing work to accept the installation of Tenant supplied equipment including but not limited to refrigeration equipment and satellite dish and those systems related support rails, curbs, pipe portals, etc.

1.05 WARRANTY

A. Provide manufacturer's 15-year warranty, which begins after the date of substantial completion and covers the roofing membrane, associated flashing, roof insulation, roof accessories, vapor barrier (if any) and labor utilized in the installation of the warranted materials. The 15-year warranty shall cover the entire roof system and all related components with no monetary limit, with non-prorated coverage as issued by the membrane manufacturer. The roofing contractor shall provide a 5 year workmanship and watertight warranty independent of the membrane manufacturer's 15 year warranty.

1. Warranty to be signed and countersigned by manufacturer and installer with a copy provided to the Owner.

PART II - PRODUCTS

2.01 Acceptable roofing system manufacturers:

A. GAF

B. Johns Manville

2.02 Miscellaneous Products

A. Cover Board: 3/4" perlite, minimum 40 psi compressive strength, mechanically fastened in strict compliance with FM Global wind up-lift requirements and membrane manufacturer's requirements.

B. Copings, gravel stops, gutters, downspouts, scuppers, etc. as per section 07600.

C. Sealant: As provided by membrane manufacturer.

D. Termination bars: 0.040 mill finished aluminum with 3 1/2" vertical drop and 1/2" top caulk receiver.

E. Sump pans: Recessed 20 Ga. metal.

F. Drain and Stack vents: Provide one of the following:

a. 4-lb desilverized pig lead flashing.

b. Portals Plus "Alumi-Flash" XT with C-126 cap.

c. Portals Plus "Pipe Portal System" with RC-4A ABS cover and C-126 cap.

G. Single Pipe Penetrations (natural gas & electric): Provide one of the following:

a. Portals Plus "Alumi-Flash" XT with EPDM capsized to fit pipe.

b. Portals Plus "Pipe Portal System" with ABS cover and EPDM capsized to fit pipe.

c. Pate Pipe Curb with ABS cover #pcc-2 and PVC capsized to fit pipe.

H. Condensate Drains (where internal piping is required): Provide Portals plus Alumi-Flash (standard) with C-126 cap or Pate Pipe Seal #pps-3 with spun aluminum base.

I. Plastic Cement: Conform to FS SS-C-153C.

J. Traffic Pads: provide 3/8" thick "DynaTred Plus Roof walkway or approved equal as supplied by the manufacturer of the membrane being installed

PART III - EXECUTION

3.01 INSTALLATION

A. Install roof system in strict compliance with manufacturer's instructions.

B. The use of pitch pockets or sealant pockets is strictly prohibited

C. Terminate the flashings of all roof curb corners with transition flashing or cover with three course of roofing cement and fabric reinforcement. All exposed roofing cement shall be protected with granules

D. Provide saddles/crickets at all curbs and equipment bases to push water around curbs.

E. Protect all adjoining and finished surfaces, including, but not limited to walls, glazing systems, pavements, walks and landscaping. Repair damaged areas to "as new" condition at no cost to the Owner.

F. Provide prefabricated jackets and/or pipe portals, weather tight and insect proof, at all pipe clusters. The use of pitch pockets, or sealant pockets are strictly prohibited. All soil stacks, flue stacks, pipes and other penetrations shall be flashed in on top of the completed roof membrane.

G. Do not install more insulation and membrane than can be made watertight before the end of each days work.

H. Repair/replace deteriorated, defective or damaged roofing prior to final acceptance.

G. Standing water will not be permitted on any completed roof. All areas where standing water exists shall be corrected regardless of acceptance of standing water by the membrane manufacturer.

H. Splash blocks shall consist of pre-manufactured concrete units set on roof pads or additional layers of membrane and placed under all condensation lines and downspouts.

I. All pipe supports shall be placed over a roof pad that is adhered to the roof surface.

J. All gas lines, condensation lines, spigots, electrical lines and steel pipes and tubes that penetrate the field of the roof must be flashed thru a Portals Plus or Pate pipe flashing. The use of a pitch pocket or a lead sleeve and caulk to flash a penetration is not acceptable.

K. The back side of all masonry parapet walls must be covered and flashed in with roofing material per the requirements of the membrane manufacturer. At high wall details where the flashing height exceeds 24", separate the base flashing from the wall flashing with a metal counterflashing detail and waterproof above as indicated in the drawings.

L. Penetrations thru the wall flashings must be above 24” from the completed roof height and properly flashed so as not to effect the wall flashing warranty.

M. All penetration boots must be terminated with a metal draw band and sealed with caulk.

N. All fasteners used to secure caps, hoods, counterflashings and coping details shall consist of stainless steel, neoprene washered screws. Nails are not acceptable.

O. Clear the roof of all excess loose granules upon completion of the roof. All asphalt bleed-out must be covered with granules.

P. Modified bitumen roof membrane shall be “White Granule” in color.

Q. Penetrations through any roof curb base flashing or any wall flashing is prohibited.

END OF SECTION

SECTION 07600 - FLASHING, SHEET METAL, SPECIALTIES AND ACCESSORIES

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work includes:
1. Metal counter flashing.
2. Metal wall flashing and copings
3. Scuppers
4. Gutters and Downspouts, (except at standing seam metal roofs)
5. Roof Scuttle
6. Miscellaneous roof accessories
7. Equipment curbs.

1.02 QUALITY ASSURANCE

A. Comply with the recommendations of S.M.A.C.N.A. (Latest Edition).

B. Sheet metal details, including copings, related to the membrane roofing installation specified in sections 07500, 07510, 07520, 07530 and 07535 shall be installed by the membrane roofing installer.

PART II - PRODUCTS

2.01 FLASHING AND SHEET METAL MATERIALS

A. Zinc-coated Steel: Commercial quality with 0.20% copper, ASTM A 653, G90 hot-dip galvanized, (24 gauge) except as otherwise indicated, pre-finished with Kynar 500/Hylar 5000 coating..
1. Gutters up to 15” girth; use 26 gauge.

2. Gutters 16” to 20” girth; use 22 gauge.

3. Scuppers, conductor heads and downspouts use 24 gauge.

4. Copings up to 18” girth; use 24 gauge.

5. Copings over 18: girth; use 22 gauge.

6. All counterflashings shall be 24 gauge

B. Aluminum coping: ASTM B 209, alloy 3003, temper H14, 0.032" thick except as otherwise indicated. Provide pre-finished KYNAR colors as noted.
1. Copings over 14” wide or gutters over 16” girth, use 0.040” min. thickness.

2. Gutters up to 15” girth; use 0.032” min. thickness.

3. Gutters 16” to 20” girth; use 0.040” min. thickness.

4. Downspouts use 0.025” min. thickness.

C. Colors: Pre-finish all exposed copings, trim, gutters and downspouts in the following KYNAR colors:
1. Color as noted on plans, to match building, as manufactured by Una-Clad (Copper Sales Inc.), Metal-Era or Integris Metals.

2.02 MISCELLANEOUS FLASHING AND SHEET METAL ACCESSORIES

A. Solder: For use with steel or copper, provide 50 - 50 tin/lead solder (ASTM B 32), with rosin flux.

B. Fasteners: Same metal as flashing/sheet metal. Match finish of exposed heads with material being fastened.

C. Mastic Sealant: Polyisobutylene; non-hardening, non-skinning, non-drying, non-migrating sealant.

D. Adhesives: Type recommended by flashing sheet manufacturer for waterproof/weather-resistant seaming and adhesive application of flashing sheet.

E. Reglets: Metal or plastic units, compatible with flashing indicated, non-corrosive.

F. Metal accessories: Provide sheet metal clips, straps, anchoring devices and all accessory units as required for installation of work, matching or compatible with material being installed, noncorrosive.

G. Roofing cement ASTM D-2822 asphaltic.

2.03 FABRICATED UNITS

A. General Metal Fabrication: Shop-fabricate work to greatest extent possible. Comply with details shown, and with applicable requirements of SMACNA "Architectural Sheet Metal Manual". Fabricate for waterproof and weather-resistant performance; with expansion provisions for running work, sufficient to permanently prevent leakage, damage or deterioration of the work. Form exposed sheet metal work without buckling with exposed edges folded back to form hems.

1. Coping Joints: Use S.M.A.C.N.A. joint types J5 thru J12 in compliance with S.M.A.C.N.A Architectural Sheet Metal Manual table 3-1 “Coping Design”, for the specific metal thickness, type and coping width.

2. Pre-engineered/manufactured coping cap systems complying with FM wind uplift and S.M.A.C.N.A. standards are acceptable if approved by the Architect.

B. Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used, or would not be water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1" deep, filled with mastic sealant.

C. Sealant Joints: Where movable, non-expansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.

D. Separations: Provide for separation of metal from non-compatible metal or corrosive substrates, with bituminous coating or other permanent separation.

E. Gutters and Downspouts and Trim: Provide manufacturers standard KYNAR shop finish, color as per Article 2.01.D. For gutters at standing seam metal roofs, see Section 07610.

1. Where downspouts will be vulnerable to damage from vehicular traffic provide protective cover of 1/8” thick bent steel plate 5’-0” tall bolted to the building wall

with the lower edge approximately 8” above finish grade. Finish to match downspout color.

2.04 ROOF SCUTTLE

A. 2'-6" X 3'-0" Type "S" with "Ladder UP" safety post, model 2, by Bilco, provide fire-rated units as required by local authorities.

2.05 EQUIPMENT CURBS

A. Equipment Curbs; 18 ga. galvanized steel with continuous welded cover seams, factory installed wood nailer, factory installed 1 1/2 thick 3 pound density rigid insulation and 18 ga. galvanized counter flashing and reinforcing as required to support equipment.

2.06 PIPE PORTALS

A. Portals Plus “Alumi-Flash” EW or XT with EPDM cap sized to fit pipe.

2.07 CAST DOWNSPOUT NOZZLES

A. Zurn Z199 or Wade Drains 3940 cast bronze downspout nozzle.

PART III EXECUTION

3.01 INSTALLATION REQUIREMENTS:

A. Comply with manufacturer's installation instructions and recommendations, and with SMACNA "Architectural Sheet Metal Manual". Anchor units as required to be secure and permanently watertight/weathertight.

END OF SECTION

SECTION 07900 - JOINT SEALERS

PART 1 - GENERAL

1.01 QUALITY ASSURANCE

A. Applicator Qualifications: Applicator shall have a minimum of 5 years experience successfully installing sealants.

B. Compatibility; Applicator shall be responsible for verifying that sealants used are compatible with joint substrates.

C. Guarantee; Sealant joints shall be guaranteed against adhesives and cohesive failure and water penetration through the sealed joint for 5 years.

D. Apply sealants in strict compliance with manufacturer instructions.

1.02 REFERENCES

A. ASTM C790 - Recommended Practices for Use of Latex Sealing Compounds.

B. ASTM D804 - Recommended Practice for Use of Solvent - Release Type Sealants.

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

D. FS TT-S-227 - Sealing Compound, Rubber Base, Two Component.

E. FS TT-S-230 - Sealing Compounds, Synthetic-Rubber Base, Single Component, Chemically Curing.

F. FS TT-S-1543 - Sealing Compounds, Synthetic-Rubber Base.

1.03 SUBMITTALS

A. Submit product data and samples in accordance with Section 01300, including a summary of where each sealant is proposed to be used.

B. Submit manufacturer's surface preparation and installation instructions.

C. Submit samples of available sealant colors for selection by the Architect.

1.04 WARRANTY

A. Provide two year warranty in accordance with Section 01700.

B. Warranty: Replace sealants which fail because of loss of cohesion or adhesion, or do not cure.

PART II - PRODUCTS

2.01 MANUFACTURERS

A. Products made by the following manufacturers, provided they comply with requirements of Contract documents, will be among those considered acceptable, however, it is the contractor’s responsibility to provide only products compatible with adjacent materials in the assembly.

1. Pecora Corporation

2. Dow Corning Corporation
3. General Electric Co., GE Silicones
4. Sonneborn Building Products Division/Chemrex, Inc.
5. Tremco, Inc.

2.02 SEALANTS

A. Compatibility: Provide joint sealers, joint fillers and other related materials that are compatible with one another and with joint substrates under conditions of service and application

B. Interior Sealants and Caulking

1. In areas **not** subject to moisture: Acrylic latex caulk able to withstand movement of +7.5% or –7.5%. Maximum Shore A Hardness 55. Compatible with latex paints; non-staining; non-bleeding; color to match adjacent surfaces or as directed by Architect.

a. Pecora AC-20 +Silicone – 1-part Non-Sag Acrylic Latex Caulking Compound

2. In areas subject to moisture (toilet rooms and sink areas): 1-part silicone based sealant, conforming to FS TT-S-1543 Class A, able to withstand movements of +25% or –25%; maximum Shore A hardness of 50; non-staining, color to match adjacent surfaces or as directed by Architect.

a. Pecora 898 – 1-part Sanitary Mildew Resistant Silicone Sealant

C. Minimal Movement Sealants (general purpose building envelope sealant, including window and door perimeters, storefront perimeters, ATM installations, exterior counter tops, etc - +25% or -25% movement capability) conforming to ASTM C-920 Type S, Grade NS, Class 25 and Federal Specification TT-S-230(c) Type II, Class A. Shore A Hardness 25-40. Non staining, non bleeding.

1. Pecora DynaTrol I-XL - General Purpose 1-part Polyurethane Sealant

D. Significant Movement Sealants (Control and Expansion Joints - +25% or -25% movement capability) conforming to ASTM C-920 Type M, Grade NS, Class 25 and Federal Specification TT-S-227(e) Type II, Class A. Shore A Hardness 25-40.

1. Pecora DynaTrol II - General Purpose 2-part Polyurethane Sealant

E. Extreme Movement Sealants (Control and Expansion Joints - +100% or -50% movement capability) conforming to ASTM C-920 Type S, Grade NS, Class 25 and Federal Specification TT-S-1543(a) Class A. Shore A Hardness 15-25.

1. Pecora Pro-Sil^{sct}1 – 1-part Hybrid Polymer Sealant

F. Traffic Grade Sealants (Horizontal joints in areas subject to pedestrian or vehicular traffic) – Conforming to ASTM C-920 Type M, Grade NS, Class 25 and Federal Specification TT-S-227(e) Type II, Class A. Shore A Harness 40.

1. Pecora DynaTred – 2-part Non-Sag, Traffic Grade Polyurethane Sealant

G. Color: Sealant color shall match the color of the materials at each side of the joint. If materials change along the length of a continuous joint, the color shall change to match

the surrounding materials. When materials differ on each side of the joint, install as follows. For combinations not listed below, consult the Architect of Record.

1. Masonry and Storefront Systems; match storefront.

2. Masonry and Hollow Metal; match hollow metal final finish.

3. Masonry and Prefinished Metal; match prefinished metal.

4. Horizontal Concrete and Masonry; match concrete.

5. EIFS/Plaster and Masonry; match EIFS/Plaster.

2.03 ACCESSORIES

A. Primer: Provide type recommended by sealant manufacturer for project conditions, non-staining.

B. Backer Rod: Closed cell (non-gassing) polyethylene or polyurethane as recommended by sealant manufacturer, oversized 30% to 50%.

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

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

PART III - EXECUTION

3.02 INSPECTION

A. Verify joint dimensions, physical, and environmental conditions are acceptable to receive work of this Section.

B. Beginning of installation means acceptance.

3.03 PREPARATION

A. Clean, prepare, and size joints in accordance with manufacturer's instructions. Remove any loose materials and other foreign matter which might impair adhesion of sealant. Joints shall be dry, clean and free from dust.

B. Verify that joint shaping materials and release tapes are compatible with sealant.

C. Examine joint dimensions and size materials to achieve required width/depth ratios.

D. Use joint filler to achieve required joint depths, to allow sealants to perform properly. Install joint filler and backing without gaps between ends.

E. Use bond breaker where required to prevent 3-sided bonding within the joint. Provide and install as recommended by sealant manufacturer.

F. Prime joint surfaces in accordance with sealant manufacturer’s recommendations

3.04 INSTALLATION

A. Perform work in accordance with ASTM C804 for solvent release and C790 for latex base sealants as applicable.

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

C. Apply sealant within recommended temperature ranges. Consult manufacturer when sealant cannot be applied within recommended temperature ranges.

D. Width/Depth Ratios: Minimum depth = W x .5 not to be less than 1/4". Maximum depth = W x .9 not to be greater than 1/2".

E. Tool joints concave.

F. Joints: Free of air pockets, foreign embedded matter, ridges, and sags.

3.05 CLEANING AND PROTECTION

A. Clean off excess sealants or smears adjacent to joints without damaging adjacent surface or finishes.

B. Protect sealants from damage and contaminants until fully cured. Damaged or contaminated sealants shall be cut out and replaced.

END OF SECTION

SECTION 08100 – STANDARD STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The work of this Section includes, but is not limited to the following.

1. Steel hollow metal door and window frames.

2. Steel hollow metal doors.

3. Steel solid core doors.

1.02 RELATED WORK

A. Section 08110 – INTERIOR ALUMINUM DOORS AND FRAMES

B. Section 08200 – WOOD DOORS

C. Section 08700 – FINISH HARDWARE

1.03 QUALITY ASSURANCE

A. Provide doors and frames complying with Steel Door Institute "Recommended Specifications Standard Steel Doors and Frames" SDI-100.

B. Fire Rated Door Assemblies: Provide assemblies complying with NFPA 80 and labeled in accordance with ASTM E-2074-00. Comply with UL 10C “Positive Pressure Fire Tests of Door Assemblies”.

1.04 REFERENCE STANDARDS

A. SDI-100 - Recommended Specifications-Standard Steel Doors and Frames of Steel Door Institute.

B. ASTM A525 - Steel sheet, Zinc Coated (Galvanized) by the Hot Dip Process, General Requirements.

C. ASTM A569 - Steel, Carbon, Hot-Rolled Sheet and Strip, Commercial Quality.

D. ASTM A591 - Steel Sheet, Cold-Rolled, Electrolyte Zinc Coated.

E. ASTM A366 - Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.

1.05 SHOP DRAWINGS AND PRODUCT DATA

A. Submit shop drawings and product data in accordance with Section 01300.

B. Indicate general construction, configurations, jointing methods, reinforcements, anchorage methods, hardware locations, and installation details.

PART II - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with requirements, provide steel doors and frames by one of the following:

- Amweld/Div. American Welding & Mfg. Co.
- Ceco Corp.
- Curries
- Fleming Steel Doors and Frames, an Assa Abloy Group Company
- Mesker Industries, Inc.
- Steelcraft/Div. American Standard Co.

2.02 MATERIALS

A. Provide doors and frames as follows, in compliance with SDI-100 requirements:

1. Interior Doors: Grade II, heavy-duty, Model 1, minimum 18-gage faces, 1 ” thick.

2. Exterior Doors: Grade III, extra heavy-duty Model 2, minimum 16-gage faces, 1-3/4 ” thick.

3. Interior Door Frames: Minimum 18-gage cold-rolled furniture steel, 2” face, concealed fastenings, mitered and welded corners.

4. Exterior Door Frames: Minimum 16-gage cold-rolled furniture steel (galvanized), 2” concealed fastenings, mitered and welded corners.

B. Hot-Rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A 1011.

C. Cold-Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A 1008.

D. Galvanized Steel Sheets: Zinc-coated carbon steel sheets, complying with ASTM A-653, G60 zinc coating, mill phosphatized.

E. Supports and Anchors: Fabricate of not less than 18-gage galvanized sheet steel.

F. Inserts, Bolts, and Fasteners: Manufacturer's standard units, except hot-dip galvanize items to be built into exterior walls, complying with ASTM A 153, Class C or D as applicable.

2.03 SHOP APPLIED PAINT

A. Primer: Rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints.

2.04 FABRICATION

A. Fabricate frames with mitered and welded corners. K-D Frames are prohibited.

B. Fabricate exposed faces of doors from only cold-rolled steel.

C. Fabricate frames with 12-gage concealed stiffeners, reinforcement, edge channels, louvers, and moldings from either cold-rolled or hot-rolled steel (at fabricator's option). Factory weld all frames. Field welding/fabrication is prohibited.

D. Fabricate exterior doors, panels, and frames from hot dip galvanized sheet steel. Close top and bottom edges of exterior doors as integral part of door construction or by addition of minimum 16-gage inverted steel channels.

E. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat Phillips heads for exposed screws and bolts.

F. At exterior locations provide thermal insulating door and frame assemblies, tested in accordance with ASTM A-1363.

G. Provide assemblies with U factor of 0.41 BTU/Hr. Ft. squared/deg. F or better.

H. Finish Hardware Preparation: Doors and frames to receive mortised and concealed finish hardware. Comply with applicable requirements of ANSI A115 series specifications.

I. Door Silencers: Except on weather-stripped frames, drill stops to receive 3 silencers on strike jambs.

J. Accurately form and cut mitered corners of flush type frames. Weld on inside surfaces. Grind welded joints to smooth uniform finish.

K. Reinforce and prepare frames to receive hardware. Refer to Section 08700 for hardware requirements.

L. Provide jamb anchors: SDI-100. Weld floor jamb anchors in place.

M. Fill surface depressions with metallic paste filler and grind to smooth finish.

N. Touch up areas where galvanized coating has been removed due to sanding or handling.

O. Chemically treat surfaces and apply one coat of primer.

PART III - EXECUTION

3.01 INSTALLATION

A. Comply with SDI-105 "Recommended Erection Instructions For Steel Frames", SDI-100 and NFPA 80.

B. Install hollow metal frames plumb and square, and with maximum diagonal distortion of 1/16 inch. Install hardware in accordance with requirements of Section 08700. Ensure frames are securely and rigidly anchored to adjacent construction.

C. Frame Anchorage:

1. In masonry construction, locate 3 wall anchors per jamb at hinge and strike levels.

2. At in-place concrete or masonry construction, set frames and secure to adjacent construction with machine screws and masonry anchorage devices.

3. Install fire-rated frames in accordance with NFPA Std. No. 80.

4. In metal stud partitions, install at least 3 wall anchors per jamb at hinge and strike levels. In open steel stud partitions, place studs in wall anchor notches and wire tie. In closed steel stud partitions, attach wall anchors to studs with tapping screws.

C. After installation, touch-up scratched or damaged surfaces. Use type of primer identical to that used for shop coat.

D. Paint all doors and frames.

E. Final adjustments: Check and readjust operating finish hardware items, leaving steel doors and frames undamaged and in complete and proper operating condition.

END OF SECTION

SECTION 08110 –INTERIOR ALUMINUM DOOR FRAMES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The work of this Section includes, but is not limited to the following.

1. Interior aluminum door frames

1.02 RELATED WORK

A. Section 08200 - WOOD DOORS

B. Section 08700 – HARDWARE

C. Section 08800 – Glazing

1.03 SHOP DRAWINGS AND PRODUCT DATA

A. Product Data: Submit manufacturer product specifications, technical product data, standard details, and installation recommendations for each type of frame. Include the following information:

1. Fabrication methods

2. Finishing

3. Preparation for hardware

4. Accessories, such as glazing bead and silencers

B. Shop drawings: Submit shop drawings for fabrication and installation of door frames, window units and trims, including the following:

1. Typical elevations

2. Detail sections of typical members

3. Hardware, mounting heights

4. Anchorages and reinforcements

5. Glazing details

6. Extruded aluminum ceiling and wall trims, sills, covers and similar items indicated or required for complete installation

C. Samples: Submit samples of each type and color of aluminum finish.

D. Manufacturer Instructions: Provide copies of manufacturer data for fabrication and installation of aluminum door frames.

1.04 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Company specializing in the manufacturing of door frame systems with a minimum of 10 continuous years of documents experience.

2. Installer: Company with a minimum of 5 years documented experience in the installation of interior aluminum door frames, approved by manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver all materials to the installation site in the manufacturer's original packaging. Packaging shall contain manufacture's name, product number, frame number as indicated on architectural drawings, and other related information.

B. Inspect frames upon delivery for damage.

C. Store frames at the building site under cover. Avoid the use of coverings that could contribute to discoloration of the finish.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

A. Timely
10241 Norris Ave.
Pacoima, CA 91331
(800) 247-6242

2.02 PRODUCTS

A. Timely T28 aluminum, clear anodized, with Alumatone frame

2.03 MATERIALS

A. Aluminum Members: All component shapes shall be extruded from controlled alloy billets of 6063-T5 or 6463-T5, complying with ASTM B 221.

B. Fasteners: Provide fasteners of aluminum, stainless steel or other non-corrosive materials which are compatible with aluminum components, hardware, and anchors in accordance with ASTM A 164.

C. Glazing Gaskets: Glazing gaskets shall be black and or gray roll-in vinyl type.

D. Door mutes shall be black or gray pull in mohair type for non-rated frames. For fire rated frames, mutes shall be pull in vinyl.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that wall surfaces to receive frame are smooth, flat and of proper size.

3.02 INSTALLATION

A. Install frames in accordance with manufacturer's installation instructions.

3.03 CLEANING

A. Wash all soiled surfaces with mild soap solution, rinse with clear water, and wipe dry. Do not use any harsh cleaning agents, abrasives, or caustic for cleaning. Leave free of dirt, streaks, and labels.

END OF SECTION

SECTION 08200 - WOOD DOORS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Solid core flush wood doors with veneer faces.

B. Half light doors

C. Shop priming of wood doors is included.

D. Louvers for wood doors (furnished and installed) are included.

1.02 QUALITY ASSURANCE

A. AWI Quality Standards: Section 1300 "Architectural Flush Doors" of "Architectural Woodwork Quality Standards" published by Architectural Woodwork Institute (AWI).

B. WDMA IS 1A – Window and Door Manufacturers Association.

C. Fire-Rated Wood Doors: Provide wood doors which match units tested in door and frame assemblies per ASTM E 2074 and UL 10C and which are labeled and listed for ratings indicated by UL, other testing and inspection agency acceptable to authorities having jurisdiction.

D. Manufacturer: Obtain doors from a single manufacturer unless noted otherwise.

E. Warranty: Provide door manufacturer's standard, signed by Manufacturer, Installer and Contractor, agreeing to repair or replace defective doors, including re-hanging and refinishing, at no cost to the owner. Warranty shall be for the life of the installation and shall include (but not be limited to) doors exhibiting defects in materials or workmanship including warp and de-lamination

PART II - PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with requirements, provide products of one of the following:

1. Algoma Hardwoods, Inc.

2. Buell Door Company

3. Eggers Industries

4. Oshkosh Architectural Door Company

5. Marshfield Doorsystems, Inc. (formerly Weyerhauser Company)

6. Mohawk Flush Doors, Inc.

2.02 INTERIOR FLUSH WOOD DOORS

A. Solid Core Doors for Opaque Finish: Comply with the following requirements:

1. Faces: Any closed-grain standard thickness hardwood of mill option or medium density overlay (MDO).

2. Grade: Custom.

3. Construction: SLC-5 (Glued block core, 5-ply), edge bands glued to core, SCLC-5 (Structural Composite Lumber Core, 5-ply) or particleboard core (PC-5, 1-LD-2 grade), all edges glued to core. Provide 1-3/8 wide solid wood stiles at top, bottom and center and solid wood lock block.

4. Thickness 1 ¾ inches.

B. Fire -Rated Solid Core Doors: Comply with the following requirements.

1. Faces and AWI Grade: Match non-rated doors in same area of building, unless otherwise indicated.

2. Construction: Manufacturer's standard core construction as required to provide fire-resistance rating indicated.

C. Solid Core Doors for Stained Wood Veneer Finish: Comply with AWI type SLC-7; 1 3/4 inches thick; solid core construction with plain sliced select grade wood veneer (Birch unless otherwise specified).

D. Half Lite Interior Wood Doors: 1 3/4 inches thick, AWI Premium Grade, stain grade wood veneer (or solid wood) to match flush doors, wood stops at glazing.

2.03 LOUVERS AND LIGHT FRAMES:

A. Louvers: For doors to receive opaque finishes, provide door manufacturer's standard metal louvers, of size indicated, formed of 18 gage cold-rolled steel, factory primed for finish painting. For doors with stained wood veneer finish, provide wood louvers of material and finish to match door finish.

B. Frames for Light Openings in Fire Doors: Manufacturer’s standard frame formed of 18-gage cold-rolled steel, factory-primed, and approved for use in door of fire rating indicated.

2.04 FABRICATION

A. Openings: Cut and trim openings through doors and panels as shown. Comply with applicable requirements of referenced standards for kind(s) of doors required.

1. Light Openings: Factory cut openings. Provide 18-gage cold rolled metal frames. At all pharmacy doors, the removable stops shall be placed on the pharmacy side of door. Non-removable stops shall be placed at opposite side of pharmacy door. Fire rated doors with light openings shall have UL listed wire glass.

2. Louvers: Factory install louvers in prepared openings.

B. Fabricate wood doors in accordance with premium grade requirements of AWI Quality Standards, Section 01300.

C. Bevel strike edge of non-rated single acting doors 1/8 inch in 2 inches.

D. Bevel fire-rated doors 1/8" in 2" in lock edge; trim stile rails only to extent permitted by labeling agency.

E. Radius strike edge of double acting swing doors 2 1/8 inches.

F. Prepare doors to receive hardware. Refer to Section 08700 for hardware requirements.

G. Wood muntins and glazing stop shall be overlay type, wood shall be red oak.

2.05 SHOP-PRIMING:

A. Before delivery of doors shop-prime as follows:

1. Paint Finish: Prime with one coat of wood primer; interior enamel under coat (FS-TT-E-543).

2. Moore's alkyd enamel under body.

2.06 PREFITTING AND PREPARATION FOR HARDWARE
(contractors option)

A. Pre-fit and pre-machine wood doors at factory.

PART III EXECUTION

3.01 INSTALLATION

A. Condition doors to average prevailing humidity in installation area prior to hanging. Seal cut surface after fitting and machining.

B. Fitting Clearances: For non-rated doors provide clearances of 1/8" at jambs and heads; and 1/8" from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4" clearance from bottom of door to top of threshold.

C. Install doors and transoms plumb and square, and with maximum diagonal distortion of 1/16 inch. Install hardware in accordance with requirements of Section 08700.

D. Coordinate installation of glass and glazing.

E. Coordinate staining and sealing of wood surfaces.

3.02 OPERATION

A. Re-hang or replace doors, which do not swing or operate freely, as directed by Architect.

END OF SECTION

SECTION 08300 – ACCESS PANELS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work includes:

1. Access panels

1.02 QUALITY ASSURANCE

A. Provide a complete properly operating installation for each type of access panel including all hardware, mounting and installation components.

B. Any deviation from the specified finishes, colors, etc., must be approved by the Architect of Record and fully coordinated with all similar and related systems.

PART II - PRODUCTS

2.01 ACCESS PANELS

A. Provide 24” x 36” doors, with 16 Ga. frames, 14 Ga. doors, continuous concealed hinges, cylinder lock with two keys and prime painted finish unless noted otherwise. Units with plaster bead flanges may be used (contractors option) at EIFS soffits. Provide fire rated units when required by local authorities. At panels in weather exposed locations provide gasketing and rain hoods.

B. Acceptable Manufacturers: Acudor; model UF-5000, PS-5030 (plaster flange), FW-5050 (fire rated).
JL Industries, Inc.; model TM, model PWE (plaster), model FD (fire rated).
Karp Assoc., Inc.; model DSC-214M, DSC-214 pl (plaster), KRP-150 FR (fire rated).
Larsen’s Manufacturing Co.; model L-MPG, L-FRAP (fire rated).
Milcor; style M, style K (plaster), UFR (fire rated).
Mifab Manufacturing: style UA, CAD-FL-PL (plaster), MPFR (fire rated).

PART III - EXECUTION

3.01 INSTALLATION

A. Install access panels complete with necessary hardware, in accordance with manufacturer's instructions.

B. Painting: See Section 09910.

C. Upon project completion lubricate, test and adjust doors to operate easily, free from warp, twist or distortion.

END OF SECTION

SECTION 08450 - ALUMINUM STOREFRONTS & AUTOMATIC ENTRANCES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Aluminum storefronts and automatic entrances include the following:

1. Storefront framing systems.

2. Automatic sliding entrance doors. (not used)

3. Interior storefront systems. (ref. NFCU TI specifications)

B. Electrical connections are specified in Division 16.

1.02 SYSTEM PERFORMANCE

A. General: Provide automatic entrance and storefront assemblies that have been designed and fabricated to comply with performance characteristics listed below.

1. Wind loading: System shall withstand uniform pressure of 30 PSF (1440 Pa) with maximum deflection of 1/175 of span and allowable stress with a safety factor of 1.65.

Entrance Operator: Provide operators which will open and close doors and maintain them in fully closed position when subjected to the 30 MPH wind velocity or equivalent inward differential pressures.

2. Air infiltration: Tested in accordance with ASTM E-283-04 shall not exceed .06 CFM/SQ. FT. of fixed area.

3. Water infiltration: Tested in accordance with ASTM E-331-00 shall allow no penetration at 8 PSF pressure.

4. Thermal: All framing members shall incorporate a thermal barrier eliminating direct contact between exterior and interior aluminum sections.

1.03 QUALITY ASSURANCE

A. Each type of system is based on one manufacturers system respectively. Acceptable alternate manufacturers are listed but must conform in every way to the base system.

1. Any deviation from the specified finishes, colors, etc., must be approved by the Architect of Record and fully coordinated with all similar and related systems.

B. Powered door operators shall comply with UL 325.

C. Automatic entrances shall be UL listed as an exitway and comply with A.D.A. requirements.

1.04 SUBMITTALS

A. Submit shop drawings for each type of system.

PART II - PRODUCTS

2.01 ACCEPTABLE STOREFRONT MANUFACTURER

A. Storefront Systems: Kawneer Company #Trifab VG 451-T-CG, thermally broken, center glazed system 2" x 4-1/2" profile with shear block construction, to receive ¼" glass or 1" insulating glass as indicated on elevations.

Color: Clear Anodized, AA-M12C22 A41, Class I Anodic coating (unless noted otherwise on drawings).

B. Alternate Storefront Manufacturers:
1. United States Aluminum Corp. #IT 451, thermally broken.

2. Vistawall Architectural Products, Series 3000, Thermal Flush Glaze.

PART III - EXECUTION

3.01 PREPARATION

A. Field Measurement: Take field measurements prior to preparation of shop drawings and fabrication, to ensure proper fitting of work.
1. Contractor shall provide appropriately sized rough opening to receive the automatic entrance doors.

3.02 INSTALLATION

A. Comply with manufacturer's specifications and recommendations.

B. Set units plumb, level and true to line, without warp or rack of frames or doors. Anchor securely in place. Separate aluminum and other corrodible metal surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

C. Set sill members in a bed of sealant or with joint fillers or gaskets to provide weathertight construction.

D. Install complete door operator system in accordance with manufacturer's instructions, including piping (if any), controls, control wiring, and remote power units (if any).

E. Glass and Glazing: See Section 08800.

F. Guide rails to be set in cored holes and grouted in place.

3.03 ADJUST AND CLEAN

A. Adjust operating devices and hardware to function properly, without binding, and to provide tight fit at contact points and weather-stripping.

B. Clean aluminum surfaces promptly after installation. Remove excess glazing and sealant compounds, dirt and other substances.

END OF SECTION

SECTION 08700 - DOOR HARDWARE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Hardware for interior and exterior doors for both new and existing doors. Hardware on existing doors indicated to remain will be replaced with new hardware as indicated on the drawings. Specified manufacturer and item or assembly shown on drawings take precedent over items specified in this section, however, when no specified item is shown on drawing, use items herein.

1.02 RELATED WORK

A. Section 08100 - STANDARD STEEL DOORS AND FRAMES

B. Section 08200 - WOOD DOORS

1.03 REFERENCE STANDARDS

A. ANSI A115.1 - Door and Frame Preparation for Door Locks

B. ANSI A115.1 - Door and Frame Preparation for Lever Extension Flush Bolts.

C. ANSI A117.1 - Door and Frame Preparation for Closer, Offset Hung, Single Acting.

D. ANSI A117.1 - Specifications for Making Buildings and Facilities Accessible to and usable by Physically Handicapped People.

E. ANSI A156.1 - Butts and Hinges

F. ANSI A156.2 - Locks and Lock Trim.

G. ANSI A156.3 - Exit Devices.

H. ANSI A156.4 - Door Controls (Closers).

I. ANSI A156.6 - Architectural Door Trim.

J. ANSI A156.7 - Template Hinges.

1.04 QUALITY ASSURANCE

A. Obtain each type of hardware from a single manufacturer.

B. Hardware shall be furnished only by a recognized builder's hardware supplier who has in him employ an experienced hardware consultant (AHC) or person with equivalent experience who shall be available at all reasonable times during the course of the work for consultation with the Owner, Architect, and Contractor.

C. The General Contractor and his hardware supplier shall examine the drawings and schedule. Any concerns arising from this examination regarding the installation, performance, or function (etc...) of the hardware shall be brought to the attention of the Architect.

D. Hardware supplier shall have warehousing facilities and shall have been furnishing finish hardware for not less than three years.

E. Fire-Rated Openings: Provide hardware complying with NFPA 80 and local codes and ordinances. Furnish units with "UL" or "FM" labels as required.

F. Accessibility: Provide hardware complying with the requirements of the "Americans With Disabilities Act".

G. Discrepancies: Furnish proper types, finishes, fasteners, and quantities based on codes, requirements, etc. in effect at time of installation.

1.05 SUBMITTALS

A. Hardware Schedule: Submit a final hardware schedule fully coordinated with other work, frames and operation.

B. Submittal shall include complete descriptions of all hardware and miscellaneous associated items required for the complete installation. Data shall include illustration of each item and clearly indicate manufacturers, model numbers, functions, finishes, options and accessories to be provided.

C. Indicate locations and mounting heights of each type of hardware, in accordance with barrier free codes.

D. Templates: Furnish templates to each fabricator of doors, frames, and work factory prepared to receive hardware.

1.06 KEYING

A. Submit keying schedule with Finish Hardware schedule. Material supplier shall set up meeting with Architect and Owner to determine keying requirements for this purpose. All keys shall be tagged with opening number and/or keyset number. Keys shall be delivered to the Architect by hand or by registered, return receipt mail.

B. Keys for locksets on this project shall be supplied as follows:

10 each	Masterkey
3 each	Change Key per lock

1.07 OPERATION AND MAINTENANCE DATA

A. Provide Architect/Engineer with manufacturer's parts list and maintenance instructions for each type of hardware supplied and necessary wrenches and tools required for proper maintenance of hardware.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Requirements for design, grade, function, finish, size, etc. are indicated on the drawings.

B. Manufacturer's catalog numbers are used to establish the quality required. Similar items by other manufacturers that are equal in design, function and quality may be submitted to the Architect for review as proposed substitution in accordance with Section 01600.

C. Acceptable Manufacturers:

1.	Butt Hinges	Stanley, Hager, McKinney, Baldwin, Schlage, Lawrence Bros
2.	Door Pulls & Push Plates	Hager, Rockwood
3.	Locksets, Latches, Rim Cylinders	Arrow, Sargent, Schlage, Yale, Corbin, Russwin
4.	Exit Devices	VonDuprin, Sargent, Corbin, Russwin.
5.	Closers	LCN, Yale, Sargent, Corbin, Russwin, Schlage
6.	Wall/Floor Stops	Hager, Ives, Rockwood, Quality, Trimco
7.	Silencers	Glynn Johnson, Hager, Rockwood
8.	Thresholds, Sweeps	National Guard, Pemko
9.	Weather-stripping	Pemko, Reese, Zero
10.	One-way viewer	Ives, Rockwood, Stanley; (and Colonial Safeguards Inc. where Big-Eye door viewer is specified)
11.	Door Protection & Kick Plates	Hager, Rockwood, Construction Specialties
12.	Push Button Lockset	Simplex
13.	Bolts and Catches	Ives
14.	Key Cabinet	Key Control, Telkee, Alladin

2.02 MATERIALS & FABRICATION

A. Hand of Door; Drawings show swing of each door leaf. Furnish each hardware item for proper installation and operation of door movement.

B. Manufacturers Nameplates; Shall not be visible except for required UL labels.

C. Fasteners: Conform to templates, prepared for machine screw installation. Provide Phillips flat-head screws (unless noted otherwise), finish to match hardware. Provide concealed fasteners when available. Do not use exposed thru-bolts (unless noted otherwise).

D. Provide items as listed on the drawings, complete to function as intended.

E. If specified hardware is not delivered in a timely manner, provide suitable hardware on a temporary basis to meet the Owner's needs. Notify Architect immediately if this situation arises.

2.03 HINGES

A. Screws; Phillips flat-head machine screws except furnish Phillips flat-head wood screws for installation into wood. Screw finish to match hinge.

B. Hinge Pins; Exterior doors, non-removable pins with security stud. All other interior doors, non-rising pins (unless noted otherwise).

C. All hinges shall be concealed five knuckle ball and oilite bearing hinges. All hinges shall be size and weight recommended by the hinge manufacturer for the application. The width of hinges shall be sufficient to clear all trim. Hinges for exterior outswinging doors shall be brass metal with ball and oilite bearings and non-removable ins (unless otherwise designated). Hinges for doors with closers shall be ball or oilite bearings. Spring hinges shall be UL Listed and approved for fire doors.

D. Number of Hinges:

1.	For doors 5 feet tall and shorter:	One pair of hinges
2.	For doors >5 feet to 7-1/2 feet tall:	One and a half pairs of hinges
3.	For doors >7-1/2 feet to 10 feet tall:	Two pairs of hinges

E. Size of Hinges

1.	For doors 36” wide and narrower:	4-1/2” hinges
2.	For doors greater than 36” wide:	5” hinges

2.04 LOCKSETS, LATCHES AND BOLTS

A. Lockset and Latches shall be ANSI4000 series Cylindrical locksets Grade 1. Locksets and latchsets for Fire rated opening shall be listed for Fire and Safety. All lever handles on UL listed openings shall be listed Lever handles. Locksets shall be of lever handle design designated in finish hardware schedule.

B. Strikes; Provide manufacturers standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set.

C. Lock Throw: Provide 5/8" minimum. Comply with UL for rated doors.

2.05 PUSH/PULL UNITS

A. Provide manufacturer’s standard exposed fasteners.

2.06 CLOSERS

A. Comply with manufacturer recommendations for closer size, door size, exposure and use.

B. Closers for wood doors shall be fastened by means of hex bolts. Thru-bolt fasteners shall not be used. All outswinging corridor doors shall have parallel arm mounted closers, unless otherwise approved by Architect.

C. All doors with closers must be handicapped accessible. Comply with accessibility requirements regarding opening force and delayed action. UL listed openings shall not have the Delayed Action Feature. Closers shall have backcheck feature. Multi-size closers shall be adjusted in field.

2.07 PROTECTION PLATES AND KICK PLATES

A. Protection Plates and Kick Plates; Stainless steel (US 32D finish) 20 ga., fabricated to dimensions indicated on drawings. Provide protection plates with overlapping wrap around door edges.

B. Adhesive mount utilizing field applied contract cement supplied by cladding manufacturer.

2.08 WEATHERSTRIPPING

A. Jambs and heads: Continuous extruded aluminum walls and flanges with bumper type, replaceable, flexible bulb/loop vinyl insert.

B. Door sweep: Extruded aluminum with loop type replaceable rubber insert.

2.09 KEY CABINET

A. Provide a Key Control Cabinet at all single tenant buildings that are receiving interior built-out as a part of this project. Key Control Cabinet shall be sufficient for all keys in installation plus 50 percent expansion capability. Cabinet shall be of upright file drawer type.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install hardware in accordance with manufacturer's recommendations, using proper templates and furnished with machine screws and expansion shields; items applied to gypsum board or plaster shall be sufficiently long to provide solid connection to framing or backing behind the plaster or gypsum board, items for application to wood shall be furnished with screw sufficient for solid connection. All exposed fasteners shall be the same metal as the item fastened except that fasteners for aluminum items shall be brass or stainless steel.

B. Set hardware items level, plumb, true to line and location. Drill and countersink items not factory prepared for fasteners. Cut and fit threshold, then set in mastic and fasten in place with expansion anchors.

C. All hardware shall be mounted for handicap accessibility in accordance with ANSI A117.1.

D. Mounting height for devices required for accessible door passage, including, but not limited to lever handles, knobs, pushplates, pull handles, alarm locks, cylinder locks etc. shall not exceed 48” above finish floor (a.f.f.) or as required to comply with Americans With Disabilities Act. Unless required otherwise by code, mount hardware as noted below.

1. 40 5/16” a.f.f. to centerline of strike for latches, locks, knobs, levers, cross bar exit devices.

2. 42” a.f.f. to centerline of door pulls.

3. 45” a.f.f. to centerline of dead bolts, push plates.

E. Set units plumb, true to line and location, attached as required for proper operation.

F. Set thresholds for exterior doors in a full bed of butyl rubber or polyisobutylene sealant.

3.02 INSPECTION

A. Doors frames and hardware shall be examined for damage, defects and suitability for the intended use. Any part of item found damaged, defective or inadequate shall be made good before installation or shall be replaced with good material. After installation has been completed, hardware supplier shall have a qualified hardware consultant check the job to determine the proper application of hardware according to the approved hardware schedule and keying schedule. Also, check the operation and adjustment of all hardware items.

3.03 PROTECTION

A. The General Contractor is responsible for the proper protection of all items of hardware until the Owner accepts the project as complete.

3.04 ADJUST AND CLEAN

A. After work has been otherwise completed, hardware shall be examined in place for complete and proper installation. Keys shall be tested for conformance with keying schedule.

B. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit. Lubricate moving parts with type lubrication recommended by manufacturer. Instruct Owner's personnel in proper adjustment and maintenance of hardware and hardware finishes during final adjustment of hardware.

C. Replace units, which cannot be adjusted for proper operation.

D. Final adjustment must occur within one week of occupancy by tenant.

END OF SECTION

SECTION 08800 - GLASS AND GLAZING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Glass and glazing for:

1. Storefront systems and doors, see Section 08450.

2. Interior glass doors and walls.

3. Mirrors.

1.02 SYSTEM PERFORMANCE

A. Provide glass and glazing that will withstand normal temperature changes, wind loading, impact loading, etc. without breakage of glass, failure of seals and loss of air-tightness and water-tightness.

B. See other Division 8 Sections for related performance requirements.

1.03 QUALITY ASSURANCE

A. Comply with recommendations of the Float Glass Marketing Association “Glazing Manual” and “Sealant Manual”.

B. Comply with Sealed Insulating Glass Manufacturer’s Association (SIGMA) #65-7-2.

C. Comply with ASTM C 1036 or ASTM C 1048 (tempered) and CPSC 16 CFR Part 1201 (safety glazing).

D. Warranty: Provide written warranty covering manufacturing defects, signed by the manufacturer, for the periods stated below after substantial completion.

1. Float Glass: Manufacturers ten-year minimum period.

2. Mirrors: Manufacturers Standard five-year period protecting against silver spoilage.

1.04 REFERENCES

A. ANSI 297.1 - Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in building.

B. FS DD-G-541 - Glass, Float, Sheet, Figured, and Spandrel (Heat Strengthened and Fully Tempered).

C. FS DD-G-1403 - Glass, Float, Sheet, Figured, and Spandrel (Heat Strengthened and Fully Tempered).

D. SIGMA No. 64-7-2 - Specification for Sealed Insulating Glass Units.

E. FGMA - Glazing Manual.

F. AWI - Section 1300.

1.05 SUBMITTALS

A. Submit product data in accordance with Section 01300.

B. Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements for the various types of glass.

C. Submit shop drawings in accordance with Section 01300.

D. Submit samples of each glass type and tint in accordance with Section 01300, if required by Architect.

1.06 DELIVERY, STORAGE, AND PROTECTION

A. Deliver products to site in accordance with Section 01600,

B. Store and protect products in accordance with Section 01600.

PART II - PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with requirements, provide products by :

1. Ford Motor Co., Glass Division
2. Libbey-Owens-Ford Co.
3. Pilkington/LOF Building Products.
4. Monsanto Co.
5. PPG Industries, Glass Group
6. Guardian Industries Corp.
7. Viracon Inc.

2.02 GLASS PRODUCTS - GENERAL

A. Provide Primary glass complying with FS DD-G-451 and Heat-Treated glass complying with FS DD-G-1403.

B. Fabricate to sizes and thickness recommended by glass manufacturers for application indicated.

C. Heat Strengthening: If geographic, climatic, or shading conditions exist which will cause increased thermal stresses in the glass, increasing the possibility of thermal breakage, provide heat strengthened glass complying with ASTM C 1048, Kind HS.

2.03 GLASS PRODUCTS

A. 1/4" Clear Uncoated Float Glass: Not Used.

B. 1/2" Clear Tempered Float Glass: Grade B (fully tempered), style I (uncoated surfaces), type I (float), quality q3, class 1. Provide at interior doors and glass walls.

C. Hurricane/Impact Resistant Glass for exterior storefront and doors: Impact-resistant 9/16" laminated glass with .090" PVB interlayer and low-e coating, clear. (tested to +58 / -58 psf Uniform Load). Two panes of equal thickness clear, low-e glass, laminated together with a test compliant interlayer.

D. Mirrors: 1/4” polished plate glass panels, silver coated and hermetically sealed with a uniform coating of electrolytic copper plating.

E. 1/4" Wired Glass: Not Used.

2.04 GLAZING SEALANTS (Interior Applications)

A. General: Comply with recommendations of sealant and glass manufacturers for selection of glazing sealants with performance and compatibility characteristics suitable for application and conditions indicated.

B. Colors: Match color of frame finish.

2.05 GLAZING GASKETS/TAPE

A. Glazing Gaskets: ASTM C864, resilient polyvinyl chloride, extruded shape to fit glazing channel retaining slot; black color.

B. Glazing Tape: Closed cell polyvinyl chloride foam, maximum water absorption by volume 2 percent, designed for 25 percent compression for air barrier vapor retarder seal, black color, coiled on release paper over adhesive on two sides; widths required for specified installation.

C. Glazing Tape: Butyl compound tape with integral resilient tube spacer, 10 to 15 Shore A durometer hardness, black color, coiled on release paper, widths required for specific installation.

2.06 MISCELLANEOUS GLAZING MATERIALS

A. Compatibility: All materials shall be compatible with surfaces contacted in installation.

B. Cleaners, Primers and Sealers: As recommended by sealant/gasket manufacturer.

C. Setting Blocks; ASTM C 864 neoprene, 80 to 90 Shore A durometer hardness; length 4 inches, width of glazing rabbet space less 1/16 inch, height required for glazing method, pane weight and pane area.

D. Spacers: Shims: ASTM C 864: neoprene, 50 to 60 Shore A durometer hardness; length 3 inches, one half height of glazing stop, thickness required for application, one face self-adhesive.

E. Glazing Splines: ASTM C 864, resilient polyvinyl chloride, extruded shape to fit glazing channel retaining slot; black color.

PART III - EXECUTION

3.01 PREPARATION / INSTALLATION

A. Clean glazing/framing members immediately before glazing to remove all detrimental substances.

B. Adjust glazing channel dimensions as required by conditions for proper bite, edge/face clearances, and seal thickness.

C. Install properly sized setting blocks in sill rabbet at one quarter of glass width from each corner, but not closer than 6” unless noted. Set blocks in thin course of sealant suitable for heel bead use.

D. Provide spacers and edge blocks, correctly sized for conditions. Provide 1/8” minimum bite of spacers on glass.

E. Miter cut wedge-shaped gaskets at corners, prevent pull away at corners, seal corner and butt joints as recommended by gasket manufacturer.

F. Trim sight exposed tape flush with stop and finish sealant flush with sight line.

G. Install transparent mirror with mirror coating facing “subject” side.

H. Install glass materials by method recommended by frame manufacturer or as indicated. Maintain expansion/contraction tolerance as recommended by glass manufacturer.

I. Variation from Plane shall be no more than 0.03 inches per foot or 0.25 inch in 30 feet. Misalignment of glass abutting in plane shall be no greater than 0.015 inches.

J. Lights in wood doors set in glazing tape or compound by glazier. Wood stops to match veneer species.

3.02 PROTECTION AND CLEANING

A. After installation, mark each pane of glass with an "X" by using plastic tape or removable paste.

B. Protect glass from contaminating substances.

C. Remove and replace broken, chipped, cracked, abraded or damaged glass.

D. Remove labels and wash glass on both faces prior to final acceptance.

E. Remove glazing materials from finish surfaces.

END OF SECTION

SECTION 08870 – GLAZING FILM

PART 1 - GENERAL

1.01 DESCRIPTION

A. Applied glazing film for interior windows as indicated on the drawings.

1.02 SUBMITTALS

A. Provide 6” square samples of each glazing film

B. Provide manufacturer’s product literature and installation instructions

1.03 QUALITY ASSURANCE

A. Comply with manufacturer’s instructions.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver to site only when windows are ready to receive applied film.

B. Deliver glazing film packaged in a manner to prevent damage or marring of film.

C. Store in a clean dry area, laid flat and protected from damage.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

A. Solyx (888) 657-5224

B. Provide film product as indicated on the drawings.

PART 3 - EXECUTION

3.01 PREPARATION

A. Clean the areas to which the film is to be applied, removing all traces of dirt, dust particles, silicone, grime, grease, etc. Glass shall be clean and free from defects which would affect the application of the glazing film.

B. Make sure there are no dry spots or imperfections on the film prior to installation.

C. Prepare glazing film and glass surface in accordance with manufacturer’s instructions.

3.02 INSTALLATION

A. Note: The methods described here are for a “wet” installation. Verify with the manufacturer whether a wet or dry installation is recommended for the particular glazing film being applied. Whichever method is recommended, install glazing film in accordance with manufacturer’s instructions.

B. Carefully measure the height and width of the glass surface. Allow +/- 3/4" extra material on each side of the film and cut the film to size

C. Create a wetting solution by adding 8 drops (a one second short squeeze) of very mild detergent (baby shampoo or dish detergent, not hand soap into a 32oz. spray bottle filled with water.

D. Lay the cut to size decorative film on a clean flat surface with the release liner up, or have someone hold the piece to be applied

E. To separate the release liner from the film take two pieces of scotch tape and stick them opposite each other at one corner. Pull the two pieces of tape apart and the liner will begin to separate from the film.

F. Remove the release liner and spray the now exposed adhesive surface thoroughly with the wetting solution. Take care that when removing the release liner the film does not roll over onto itself. It will stick together and is difficult to pull apart. Wet the film as the liner is removed Apply a generous amount of the wetting solution to the glass. The wetting solution prevents the film from sticking to the surface immediately, thereby allowing more time in which to properly position the film.

G. Orient film with linear stripes horizontal. Align film so that stripes are parallel to the window frame. Noticeable misalignment between window frame and stripes on film will not be acceptable.

H. Place the now wet film onto the clean glass surface. Wet the face of the film to be squeegeed. Use a plastic card squeegee and squeegee from the center out towards the edges to remove any air bubbles and wetting solution. Double check that the film is flat and smooth with no remaining air bubbles or water .

I. If any bubbles remain, squeegee them out towards the closest edge.

J. Trim the excess film from the edges of the surface. Cut in one continuous movement, using a straightedge and razor knife. Use paper towels for cleaning the glass surface and for the absorption of excess wetting solution around the edges.

K. The film may take a few days to dry in order for it to completely adhere to the glass surface. Protect the film during this time.

3.03 PROTECTION

A. Protect glazing film from damage and dirt after installation.

END OF SECTION

SECTION 09220 - EXTERIOR PORTLAND CEMENT PLASTER

PART I - GENERAL

1.01 QUALITY ASSURANCE

A. Comply with ASTM C-926-98a as applicable and “Plaster, Metal Framing System, Lath Manual”, latest edition.

B. Fire-Resistance: Comply with authorities having jurisdiction.

C. Allowable tolerances: Do not exceed 1/8 inch in 10 ft. for bow, wrap, plumb or level.

D. Source: Obtain lath and plaster materials from a single manufacturer.

E. Low suction and other substrates where proper bond is questionable shall be lathed before plastering.

F. Remove coatings detrimental to stucco i.e., paint, glaze, etc., from masonry substrates or install lath before plastering.

1.02 SUBMITTALS

A. Provide two 12” x 12” samples of each color and finish to be applied.

1.03 PROJECT CONDITIONS

A. Protect adjoining work from soiling, spatters, moisture, or other damage.

B. Protect plaster from freezing and from uneven and excessive evaporation. Provide coverings, moist curing, protection from wind and sunlight or other necessary protection.

PART II - PRODUCTS

2.01 SUPPORT SYSTEMS

A. Provide metal or wood support systems as required by the architect of record and of sufficient strength to carry all associated loads.

B. Channels: Cold rolled steel, 16-ga. min. thickness, protected with rust-inhibitive paint or galvanized. Provide galvanized channels for installations in salt air environments.

1. Carrying channels: minimum 1-1/2” deep x 7/16” wide flanges.

2. Furring channels: minimum 3/4” deep x 7/16” wide flanges.

3. Hat Channels: Minimum 26 gage.

C. Hanging and Tile wire: As required by architect of record to carry all associated loads.

D. Fasteners: Nails, screws and wire ties as required by architect of record to carry all associated loads.

2.02 LATH

A. Asphalt Paper-Backed Diamond Mesh Metal Lath (small mesh, approx. 11,000 meshes per sq. yd.), conforming to Federal Spec. UU-B-790a, type 1, grade B, style 2.
Weight: 3.4 lbs. per sq. yd.
Type: Self-furring.

B. Woven Wire Lath: Galvanized steel wire, 18 gage for 1" mesh, 17 gage for 1-1/2" mesh.

C. Water Proof Paper: U.U.B-790, minimum weight 15 lbs./100 sq. ft.

D. Fasteners: Nails; galvanized with 7/16" heads minimum, length to penetrate into wood 7/8" minimum.

Screws, galvanized with 7/16" heads minimum, length to penetrate steel framing 1/2" minimum.

E. Accessories: Provide minimum 26 gage, galvanized metal corner reinforcement, strip lath, casing beads (24 gage min.), prefabricated control joints and drip screeds.

2.03 PLASTERING MATERIALS

A. Portland Cement: ASTM C-150, Type I or II.

B. Hydrated Lime: ASTM C-206.

C. Aggregate: For base coats and finish coats, comply with ASTM C-144. Use washed Ottawa silica sand for finish coats.

1. For integrally colored finish coat, aggregate shall be manufactured or natural sand to match the colors indicated on the drawings.

2.04 PORTLAND CEMENT PLASTER MIXES

A. Three coat work over metal lath, provide mechanically mixed proportions according to ASTM C-926 as follows:

1. Scratch Coat: One part Portland cement, 1/4 part hydrated lime, 3 -1/2 parts aggregate (reinforcing fibers not to exceed 3% of Portland cement).

2. Brown Coat: One part Portland cement, 1/4 part hydrated lime, 4-1/2" parts. aggregate.

3. Finish Coat: (See article 2.03, C.1. for field and accent colors). Provide the following, to match required field and accent colors:

a. Class PB, E.I.F.S. system, 100% acrylic resin based, factory mixed, integrally pigmented, finish coat applied over E.I.F.S. manufacturer's tintable primer. Acceptable manufacturers: Dryvit, Parex, Senergy and Sto.

Note: For factory prepared finish coats, add water only, per manufacturers instructions.

2.05 MISCELLANEOUS METALS

A. Bonding agents: “ACRYL 60” by Standard Drywall Products Co. or equal.

B. Fiberglass Reinforcement: Alkaline resistant 1/2” long strands.

PART III - EXECUTION

3.01 ACCESSORY APPLICATION

A. Corner Bead: Apply to all vertical and horizontal exterior corners.

B. Casing Bead: Install at all locations where stucco terminates against dissimilar materials.

C. Control Joints: Break base behind joint and back by double studs. Space control joints not exceeding 10 ft. in either direction. Where vertical and horizontal joints intersect, butt horizontal joint to continuous vertical joint. Caulk splices and intersections

D. Reinforcing: Apply strips of metal lath over joints between dissimilar plaster bases, at un-lapped interior corners and diagonally around corners of all openings.

3.02 INSTALLATION

A. Stucco applied to metal lath shall be fully embedded and completely keyed.

B. Masonry substrates with correct suction shall be dampened prior to plaster application.
1. Apply in two coats, brown coat and finish coat.

2 Apply base coat in two steps using “double-back” method to 1/2” thickness.

C. Proper concrete substrates shall receive bonding agent prior to plaster application.
1. Apply in two coats, brown coat and finish coat.

D. Primers: Apply to substrate at E.I.F.S. manufacturers prescribed rates, prior to application of E.I.F.S. finish materials. Tint to match finish color.

3.03 PLASTER THICKNESS & TEXTURE

A. Scratch Coat: On metal reinforcing 1/2” thick minimum.

B. Brown Coat: 3/8” thickness.

C. Finish Coat: Apply 1/8” minimum thickness. Increase thickness as required to achieve required texture and aggregate embedment.

D. Texture: “Fine sand float” unless specified otherwise on drawings

E. Avoid excessive trowel marks.

3.04 CLEANING AND PROTECTION

A. Remove plaster from other work not to be plastered. Repair/replace any surface damaged by plastering work.

B. Plaster must be un-damaged at time of final acceptance.

END OF SECTION

SECTION 09250 - GYPSUM WALLBOARD SYSTEMS

PART I - GENERAL

1.01 DESCRIPTION

A. Types of work include:

1. Metal Framing for gypsum wallboard soffits and non-load bearing interior partitions.

2. Gypsum drywall.

3. Gypsum backing boards for application of other finishes.

4. Exterior gypsum drywall materials.

5. Acoustical Insulation

6. Acoustical Sealant

7. Drywall finishing.

1.02 QUALITY ASSURANCE

A. Fire-resistance ratings: Where fire-resistance ratings are indicated, provide materials/ assemblies complying with ASTM E 119-00a and as required by local authorities.

B. Perform gypsum wallboard systems work in accordance with recommendations of ASTM C754 and GA 216 unless otherwise specified in this section.

C. Comply with ASTM C 1396, “Specification for Gypsum Board”.

1.03 REGULATORY REQUIREMENTS

A. Fire-Rated partitions, ceilings etc.: Assemblies shall be listed and labeled by UL or equivalent testing organizations, acceptable to the Architect. Materials and installation shall comply with approved listed design.

1.04 SUBMITTALS

A. Submit manufacturer's recommendations for installation of sound insulation and acoustical sealant.

1.05 REFERENCES

A. GA 216 - Recommended Specifications for the Applicant and Finishing of Gypsum Board.

B. ASTM C754 - Installation of Steel Framing Members to receive Screw attached Gypsum Wallboard, Backing Board, or Water-Resistant Backing Board.

C. FS HH-I-52ID - Insulation Blankets, Thermal Mineral Fiber, for Ambient Temperatures.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Manufacturer: United States Gypsum Company. Unimast Inc.

2.02 METAL SUSPENDED CEILING FRAMING

A. Main runners: Hot or cold-rolled steel channels with rust inhibitive paint. Minimum 16 gauge; 1-1/2 inch size, lengths as required. Size components to comply with ASTM C 754.

B. Furring members: ASTM C 645; 25 ga. min. thickness, hat-shaped or C-shaped (spans over 4 ft.).

C. Channel Clips: galvanized wire as manufactured by USG.

D. Tie Wire: 18 gauge; soft annealed galvanized wire.

E. Hanger Wire: ASTM A 641, 8 gauge; soft annealed galvanized wire.

2.03 METAL WALL/PARTITION FRAMING

A. Provide metal framing and furring materials in accordance with GA 216 and as specified herein.

B. Studs: ASTM C 645; 20 ga. min. thickness, galvanized, punched for utility access, size as noted on plans. Provide heavier ga. if required by Architect of Record or by manufacturer's span table for allowable gauge minimums.

C. Runners: Of same material and finish as studs, bent leg retainer notched at 2 inch centers to receive studs. Use type recommended by stud manufacturer for conditions.

D. "Z"-Furring members: Screw-type galvanized steel, ASTM A 653, G60, 24 ga. min. thickness designed for mechanical attachment of insulation boards to masonry and concrete walls. 1-1/2 inch deep, unless indicated otherwise.

E. Fasteners: Type S screws, unless otherwise recommended by stud/furring manufacturer for conditions.

F. Deflection Track: ASTM A-653, galvanized steel sheet deep leg track, provide:"SLP-TRK" by Sliptrack Systems, Inc., "Deep Leg Track w/Slip Clip" by Fire Trak Corp., "Deflection Track" by Marino/Ware® or "VertiClip SLD" series by Steel Network, Inc.

G. Furring and Bracing Members: Of same material and finish as studs, thickness to suit purpose.

H. Wood Blocking: Construction grade softwood moisture resistant and fire retardant treated.

2.04 GYPSUM BOARD

A. Provide gypsum wallboard materials in accordance with recommendations of GA 216.

B. Gypsum Wallboard: ASTM C 1396, regular types unless noted otherwise. Provide Type X for fire-resistant rated assemblies. 5/8" minimum thickness with tapered edges.

C. Water-Resistant Backing Board (WR): ASTM C 1396, regular types unless noted otherwise. Provide Type X for fire-resistant rated assemblies. Provide water-resistant backing board at all toilet room interiors and at all other plumbing walls. 5/8" minimum thickness with tapered edges.

D. Exterior Gypsum Board: ASTM C 1396, Type X for fire-resistant rated assemblies. 5/8" minimum thickness with manufacturer's standard edges.

2.05 GYPSUM WALLBOARD ACCESSORIES

A. Provide gypsum wallboard accessories in accordance with GA 216.

B. Provide manufacturers standard galvanized corner-beads, L-type edge trim beads, U-type edge trim beads, and one-piece control joint beads.

C. Corner Beads: U.S. Gypsum No. 800 Metal Mesh Corner Bead.

D. Edge Trim: Unless shown otherwise, U.S. Gypsum No. 200 series metal trim on drywall.

1. Finish stop beads, U.S. Gypsum No. 200 series.

2. Vinyl edge trim at exterior locations.

3. Metal 'J' trim is not acceptable.

E. Control Joint: USG No. 093.

2.06 JOINT TREATMENT

A. ASTM C 475 as recommended by manufacturer for application intended.

B. Joint Tape: Paper reinforcing tape.

C. Joint Compound: Vinyl-type powder or ready-mixed for interior use.

1. Grade: Single multi-purpose grade for entire application.

2. Water-resistant Joint Compound: Special water-resistant type. Treat joints, fastener heads and cut edges.

2.07 MISCELLANEOUS MATERIALS

A. Comply with gypsum board manufacturer recommendations.

B. Gypsum Board Screws: Comply with ASTM C-1002-01.

C. Sound Attenuating Blankets: FS HH-I-521 Type I; semi-rigid mineral fiber blankets, Class 25 flame spread, full thickness of stud.

D. Acoustical Sealant: Type recommended for use in conjunction with gypsum board manufacturer.

E. Security Mesh: ASTM A-1011, ASTM F-1267, Type I, Class 1,2, and 3, Grade A, 16 gauge carbon steel, expanded to form a 3/4 inch diamond mesh.

F. Exterior Soffit Vents: Continuous vent. Provide gauge and ventilation area to suit conditions.

1. Acceptable manufacturers:
   a. Superior Products, SFT series, galvanized steel ventilation screed. Color: Paint to match adjoining EIFS.
   b. Alcoa, “Vent-a-Strip”, model 70 or 79, color: white.
   c. Amico “Vinyl Soffit Screed Ventilator”, insert style AMSVI-300 or sheathing style AMSV-300-50.
   d. Stockton Products “soffit vent/reveal screed.

PART 3 - EXECUTION

3.01 METAL FRAMING ERECTION - GENERAL

A. Erection metal framing in accordance with ASTM C754.

B. Install members true to lines and levels to provide surface flatness with maximum variation of 1/8 inch in 10 feet (1/960) in any direction.

3.02 INSTALLATION OF METAL SUSPENDED CEILING FRAMING

A. DO NOT BRIDGE building expansion joints with support system.

B. Ceiling Support Systems: Secure hangers to structural support by direct connection where possible. DO NOT ANCHOR support systems to metal roof deck.

1. Level main runners to tolerance of 1/4” in 12’-0” measured in any direction.

2. Attach metal wall track/angle wherever system meets vertical surfaces. Mechanically join support members, butt-cut to fit wall track.

3. Install auxiliary trim/framing at termination of drywall work, at light fixtures, etc., for proper support of drywall and other work.

3.03 INSTALLATION OF METAL WALL/PARTITION FRAMING

A. Install supplementary framing, blocking and bracing at terminations in work for support of fixtures, equipment, grab bars, toilet accessories, etc.

1. At partitions which adjoin another tenant (demising walls) or support soffits or decor wall fixtures, provide minimum 22 ga. 6” studs at 24” o.c., attached to structure. Extend drywall up to metal deck.

B. Isolate stud system from transfer of structural loading. Space control joints: 30-ft. o.c. or less at partitions. 50 ft. o.c. or less at ceilings.

C. If top track of partition is secured to roof deck, provide “deflection track” with 2” flange and install continuous bridging within 1 ft. of track. Do not attach stud to deflection track (to accommodate allowable roof deflection).

D. Install studs and furring vertically. Space studs 24” o.c. unless noted otherwise. Space furring members at 24” o.c. unless noted otherwise.

E. Provide Type X gypsum board at walls which adjoin other tenants.

F. Provide water-resistant (WR) gypsum board at all plumbing walls.

G. Erect thermal insulation vertically and hold in place with Z-furring members spaced 24" o.c.

H. Align floor runners, locating to partition layout indicated, anchoring in place at maximum 24 inches on center.

I. Place studs at dimensions shown on the Drawings and not more than 2 inches from abutting walls and at each side of openings. Connect studs to runners and tracks using screws or welding, in accordance with manufacturer's recommendations as approved by the Architect. Erection studs in one piece lengths. Splicing and wire typing of framing components will not be permitted.

J. Where partitions are indicated to terminate above the ceiling without extending to the roof structure, extend partition 6" minimum above ceiling and provide lateral diagonal bracing from top of partition to underside of deck at 48" o.c. in alternating directions.

K. Provide deflection allowance below supported horizontal building framing in ceiling or head track for non-load bearing framing.

L. Construct corners using minimum three studs. Double studs at door, window, and sidelight jambs. Install intermediate studs above and below openings to match wall stud spacing.

M. Attach cross studs or furring channels to studs for attachment of plumbing fixtures, toilet and bathroom accessories, grab bars and other items anchored to partitions or walls.

N. Coordinate installation of bucks, anchors, blocking, electrical and mechanical work which is to be placed in or behind partition framing. Allow such items to be installed after framing is complete.

O. Install studs and/or runners at door heads as recommended by door frame manufacturer and as approved by Architect.

3.04 GYPSUM BOARD INSTALLATION

A. Application and Finishing Standards: ASTM C-840 and GA 216.

B. Locate exposed end butt joints as far from center of walls and ceilings as possible. Avoid butt ends when possible.

C. Do not install imperfect, damaged or damp boards.

D. Locate ends/edges over supports. Do not place tapered edges against cut edges. Stagger vertical joints over different studs on opposite sides of partition.

E. Provide water resistant gypsum board at all wet areas and as indicated on the drawings. Apply un-cut long edge of WR board at bottom of work. Seal all ends, cut edges and penetrations with sealant. If not indicated otherwise, provide at the following locations:

1. All walls in toilet rooms
2. All walls in janitor rooms
3. All walls around water fountains
4. Plumbing walls in employee rooms and lounges

F. Fasten all gypsum board to supports with screws.

G. Exterior Soffits: Install exterior gypsum board perpendicular to supports, with end joints staggered over supports.

H. Place corner beads at external corners. Use longest practical lengths. Place edge trim where gypsum board abuts dissimilar materials.

3.05 DRYWALL TRIM ACCESSORIES

A. Install metal trim as follows:

1. Corner beads at external corners.

2. Edge trim where gypsum board edge would be exposed or semi-exposed.
   a. L-type where work abuts other work.
   b. U-type at exposed edges, reveals, gasketed or sealant-filled joints.

3.06 DRYWALL FINISHING

A. Prepare work as required for decoration (textured finishes prohibited).

B. Apply joint tape at joints except where trim accessories occur.

C. Apply joint compounds in 3 coats and sand between last 2 coats and after last coat.

D. Tape, fill, and sand exposed joints, edges, corners, openings and fixings, to produce surface ready to receive surface finishes. Feather coats onto adjoining surfaces so that camber is maximum 1/32 inch.

E. Remove and re-do defective work at no additional cost to the Owner.

3.07 ACOUSTICAL ACCESSORIES INSTALLATION

A. Place acoustical insulation in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions and tight to items passing through partitions.

B. Place acoustical sealant within partitions in accordance with manufacturer's recommendations and as indicated. Install acoustical sealant at gypsum board perimeter. Caulk all penetrations of partitions by conduit, pipe, ductwork, rough-in boxes, and door sidelite frames.

END OF SECTION

SECTION 09300 - CERAMIC AND PORCELAIN TILE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Ceramic and porcelain tile floor and base installed using the thinset method, with cementitious grouted joints.

1.02 QUALITY ASSURANCE

A. All work shall be installed in compliance with ANSI standards and the latest edition of the Tile Council of America's "Handbook for Ceramic Tile Installation".

B. Ceramic tile materials shall comply with ANSI A137.1 "Standard Specifications for Ceramic Tile".

C. Install grout and tile sealer in strict conformance with manufacturer's instructions.

1.03 REFERENCES

A. ANSI A108.5 - Ceramic Tile Installed with Dry-Set Portland Cement Mortar.

B. ANSI A118.1 - Dry-Set Portland Cement Mortar.

C. ANSI A118.4 - Latex - Portland Cement Mortar.

D. ANSI 137.1 - Recommended Standard Specifications for Ceramic Tile.

1.04 SHOP DRAWINGS AND PRODUCT DATA

A. Submit shop drawings and/or product data in accordance with Section 01300.

B. Submit product data, specifications, and instruction for using adhesives and grouts.

1.05 SAMPLES

A. Submit samples of tile and grout in accordance with Section 01300.

B. Deliver leftovers full size pieces of tile of all colors for maintenance use as directed by Owner.

1.06 CERTIFICATES

A. If required, by Architect, submit manufacturer's certification that tile materials supplied conform to ANSI 137.1.

1.07 MAINTENANCE DATA

A. Submit maintenance data in accordance with Section 01700.

B. Include cleaning methods, cleaning solutions recommended, stain removal methods, and polishes and waxes recommended.

PART 2 - PRODUCTS

2.01 ACCEPTABLE TILE MANUFACTURERS

A. American Olean Tile Company.

B. Dal Tile

C. Crossville

2.02 TILE MATERIALS

A. See plans

2.03 MORTAR

A. Dry-Set Portland Cement Mortar: Product shall comply with ANSI A118.1.

B. Latex-Portland Cement Mortar: Product shall comply with ANSI 118.4.

C. Mix and proportion in accordance with manufacturer's instructions.

2.04 GROUT

A. Commercial Portland Cement Grout with latex additive. Product shall comply with ANSI A118.6. Color per drawings. Acceptable manufacturers: Bostik “Hydroment®”, W.R. Bonsal Co., Polyblend.

B. Provide sealant at grout joints, as recommended by the manufacturer and approved by the Architect.

C. Mix and proportion in accordance with manufacturer's instructions.

2.05 GROUT & TILE SEALER

A. Furnish and install one of the following invisible penetrating sealer products on all grout joints:

1. Bostik Findley water-based acrylic “Grout & Tile Sealer”

2. Custom Building Products water-based “SurfaceGard”, “TileLab Grout ^ Tile Sealer” or “TileLab Grout Sealer”.

PART III - EXECUTION

3.01 INSTALLATION

A. Comply with applicable part of ANSI 108 for tile installation.

B. Comply with applicable parts of TCA “Handbook for Ceramic Tile Installation”.

1. Floor Tile: TCA F 113-95, Dry-Set Mortar or Latex-Portland Cement Mortar.

2. Wall Tile: TCA W 223-95 and W 244-95 Dry-Set Mortar or Latex-Portland Cement Mortar.

C. Extend tile work into recesses and behind fixtures. Terminate work without disrupting pattern or joint alignment.

D. Fit tiles closely to penetrations so that collars/covers overlay tile.

E. Jointing: Lay tile in grid pattern, with 1/4” joint.

F. Grout tiles in conformance with ANSI A108.10.

G. Lay tile in pattern indicated. Verify if pattern is uninterrupted through openings.

H. Where tile stops at door opening, extend tile to centerline of door.

I. Cut and fit tight to protrusions and vertical interruptions. Form corners neatly.

J. Work tile joints uniform in width, subject to variance in tolerance allowed in tile size. Joints shall be watertight, without voids, cracks, excess mortar, or grout.

K. Sound tile after setting. Replace hollow sounding units.

L. Allow tile to set for a minimum of 48 hours prior to grouting.

3.02 CLEANING AND PROTECTION

A. Clean all completed ceramic tile surfaces to be free of foreign matter.

B. Prohibit tile installations from traffic after installation.

C. Finish installation shall be free of cracked, broken, chipped, unbonded, mis-aligned or other defective tile work.

END OF SECTION

SECTION 09510 - ACOUSTIC CEILINGS

PART I - GENERAL

1.01 DESCRIPTION

A. Non-fire-rated suspended acoustic panel ceiling systems complete with wall trim, with integrated recessed fluorescent lighting.

1.02 QUALITY ASSURANCE

A. Fire Performance Characteristics: Provide components identical to those tested according to ASTM, UL as listed and as acceptable to authorities having jurisdiction.

1. Surface Burning: ASTM E 84
   a. Flame Spread: 25 or less.
   b. Smoke Developed: 50 or less

2. Fire-Resistance Ratings: Provide systems with ratings as required by authorities having jurisdiction.

B. Comply with ASTM C 635, ASTM C 636 and Ceilings and Interior Systems Contractors Association (CISCA).

1.03 SUBMITTALS

A. Submit samples and product data of all items in the acoustical ceiling system in accordance with Section 01300.

1.04 ENVIRONMENTAL CONDITIONS

A. Do not install acoustical ceilings until building is enclosed, sufficient dehumidification and temperature control are provided, dust generating activities have terminated and overhead mechanical work is completed, tested and approved.

B. Permit wet work to dry prior to commencement of installation.

C. Maintain uniform temperatures of minimum 61 degrees F. and maximum humidity of 20% to 40% prior to, during and after installation.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. USG

B. Provide manufacturers standard units complying with FS SS-S-118 including all accessories required for applications encountered.

2.02 ACOUSTIC PANELS

A. Manufacturer and product as specified on drawings

2.03 METAL SUSPENSION SYSTEMS

A. Manufacturer and product as specified on drawings

B. General: Double-web, direct hung system complying with ASTM C-635.

1. Structural Classification: Intermediate duty.
2. Metal: Hot-dipped-galvanized steel 0.015” thick x 1-1/2” high x 15/16” face.
3. Color: White

C. Hanger Wire: Provide not less than 12 gauge galvanized carbon steel ASTM A 641, soft temper.

D. Edge Moldings and trim: Manufacturers standard metal of types and profiles required for all applications encountered. Fabricate to fit all penetrations exactly.

E. Hold-Down Clips: Provide at 2 ft. o.c. on cross tees for interior panels subject to wind uplift or weighing less than 1 lb. /sq.ft.

F. Carrying Channels and Hangers: Galvanized steel; size and type to sit application and to rigidly secure the complete acoustic unit ceiling system, lights, etc., with maximum deflection of 1/360.

G. Seismic Areas: When required by authorities having jurisdiction provide “Heavy Duty “ systems approved by local authorities: Armstrong “Prelude XL”, Celotex “Classic Stab System” #PC 12-12-20 with stab-in cross tees.

1. Compression Posts: USG’s, Donn Corporation #VSA 12, 24 or 47 as required.

2. Edge Molding: Manufacturers 2 inch wide unit conforming to local requirements.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install systems in compliance with ASTM C 636, governing regulations and fire-resistance requirements. Support hangers only from structural members. Do not attach or suspend hangers from metal or plywood deck. Locate hangers not less than 6” from each end and spaced 4ft. o.c. along main runner. Locate hangers at 4 ft. o.c. each direction if main runners are spaced greater than 4 ft. o.c. Level to within 1/8” in 12ft. Limit deflection to 1/360 of span length in inches.

B. If it is necessary to cut any tegular edge ceiling tile, Contractor shall paint exposed fiberglass white to match tile color, as approved by Architect.

C. Install hangers plumb and free from contact with objects that are not part of structural or ceiling system. Wire connections shall be capable of supporting a 100 lb. allowable load.

D. Provide main runners or continuous cross tees in line with the long dimension of each side of recessed lights. Provide a hanger wire at the midpoint of each cross tee located on the long dimension of a recessed light fixture. 4 ft. cross tees supporting light fixtures is prohibited. Entire suspension system shall be completely connected forming a homogeneous frame. Independent/unattached fields are prohibited.

E. Pop rivets shall be minimized. Use only when manufacturer does not make an accessory to secure the system in the condition encountered.

F. Provide trim and moldings as required to conceal edges of acoustic tiles.

G. Install panels to fit accurately at borders and penetrations.

H. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work. Ensure the layout of hangers and carrying channels are located to accommodate fittings and units of equipment.

I. Suspended ceiling system shall not be used to support ductwork, plumbing, sprinklers, insulation, etc.

J. Where water heater is located above ceiling install adjacent suspended ceiling system to be completely and easily removable for no less than 30" x 30" clear. Install no lights or other fixtures in this area. Do not run main runners through the removable area.

K. Finished ceiling shall be true to lines and levels and free from warped, soiled or damaged grid or lay-in panels.

L. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest adjacent hangers and related carrying channels as required to span the required distance.

M. Hang independently of wall, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of the longitudinal axis or face plane of adjacent members.

N. Center ceiling systems on room axis leaving equal border pieces, unless shown otherwise.

O. The ceiling subcontractor shall support light fixture loads by supplementary hangers located within 6 inches of each corner, or support the fixtures independently.

P. Do not install fixtures so that main runners and cross runners will be eccentrically loaded. Where fixture installation would produce rotation of runners, provide stabilizer bars.

Q. Install edge moldings at intersection of ceiling and vertical surfaces, using maximum lengths, straight, true to line and level. Miter corners. Provide edge moldings at junctions with other ceiling finishes.

R. Fit acoustic lay-in panels in place, free from damaged edges or other defects detrimental to appearance and function. Fit border units neatly against abutting surfaces.

S. Install lay-in panels level, in uniform plane and free from twist, warp and dents.

T. Install hold down clips at ceiling systems within 10 feet of entrance doors and where necessary as directed by Architect.

3.02 ADDITIONAL SEISMIC REQUIREMENTS

A. General: Comply with requirements of authority having jurisdiction in the respective seismic zone.

B. Individual light fixtures or other attachments to the ceiling system, with a combined weight of 56 lbs. or less shall have two 12 gauge wire hangers attached, with slack, at diagonal corners of the fixture to prevent drop out.

1. Any fixture or attachment weighing greater than 56 lbs. must be independently supported from the structure.

C. The minimum connection strength for main and cross runner intersection/splices shall be 60 lbs. in compression and tension (must allow 5 degree offset in any direction).

1. Ceiling system actual weight, including grid, panel, light fixtures and air terminals to be 2.5 lbs./sq. ft. or less. All other services must be independently supported from structure.

2. For ceiling weighing more than 2.5 lbs./sq. ft. consult local authorities for requirements.

3. Provide vertical compression posts or struts as required by local authorities.

D. The ceiling system cannot be used to provide lateral support for walls or partitions.

E. Perimeter closure angles must provide a min. 7/8", support ledge. Terminal ends of grid or tile must rest on ledge with min. 3/8" clearance from wall.

1. For support ledges smaller than 7/8", terminal ends of cross or main runners shall be independently supported within 8" from each wall or ceiling discontinuity. This support must prevent grid from falling. This support should not be out of plumb greater than 1 in 6. Maintain 3/8" end clearance from wall.

2. All penetrations ie; columns, sprinklers, etc. and independently supported fixtures are considered perimeter closures that must allow noted clearances.

F. At wall closure ledges, cross and main runners must be prevented from spreading apart. Permanent attachment for grid alignment purposes is prohibited.

3.03 ADJUST AND CLEAN

A. Clean exposed surfaces of panels, moldings and trim. Remove and replace work that cannot be cleaned to permanently eliminate evidence of damage.

B. Adjust any sags or twists which develop in the ceiling systems and replace any part which is damaged or faulty.

3.04 ATTIC STOCK

A. Provide to Owner, new undamaged material in cartons or otherwise suitably protected, at least 24 extra acoustical ceiling panels of each type.

END OF SECTION

SECTION 09650 - RESILIENT FLOORING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Preparation of substrate surfaces.

B. Application of vinyl-composition tile and sheet vinyl.

C. Application of resilient base.

D. Cleaning of all surfaces and areas of work.

1.02 QUALITY ASSURANCE

A. Provide resilient flooring complying with the following fire performance criteria.

1. Smoke Density: Less than 450 per ASTM E 662.

2. Critical Radiant Flux (CRF): Not less than 0.45 watts/sq. cm. per ASTM E 648 - Class I.

B. Moisture vapor emission from the substrate shall not exceed 3 lbs. per 1,000 sq. ft. per 24 hour period for solid vinyl and vinyl sheet flooring; or 5 lbs. per 1,000 sq. ft. per 24 hour period for vinyl composition tile or rubber flooring, in conformance with ASTM F 1869.

C. Alkalinity of the substrate shall not exceed 9 on the ph scale. Test the ph of any area where concrete has been ground to ensure that alkalinity does not exceed requirements.

D. Install resilient flooring in conformance with flooring manufacturer’s instructions.

E. Comply with ASTM F-710 “Standard Practice for Preparing Concrete to Receive Resilient Flooring”.

1.03 REFERENCE STANDARDS

A. FS SS-T-312 Tile, Floor: Asphalt, Rubber, Vinyl, Vinyl-Asbestos.

B. FS L-FL-450 Flooring, Vinyl Plastic.

C. FS SS-W-4- Wall Base: Rubber and Vinyl Plastic.

1.04 SAMPLES

A. Submit samples in accordance with Section 01300.

B. Include duplicate 3 x 3 sized samples of each flooring material, color and pattern selected.

C. Include duplicate 6 inch long samples of base, selected.

D. Deliver left over full size pieces of tile of each color and pattern of floor material required for project, for maintenance use as directed by Owner.

E. Clearly identify each box.

PART 2 - PRODUCTS

2.01 RESILIENT FLOORING

A. Provide vinyl sheet flooring or vinyl composition tile flooring as indicated on the drawings. Sheet vinyl flooring shall have 6" high integral cove base with 3/8" radius.

B. Rubber top-set cove base is allowed only at vinyl composition tile flooring. Rubber top-set cove base shall be roll stock only (strips are unacceptable).

G. Protective Coat: Finish all resilient flooring with "Revive Plus SC" Neutral Cleaner and "Vectra" Floor Finish by Johnson Wax Products.

2.02 ACCESSORIES

A. Resilient Edge Stripes: 1/8" thick, 1" wide, homogenous vinyl, tapered or bullnose edge, color to match flooring.

B. Adhesives: Water-resistant stabilized type as recommended by flooring manufacturer or as indicated below.

1. Vinyl Flooring: Armstrong adhesive # S-700, Tarkett adhesive #T-100.

2. High moisture: Use Armstrong adhesive #S-240 in areas that are consistently wet.

3. Scribing Felt: Armstrong adhesive #S-235.

D. Concrete Slab Primer: Waterproof and non-staining as recommended by flooring manufacturer.

E. Leveling and Patching Compounds: Armstrong #S-183 Fast-Setting Cement-Based Underlayment, Armstrong #S-184 Fast Setting Cement-Based Patch Coat or portland cement based latex types as recommended by flooring manufacturer.

F. Scribing Felts: Gray cellulosic synthetic fiber felt, Armstrong #S-153.

PART 3 - EXECUTION

3.01 GENERAL

A. Inspect to ensure satisfactory substrate surfaces. Satisfactory means smooth and free from cracks, holes, ridges, and coatings preventing adhesive bond, detrimental moisture vapor emissions and other defects impairing performance or appearance.

3.02 LEVELLING

A. Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.

B. Clean floor and apply, trowel and float filler to leave smooth, flat hard surface. Prohibit traffic until filler is cured.

3.03 INSTALLATION - FLOORING

A. Open floor tile cartons, enough to cover each area, and mix tile to ensure shade variations do not occur within any one area.

B. Clean substrate. Spread cement evenly in quantity recommended by manufacturer to ensure adhesion over entire area of installation. Spread only enough adhesive to permit installation of flooring before initial set.

C. Scribe, cut and fit resilient flooring to permanent fixtures, built-in furniture, pipes, outlets, columns and walls to produce tight joints.

D. Set flooring in place, press with heavy roller to ensure full adhesion.

E. Lay flooring with joints and seams parallel to building lines and produce a non-directional tile pattern. Joint pattern shall be symmetrical about the room.

F. Install with minimum tile width 1/2 full size at room or area perimeter, to square grid pattern with all joints aligned.

G. Terminate resilient flooring below the centerline of the door panel(s) where adjacent floor finish is dissimilar.

H. Install edge strips at unprotected or exposed edges where flooring terminates.

I. Tightly cement flooring to subbase without open cracks, voids, raising or puckering at joints or telegraphing.

J. Avoid use of cut widths less than 1/2 tile at perimeters. Lay tile square to room axis.

K. Lay tile in checkerboard pattern with grain reversed in adjacent tiles.

L. Maintain minimum 70 deg F air temperature at flooring installation area for 3 days prior to, during, and for 24 hours after installation.

M. Store flooring materials in area of application. Allow 3 days for material to reach equal temperature as area.

3.04 INSTALLATION - BASE

A. Scribing Felts: When installing thinner gauge material next to thicker materials, install thicker material first.

1. Butt 12-inch wide piece of Scribing Felt against thicker material and adhere with specified adhesive.

2. Use leveling or patching compound to featheredge of scribing felt to level of substrate.

3. Allow patch to dry completely before installing flooring.

B. Apply base in longest possible lengths. Miter or cope inside corners, use pre-molded outside corners or make non-penetrating “v-cut” on backside to form outside corners.

C. Place edge strips tightly butted to flooring at locations where tile edges would otherwise be exposed.

D. Fit joints tight and vertical. Maintain minimum measurement of 18 inches between joints.

E. Install base on solid backing. Adhere tightly to wall and floor surfaces.

F. Scribe and fit to door frames and other obstructions.

G. Install straight and level to variation of plus or minus 1/8 inch over 10 feet (1/960).

3.05 CLEANING AND PROTECTION

A. Remove excess adhesive and other surface blemishes.

B. Clean, seal and wax floor and base surfaces in accordance with manufacturer's recommendations.

C. Protect flooring from damage after installation.

3.06 ATTIC STOCK

A. Provide one box (45-tile minimum) of each type of tile flooring.

END OF SECTION

SECTION 09680 – CARPETING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Prepare surfaces to receive carpeting. Remove any existing carpeting.

B. Apply carpeting on floor surfaces where indicated, by glue down method, complete with required accessories.

C. Install edge strips where carpeting terminates at other floor finishes as directed by Architect.

1.02 REFERENCE STANDARDS

A. FS DDD-C-0095 - Carpet and Rugs, Wool, Nylon, Acrylic, Modacrylic, Polyester, Polyprapylene.

1.03 SAMPLES

A. Submit one 12 inch long sample of type of edge stripping to be used.

B. Deliver leftover full size pieces of carpet of each color and pattern for maintenance use as directed by Owner.

1.04 JOB ENVIRONMENT

A. Do not commence with carpet installation until painting and finishing work is complete and ceilings and overhead work, tested, approved and completed.

B. Maintain room temperature at minimum 60 degree F for at least 24 hours prior to installation and relative humidity at approximately that at which the area is to be maintained.

C. Provide a minimum of 25 foot candles of lighting on areas to be carpeted.

1.05 SHOP DRAWINGS

A. Submit shop drawings in accordance with Section 01300.

B. Clearly indicate the method of joining seams, directions of carpet, method of integrating edge strips with carpet and installation procedures.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Carpeting manufacturer and product is specified on the drawings.

B. Adhesive: Provide and install per manufacturer’s recommendations.

C. Edge strips: Rubber type and metal strip as indicated on plans.

D. Ensure that carpet delivered to jobsite is uniform in appearance and color.

PART 3 - EXECUTION

3.01 PREPARATION OF SURFACES

A. Clean floors of dust, dirt, solvents, oil, grease, paint, plaster and other substances detrimental to proper performance of adhesive and carpet. Allow floors to thoroughly dry.

B. Ensure floors are level, with maximum surface variation of 1/4 inch of 10 feet noncumulative.

C. Ensure concrete floors are free from scaling and irregularities and exhibit neutrality relative to acidity and alkalinity.

D. Use an approved cementitious filler to patch cracks, small holes and for levelling.

3.02 INSTALLATION

A. Check matching of carpet squares before cutting and ensure there is no visible variation between dye lots.

B. Vacuum clean substrate. Spread adhesive in quantity recommended by manufacturer after primer application and decrease its life expectancy. Apply only enough adhesive to permit proper adhesion of carpet before initial set.

C. Lay carpet on floors with the run of the pile in the same direction of anticipated traffic.

D. Do not change run of pile in any one room or from one room to next where continuous through a wall opening.

E. Cut and fit carpet neatly around projections through floor and walls, and to surfaces at perpendicular planes.

F. Fit carpet snugly to walls where no base is scheduled, leaving no gaps.

G. Do not place heavy objects such as furniture on carpeted surfaces for minimum of 24 hours or until adhesive is set.

H. Entire carpet installation is to be laid tight and flat to substrate, wall fastened at edges and present a uniform pleasing appearance. Ensure monolithic color, pattern and texture match within any one area.

I. Install edging strips where carpet terminates at other floor coverings. Use full length pieces only. Butt tight to vertical surfaces. Where splicing cannot be avoided, butt ends tight and flush.

J. Protect installed carpet from damage and soilage during remaining construction.

K. Ensure that carpet will be without deterioration or damage at time of acceptance by the Owner.

END OF SECTION

SECTION 09910 - PAINTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Preparation of surfaces which are to receive finishes. All painting and finishing work and related items necessary to complete the work indicted on Drawings and described in the Specifications.

B. Work includes painting and finishing of interior and exterior surfaces.

C. Painting of mechanical/electrical work is specified in divisions 15 and 16.

D. Do not paint over code required labels or equipment name, rating, performance plates.

1.02 SAMPLES

A. Prepare 12-inch x 12 inch samples of each finish specified or indicated on the drawings. Apply finishes on materials to which they will be applied on job. Finish samples shall be approved by the Architect prior to installation.

B. Identify each sample as to finish, formula, color name and number and manufacturer.

C. Colors shall be as selected by the Architect prior to commencement of work.

1.03 MAINTENANCE MATERIALS

A. Leave on premises in a location, directed by the Owner, one unopened gallon of each color used with complete information on the formulation of colors.

B. Containers to be tightly sealed with clearly labeled for identification.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver paint materials in sealed original labeled containers, bearing manufacturer's name, type or paint, brand name, color designation and instructions for mixing and/or reducing.

B. Provide adequate storage facilities. 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 combustion.

1.05 ENVIRONMENTAL CONDITIONS

A. Ensure surface temperatures or the surrounding air temperature is above 40 degrees F. before applying finishes. Minimum application temperatures for latex paints for interior work at 45 degrees F. and 50 degrees F. for exterior work. Minimum application temperature for varnish and transparent finishes is 65 degrees F.

B. Provide adequate continuous ventilation and sufficient heating facilities to maintain temperatures above 45 degrees F. for 24 hours before, during and 48 hours after application of finishes.

C. Before painting is started in any area, broom clean and remove excessive dust.

D. Provide minimum 25 foot candles of lighting on surfaces to be finished.

1.06 PROTECTION

A. Protect other surfaces from paint and damage. Repair damage as a result of inadequate or unsuitable protection.

B. Place cotton waste, cloths and material which may constitute a fire hazard in closed metal containers and remove from site.

C. Remove electrical plates, surfaces hardware, fittings and fastenings, prior to painting operations. These items are to be stored, cleaned and replaced on completion of work in each area. Do not use solvent to clean hardware that may remove permanent lacquer finish.

1.07 QUALITY ASSURANCE

A. Install all work in accordance with manufacturer's instructions.

B. Subcontractors installing paints and stain materials shall have 5 years experience in the installation of such materials. Verification of experience shall be provided to the Architect.

1.08 WARRANTY

A. Provide a seven year non-prorated material and labor warranty related to defects in material.

PART 2 - PRODUCTS

2.01 COLOR

A. Paint colors are to be as indicated on the drawings. Where the drawings refer simply to “white”, color shall match Frazee 001 “White”.

2.02 ACCEPTABLE MANUFACTURERS - OPAQUE PAINT AND TRANSPARENT FINISHES

A. Benjamin Moore

B. Pittsburgh Paints

C. Frazee

D. ICI

E. Glidden Coatings and Resins

F. Sherwin-Williams Company

G. Duron Paint Company

H. Sinclair Company

2.03 WALLCOVERING WALL PREPARED SEALER

A. Fred Smith Company

B. Shieldz by Zinsser Company

2.04 MISCELLANEOUS PRODUCTS

A. Anti-Graffiti Coating (if required): Provide “Graffiti Solution System®“ manufactured by American Polymer Corp. System components include GSS Barrier, GSS-10 Anti-Graffiti Protectant and GSS Erasol®.

2.05 MATERIALS

A. Paint, Varnish, Stain, Enamel, Lacquer and Fillers: Best quality to type and approved brands listed herein or equivalent products as approved by Architect.

B. Paint Accessory Materials: (Linseed oil, shellac, turpentine and other materials no specifically indicated herein but required to achieve the finishes specified) high quality and approved by manufacturer or use with their products.

C. Primers: Primers applied in the field shall be of type as required for substrate and finish coating scheduled. Touch-up primers shall be compatible with shop primer.

D. Primer/Sealer (sizing) at gypsum wallboard to receive wall covering: as recommended by the wall and the adhesive manufacturers and as approved by Architect.

E. Paints: Ready-mix except field catalyzed coatings. Pigments fully ground maintaining a soft paste consistency, capable of readily and uniformly dispersed to a complete homogeneous mixture.

F. Paints shall have good flowing and brushing properties and be capable of dry or curing free of streaks or sags.

PART 3 - EXECUTION

3.01 INSPECTION

A. Thoroughly examine surfaces scheduled to be painted prior to commencement of work. Report in writing to Architect, any condition that may potentially affect proper application and performance of the product. Do not commence the work until such conditions have been corrected.

B. Correct defects and deficiencies in surfaces which may diversely affect work of this section.

C. Verify that mixed colors match the color selection indicated and the sample approved by Architect prior to application of the coatings.

D. Commencement of the work constitutes acceptance of the substrate.

3.02 PREPARATION

A. Do not paint over dirt, rust, scale, grease, moisture or other conditions detrimental to formation of a durable paint film.

B. Remove hardware, accessories, plates, light fixtures and other items not to be painted. Reinstall removed items upon completion of painting.

C. Surfaces shall be clean, dry and protected from dampness. Surfaces shall be free of any foreign materials which will adversely affect adhesion or appearance of applied coating. Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry completely. Efflorescence on any area shall be corrected before painting.

D. Remove contamination from gypsum wallboard surfaces and prime to show defects, if any. Paint after defects have been remedied.

E. Remove dirt, loose mortar, scale, powder and other foreign matter from concrete and concrete block surfaces which are to be painted or to receive a clear seal. Remove oil and grease with a solution of tri-sodium phosphate, rinse well and allow to thoroughly dry.

F. Remove stains from concrete and concrete block surfaces caused by weathering of corroding metals with a solution of sodium metasilicate after being thoroughly wetted with water. Allow to thoroughly dry.

G. Remove surface contamination from copper surfaces requiring a paint finish by steam, high pressure water of solvent washing. Apply etching primer or acid etch. Apply paint immediately if acid etching.

H. Remove contamination from copper surfaces requiring paint finish by steam, high pressure water of solvent washing. Apply etching primer or acid etch. Apply paint immediately if acid etching.

I. Remove surface contamination and oils from galvanized surfaces and wash with solvent. Apply coat of etching type primer.

J. Remove surface contamination and oils from zinc coated surfaces and wash with solvent. Apply coat of etching type primer.

K. Remove grease, rust, scale, dirt and dust from steel and iron surfaces. Where heavy coatings of scale are evident, removed by wire brushing, sandblasting or any other necessary method. Ensure steel surfaces are satisfactory before paint finishing.

L. Clean unprimed steel surfaces by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts and nuts are similarly cleaned. Prime surfaces to indicate defects, if any. Paint after defects have been remedied.

M. Sand and scrape shop primed steel surfaces to remove loose primer and rust. Feather out edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Touch-up bare steel surfaces with primer compatible to shop primer.

N. Wipe off dust and grit from miscellaneous wood items and millwork prior to priming. Spot coast knots, pitch streaks and sappy sections with sealer. Fill nails holes and cracks after primer has dried and sand between coats.

3.03 PAINT APPLICATION

A. Apply additional coats when undercoats, stains etc, show through until color and appearance is uniform.

B. Paint surfaces behind movable equipment.

C. Paint interior surfaces of ducts where visible, with flat, non-specular black paint.

D. Paint grilles and registers at ceilings and walls to match adjacent surfaces.

E. Paint exterior metal doors on tops, bottoms, sides same as exterior faces. Paint interior face of metal doors to match interior wall finish, or leave primered if interior space is left unfinished.

F. Paint interior metal doors to match the wall finishes in each adjoining room. Leave face of interior metal door primered if it faces unfinished interior space

G. Completely cover surfaces to provide an opaque, smooth, uniform finish and color, free of spotting, holidays, laps, brush marks, runs, sags or other imperfections.

H. Completed Work: Refinish or repaint work not in compliance with specified requirements.

I. Paint all ferrous metal. This includes but is not limited to:

1. Paint exposed exterior natural gas piping.

2. Paint bollards to match highway yellow color.

J. All materials shall be applied under adequate illumination, evenly spread and flowed-on smoothly to avoid runs, sags, holidays, brush marks, air bubbles, and excessive roller stipple.

K. Each coat of paint shall be slightly darker than preceding coat unless otherwise approved by Architect.

L. Coverage and hide shall be complete. When color, stain, dirt, or undercoats show through final coat of paint, the surface shall be covered by additional coats until the paint film is of uniform finish, color, appearance, and coverage, at no additional cost to Owner.

M. Sand lightly between coasts to achieve required finish.

N. All coats shall be dry to manufacturer's recommendations before applying succeeding coats.

O. Where spray painting is required, the applicator shall provide a 100 square-foot sample of the finish upon the request of the Architect.

P. Surfaces to be stained shall appear uniform in shading with color variations caused only by the natural wood grain.

Q. Where clear finishes are required ensure tint fillers match wood. Work fillers will into the grain before set. Wipe excess from the surfaces.

R. Backprime interior woodwork, which is to a receive paint or enamel finish, with enamel undercoat paint.

S. Backprime interior woodwork, which it to receive stain and clean finish, with compatible clear sealer coat.

T. Prime to the bottom edges of wood and metal doors with enamel undercoat when they are to be painted.

U. Prime top and bottom edges of wood doors with clear sealer coating when they are to receive a stain or clear finish.

3.04 CLEANING AND PROTECTION

A. As work proceeds and upon completion, promptly remove paint where spilled, splashed or spattered.

B. Protect work of others against damage from painting. Repair, repaint or replace damaged surfaces.

C. During progress of work keep premises free from any unnecessary accumulation of tools, equipment, surplus materials and debris.

D. Upon completion of work leave premises neat and clean, to the satisfaction of Architect.

3.05 PAINTING SCHEDULE

A. Gypsum Wallboard to receive Wall Covering.

Spot prime cemented and taped joints.
1 coat Wall Prep/Sealer

B. Interior surfaces, including gypsum wallboard, wood trim, doors and frames:

1 coat Acrylic latex enamel primer / sealer
2 coats Alkyd semi-gloss enamel
(If alkyd enamel is prohibited by local VOC regulations, use 2 coats Acrylic latex enamel, semi-gloss)

C. Wood, (stained doors).

Stain to color selected
2 coats Polyurethane varnish, satin finish

D. Exterior metal doors and frames

1 coat Rust inhibitive primer
2 coats Exterior acrylic latex enamel, semi-gloss

E. Ferrous Metals:

(touch up primer as required)
(lightly sand existing painted surfaces)

1 coat metal primer to suit any umprimed surface.
2 coats Alkyd semi-gloss enamel
or
2 coats D.T.M. (Direct to Metal) acrylic primer / finish coat, semi-gloss

F. Masonry surfaces required to be washable (eg: trash and compactor enclosures):

1 coat block filler / primer
2 coats 2-part acrylic epoxy finish

G. Any surfaces not covered by the above are to receive:

1 coat Acrylic latex enamel primer / sealer
2 coats Acrylic latex enamel, semi-gloss

END OF SECTION

SECTION 09950 – WALLCOVERINGS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Prepare surfaces to receive wallcoverings.

B. Adhesive apply wallcovering.

C. Edge trim and corner protectors.

1.02 RELATED WORK

A. Section 09260: GYPSUM WALLBOARD SYSTEMS.

B. Section 09900: PAINTING.

1.03 REFERENCE STANDARDS

A. Federal Specification CC-W-408A(1) - Wallcovering-Vinyl Coated.

1.04 PRODUCT HANDLING

A. Store wallcovering in clean and dry area where temperatures are maintained at minimum 15 degree F with normal humidity. Do not store in upright position.

B. Take precautionary measure to prevent fire hazards with adhesives and solvents.

C. Where toxic materials and both toxic and explosive solvents and adhesives are used, appropriate precautions and proper ventilation must be provided.

1.05 ENVIRONMENTAL CONDITIONS

A. Maintain surfaces and materials at minimum 60 degree F three days before and during application period.

B. Ensure maximum surface moisture conforms to wallcovering manufacturer's requirements and surface exhibits negative alkalinity.

C. Provide a minimum of 15 candlepower lighting on surfaces to be covered.

D. Provide adequate and continuous ventilation during work and after installation of wallcovering.

1.06 MAINTENANCE INSTRUCTIONS

A. Provide Architect with maintenance instructions for each wallcovering in accordance with Section 01700.

B. Instructions to contain manufacturer's recommended cleaning materials and application methods, including precautions in use of cleaning materials which may be detrimental to surfaces if improperly applied.

1.07 EXTRA STOCK

A. Deliver to Owner 10% of installed area at a minimum provide 1 roll of each wallcovering.

PART 2 - PRODUCTS

2.01 Wallcovering:

A. See drawings for manufacturer and type of wallcovering.

B. Adhesive: Duron Heavy Duty Vinyl adhesive or as recommended by wallcovering manufacturer.

C. Provide aluminum edge trim where the edge of wallcovering is exposed to view and does not abut adjoining surfaces. Clear acrylic corner guards are not acceptable. Trim shall be painted to match the adjacent wallcovering.

D. Provide manufacturers recommended wall prep by Fred Smith or Zinsser Co.

2.02 INSPECTION

A. Ensure surfaces to receive wallcovering are clean, true and free of irregularities. Inspect surfaces before commencing work and report defects in writing to Architect.

B. Ensure wall surface flatness tolerance do not vary more than 1/8 inch in 10 feet (1/960), nor vary at a rate greater than 1/16 inch per running foot (1/192).

C. Schedule installation of wallcovering as late as possible to prevent damage during construction and movement of materials.

D. Commencement of the work constitutes the Contractors acceptance of the surface.

2.03 PREPARATION OF SURFACE

A. Fill nicks, gouges, and other minor imperfections of gypsum wallboard and homasote surfaces with latex filler. Sand smooth flush with surface. Follow with prime coat of alkyd flat or oil base sealer or sealer recommended by wallcovering manufacturer.

B. Remove rust, dirt and grease from metal surfaces. Prime with recommended metal primer.

C. Fill in nicks, gouges, and other imperfections of plywood surfaces with patching plastic. Follow with coat of alkyd flat or oil base sealer.

D. Surfaces, new and existing, shall be properly sized with material compatible with substrate, adhesive, and wallcovering.

2.04 APPLICATION

A. Handle and apply wallcovering in accordance with manufacturer's recommendations.

B. Mix and apply adhesive in accordance with adhesive manufacturer's recommended.

C. Use fabric panels in exact order as cut from rolls. Use rolls in consecutive order as numbered by manufacturer.

D. Trim deeply textured patterns, or where patterns must be attached, on a flat work table.

E. Hang smooth, non-match patterns by applying strips on the wall, overlapping the edges and double cutting through both thickness.

F. Apply fabric secure, smooth, clean, and without wrinkles, gaps or overlaps. Eliminate air pockets and ensure full bond wall surface.

G. Horizontal seams and cutting at corners will not be permitted. Cutting shall be located not less than 2 inches from inside corner, and not less than 6 inches from an outside corner.

H. Fill in spaces above and below windows above doors and similar areas in sequence from roll.

I. Remove excess adhesive from seam before proceeding to next. Wipe seam clean with dry cloth towel. Use caution when installing VWC "M" and "B". Glue cannot be removed from face of wallcovering.

J. Install wallcovering before installating of plumbing, casings, bases, cabinets, hardware, acoustical ceiling trim, etc..

2.05 CLEANING

A. Clean wallcoverings of adhesives, dust, dirt and other contaminants.

B. Remove debris and leave areas neat and clean.

C. Replace wall plates and accessories.

END OF SECTION

SECTION 09985 - SPECIAL WALL SURFACES

PART I - GENERAL

1.01 DESCRIPTION

A. The extent of Fiberglass Reinforced Panels (FRP) is shown on schedules and drawings.

1.02 QUALITY ASSURANCE

A. Fire Performance: Products comply with the following when tested according to ASTM E-84:

1.	Flame Spread: Marlite Class C	"Naturetones Collection", less than 200. Marlite Class A "FRP", less than 25.
2.	Smoke Developed:	Marlite Class C "Naturetones Collection", less than 50. Marlite Class A "FRP", less than 450.

PART II - PRODUCTS

2.01 FIBERGLASS REINFORCED PANELS (FRP):

A. Marlite Brand, "FRP #P-145", Class A, pebble finish surface, color as indicated on drawings

B. Accessories: Provide Marlite Brand, pre-finished inside corners, outside corners, edging, division strips and plank clips as required for project conditions. Color to match panels. Provide aluminum components for Plank series and PVC for P-145 series panels.

C. Adhesive: Marlite Brand C-375 or C-551 Adhesive.

D. Sealant: Marlite Brand MS-250 clear silicone.

PART III - EXECUTION

3.01 PANEL SYSTEMS

A. Apply panels to gypsum board substrate, above base, vertically oriented with seams plumb and pattern aligned with adjoining panels.

B. Apply panel moldings to all panel edges.

C. Install panels allowing for expansion/contraction as required by panel manufacturer.

D. Apply sealant to all moldings, channels and joints between the system and different materials to assure watertight installation.

END OF SECTION

SECTION 10522 - FIRE PROTECTION SPECIALTIES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Fire extinguishers, cabinets and related accessories.

B. Recessed Key Lock Boxes

1.02 QUALITY ASSURANCE

A. Comply with applicable requirements of NFPA 10 and ADA Accessibility Guidelines.

B. Provide UL listed and FM approved fire extinguishers, which bear the UL listing mark for the type, rating and class of fire extinguisher indicated.

C. Obtain products from one manufacturer.

D. Products and the installation of said shall meet the approval of local fire officials.

1.03 SUBMITTALS

A. Submit product data in accordance with Section 01300. Include physical dimensions, operational features, color and finish, anchorage details, rough-in measurements, locations, and details.

B. Submit manufacturer's installation instructions in accordance with Section 01300.

1.04 OPERATION AND MAINTENANCE DATA

A. Submit manufacturer's operation and maintenance data in accordance with Section 01700.

B. Include test, refill or recharge schedules, procedures, and recertification requirements.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Do not install extinguishers when ambient temperatures may cause freezing.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Manufacturer model numbers indicated are for type, performance and style designation. Provide manufacturer indicted or comparable model of manufacturers listed below.

1. Potter-Roemer

2. Larsen's Manufacturing Company.

3. J.L. Industries.

4. Muckle Manufacturing.

2.02 FIRE EXTINGUISHERS

A. Multi-Purpose Dry Chemical Type: UL rated 3A-10BC. or as required by local authority.

B. Finish: Factory applied red epoxy non-chip enamel.

C. Provide as shown on the drawings, or otherwise locate so no portion of a space is more than 75 feet from the nearest fire extinguisher. Locate fire extinguishers and provide additional extinguishers to the satisfaction of the local Fire Marshal.

2.03 CABINETS

A. Semi-recessed wall mounted cabinet. Potter-Roemer 7052-DV VAW Alta Duo Vertical Door with stainless steel cabinet trim, stainless steel door with continuous piano hinge and vertical clear window, and a white enamel cabinet interior.

B. Form body of cabinet with tight inside corners and seams.

C. Predrill holes for anchorage.

2.04 ACCESSORIES

A. Surface mount brackets: manufacturers standard for the fire extinguisher furnished. Mount fire extinguishers using surface mount brackets only in shell construction that is to remain unfinished.

B. Signs: provide signs identifying the locations of fire extinguishers as required by local authorities.

2.05 KEY LOCK BOX

A. Recessed unit with dark bronze finish; Knox Box #3200-R, or approved equal.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify servicing, charging and tagging of all fire extinguishers.

B. Verify rough openings for cabinet are correctly sized and located.

C. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

A. Install fire extinguishers and identifying signs in compliance with local authorities and ADA guidelines.

B. Provide blocking and anchoring devices capable of supporting specified fire extinguishers.

C. Install cabinets plumb and level in wall openings 56 inches from finished floor to inside of cabinet.

D. Secure items rigidly in place in accordance with manufacturer's instructions.

E. Recessed Knox Box shall be installed near main the entry as directed by local fire officials.

END OF SECTION

SECTION 10800 - TOILET ACCESSORIES

PART 1 - GENERAL

1.01 DESCRIPTION

A. The extent of toilet accessories is shown on drawings.

B. Types of toilet accessories include:

Paper towel dispensers
Waste receptacles
Feminine napkin disposal
Toilet tissue dispenser
Grab bars
Mirrors

1.02 QUALITY ASSURANCE

A. Coordination: Furnish inserts and blocking to support toilet accessories.

B. All toilet accessories shall be from the same manufacturer unless noted otherwise.

C. All toilet accessories shall be fabricated to comply with requirements of the Americans with Disabilities Act, and ANSI A117-1. (Latest Edition)

1.03 REFERENCE STANDARDS

A. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

B. ASTM A366 - Cold Rolled Carbon Steel Sheets, Commercial Quality.

1.04 PRODUCT DATA

A. Submit manufacturer's product data in accordance with Section 01300.

B. Data to illustrate each accessory at large scale and show installation method.

1.05 DELIVERY, STORAGE AND HANDLING

A. Do not deliver accessories to site until rooms in which they are to be installed are ready to receive them.

B. Pack accessories individually in a manner to protect accessory and its finish.

1.06 PROTECTION

A. Protect adjacent finished surface and work from damage during installation of work of this Section.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Bobrick unless noted otherwise. See plans for model numbers.

B. Alternate Manufacturers (by permission): Bradley Corporation and American Specialties Inc.

2.02 TOILET ACCESSORY MATERIALS

A. Stainless Steel: AISI Type 302/304, with polished no. 4 finish (safety grip texture for grab bars), 22-gauge minimum.

B. Mirror Glass: FS DD-G-451, Type I, Class 1, Quality q2, 1/4" thick with silver coating, copper protective coating and non-metallic paint coating.

2.03 FINISHES

A. Chrome/nickel plating: satin finish.

B. Stainless steel: No. 4 stain luster finish.

C. Shop primed ferrous metals: pretreat and clean, spray apply one coat primer and bake.

2.04 FABRICATION

A. Weld and grind smooth joints of fabrication components.

B. Form exposed surfaces from one sheet of stock, free of joints.

C. Provide steel anchor plates and anchor components for installation on building finishes.

D. Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.

E. Hot dip galvanized ferrous metal anchors and fastening devices.

F. Shop assemble components and package complete with anchors and fittings.

PART 3 - EXECUTION

3.01 PREPARATION

A. Deliver inserts and rough-in frames to job site at appropriate time for building-in. Provide templates and rough-in measurements as required.

B. Before starting work notify Architect in writing of any conflicts detrimental to installation or operation of units.

C. Verify with Architect exact location of accessories and blocking required for mounting.

3.02 INSTALLATION

A. Install toilet accessories plumb, level and securely anchored. Mount accessories using concealed vandal proof fasteners, at heights as shown on drawings.

B. Install to comply with requirements for handicapped accessibility.

C. Install fixtures, accessories, and items in accordance with manufacturer's printed instructions.

3.03 ADJUST AND CLEAN

A. Adjust hardware and accessories for proper operation.

B. Clean toilet accessories. Replace all defective or damaged items.

END OF SECTION

SECTION 15050 - BASIC MECHANICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.01 MECHANICAL GENERAL REQUIREMENTS

A. All work under Division 15000 is subject to the requirements of this section. The contractors involved shall check all sections of the specifications in addition to the particular section covering their specific trade. Each distinct section of the specifications aimed for one trade may have detailed information with regards to other trades. Therefore, it is imperative that all sections be reviewed to get a complete picture of all other trades' functions and work required.

B. Provide all labor, materials, equipment and services necessary for the incidental to the complete installation and operation of all mechanical work.

C. Roof decks shall not be used to support piping, conduit, ductwork equipment, devices, etc. Bar joist panel points and beams shall be used to support loads unless otherwise directed by the structural engineer.

D. The drawings diagrammatically indicate the general layout of the complete mechanical systems.

1. "Field verification, of scaled dimensions on plans, is directed since actual locations, distances, and levels will be governed by actual field conditions." All measurements shall be verified at the site.

2. The mechanical and electrical contractors shall check architectural, structural, plumbing, heating, ventilation, air conditioning, and electrical plans to avoid possible installation conflicts. Should drastic changes from original plans be necessary to resolve such conflict, the contractor shall notify the Architect and secure written approval and agreement on necessary adjustment before the installation is started.

3. Discrepancies shown between plans, or between plans and actual field conditions, or between plans and specifications shall promptly be brought to the attention of the Architect for a decision.

4. Drawings and specifications are intended to cover the completed installation of systems to function as described. The omission of the expressed reference to any item of labor and material necessary to comply with practice codes, ordinances, etc. shall not relieve the contractor from providing such additional labor and material.

5. The contract drawings serve as working drawings for the general layout of the various services. However, layout of equipment accessories, specialties, piping systems, and conduit runs are diagrammatic unless specifically dimensioned and do not necessarily indicate every required valve, fitting, offset, transition, turning vane, junction box, pull box, conduit size, etc. It is the contractor's responsibility to provide all systems complete and operable. The contractor to make field verification of all services, systems, etc. as part of the total work required and the cost to be included in this base bid.

E. Conform to the requirements of all rules, regulations and codes of Local, State and Federal authorities having jurisdiction.

F. Be responsible for all construction means, methods, techniques, procedures and sequences used in the work. Furnish all tools, equipment and materials necessary to properly perform the work in a first class, substantial and workmanlike manner, in accordance with the full intent and meaning of the contract documents.

G. Accessibility: Do not locate traps, controls, unions, pull boxes, etc. in any system at a location that will be inaccessible after construction is completed. Maintain accessibility for all components in mechanical, electrical, and plumbing systems.

H. Cutting and Patching: All cutting required shall be done by the contractor whose work is involved, without extra cost to the owner. All patching and restoration including the furnishing and installation of access panels in ceiling, walls, etc. within the building lines shall be done by the respective, responsible contractor. No cutting of structural steel, concrete, or wood shall be done without prior approval of the architect. All duct openings in walls, floors, ceiling, and roof shall be cut and patched by the respective, responsible contractor.

I. Relocation of Existing Ducts, Conduits, Pipes, and Utilities: The contractor, under whose jurisdiction the work may fall, shall provide labor, material, and tools required to cut, repair, protect, cap, or relocate existing pipes, conduits, or utilities interfering with or uncovered during work, per regulations of the authorities having jurisdiction.

J. Excavation and Backfill: Excavation and removal of material, shoring, dewatering, and backfilling required for the proper laying of all pipes and conduits inside the building and premises, and outside as may be necessary, shall be done by the contractor whose work is involved, without extra cost to the owner.

K. Vibration Eliminators: Rotating or reciprocating equipment, ducts, piping, etc. shall be isolated from the structure by means of approved vibration absorbing units as provided or recommended by the equipment manufacturer or architect.

L. Sleeves: Each contractor shall furnish required sleeves. Sleeves shall be extended 2 inches above the floor, wall, etc. unless noted otherwise, and shall be Schedule 40 galvanized steel pipe and of the required size and location. The contractor responsible for running pipes in the sleeve shall caulk the space between pipe and sleeve with oakum and seal with mastic cement or other approved material.

M. Electric Motors: See Section 16050, Basic Electrical Materials and Methods.

N. Damage to Other Work: Each contractor shall be held rigidly responsible for all damages to their own or any other trades' work resulting from the execution of the involved contractor's work.

O. Concrete Foundation: Concrete foundation for all mechanical equipment shall be provided by the general contractor, but the respective mechanical contractor shall furnish foundation bolts and all essential information and shall check the work prior to the pouring of concrete insuring acceptable results. The foundation shall be as indicated or as recommended by the equipment manufacturer.

P. Large Equipment: All large equipment which is to be installed in the building that may be too large to enter through stairways, doorways, or shaft, shall be brought on the job and placed in the proper space before the enclosing structure is completed, unless arrangements are made with other contractors to permit access at a later date, without additional cost to the owner.

Q. Rough-in for Connection to Equipment: It shall be the responsibility of each contractor to study the architectural, structural, electrical, and mechanical drawings, conferring with the various trades involved and checking with the supplier of equipment in order to properly rough-in for all equipment.

R. Material and Equipment: All material and equipment shall be new and of the best quality used for the purpose in good commercial practice, and shall be the standard product of reputable manufacturers. The material and equipment must meet approval of state and local codes in the area it is being used.

S. Performance of Work: All work outlined in the various mechanical and electrical sections shall be done by the contractor under whose jurisdiction the work may fall. See drawings and specifications.

T. Electrical Wiring: See electrical specifications, Division 16.

U. Testing: All testing results shall be documented in the form of written reports.

1.02 PERMITS, INSPECTIONS, TEST AND FEES

A. All fees, licenses, test costs, etc. are contractor's responsibility.

B. Obtain all permits and pay taxes, fees and other costs in connection with the work. File necessary plans, prepare documents, give proper notices and obtain necessary approvals. Deliver inspection and approval certificates to Owner prior to final acceptance of the work.

C. All work is to be executed in compliance with, and each contractor is to observe and abide by, all applicable laws, regulations, ordinances, and rules of the national, state, county, and local governing agencies, or any other duly constituted public authority. Each contractor will at all times, maintain proper facilities and provide safe access for inspection to all parts of the work and to the shops wherein the work is in preparation. No work will be enclosed or covered until approved by the inspecting party, and should any work be enclosed or covered before all necessary inspections are completed, it will be opened for examination at the contractor's expense.

1.03 SUPPLEMENTARY CONDITIONS

A. Refer to other requirements of mechanical and electrical work in Division 1 without exception.

B. Permits, Inspections, and Tests: All work is to be executed in compliance with, and each contractor is to observe and abide by, all applicable laws, regulations, ordinances, and rules of the national, state, county, and local governing agencies, or any other duly constituted public authority. Each contractor will at all times, maintain proper facilities and provide safe access for inspection to all parts of the work and to the shops wherein the work is in preparation. No work will be enclosed or covered until approved by the architect, and should any work be enclosed or covered before all necessary inspections are completed, it will be opened for examination at the contractor's expense. All fees, licenses, test costs, etc. are contractor's responsibility.

C. Rules, Regulations, and Codes:

D. All material and equipment shall conform to the standards, where available, of the National Electrical Manufacturers Association (N.E.M.A.), National Fire Protection Association (N.F.P.A.), National Electrical Code (N.E.C.), Underwriters Laboratories (U.L.), American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), Sheet Metal and Air Conditioning Contractor's National Association (SMACNA), and American Water Works Association (AWWA).

E. All work shall conform to all applicable federal, state, and local codes and utility companies' regulations.

F. Workmanship and Installation: If any material and/or equipment is not properly installed or finished, the contractor is obligated to replace the material and/or equipment wherever required and to reinstall the material and equipment in a manner entirely satisfactory at this contractor's expense.

G. Guarantee: Each contractor shall guarantee each complete system for a period of one (1) year from the date of acceptance of the work by the Owner to be free of defects of material and workmanship and that any faulty material or workmanship will be repaired or replaced without additional cost to the Owner.

H. Cooperation: There shall be complete cooperation with all trades in the matter of planning and execution of the work. Every reasonable effort shall be made to prevent

conflict as to space requirements, dimensions, and locations, leaving of opening or other matters to obstruct or delay the work.

1.04 SUBSTITUTIONS

A. The name of an article or its make, as given in the specifications and/or drawings is used to establish a standard for the guidance of the contractor. He may propose substitution of other material or equipment (unless specifically stated no substitution accepted).

B. Should the contractor propose to furnish materials and equipment other than those specified, as permitted by the "acceptable alternate" clause, he shall submit a written request for any or all substitutions to the Architect. Such a request shall be accompanied with complete descriptive and technical data for all items (manufacturer, brand name, catalog number, descriptive literature, and capacity tables), stating in each case what addition to or deduction from the main bid is to be made if such alternates are accepted.

C. Where such substitutions alter the design or space requirements indicated on the plans, the contractor shall include all items of cost for the revised design and construction including cost of all allied trades involved.

D. Acceptance or rejection of the proposed substitutions shall be subject to approval of the Architect, and if specific approval in writing is not received, it is understood that the requirements as outlined in the contract documents are to be met.

1.05 FIRE SAFE MATERIALS

A. Unless otherwise indicated, materials shall conform to UL, NFPA or ASTM standards for fire safety with smoke and fire hazard rating not exceeding flame spread of 25 and smoke developed of 50.

1.06 REFERENCED STANDARDS, CODES AND SPECIFICATIONS

A. Specifications, codes and standards listed below are included as part of this specification, latest edition.

AABC	Associated Air Balance Council
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute
ARI	Air Conditioning and Refrigeration Institute
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers.
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
AWWA	American Water Works Association
BOCA	Building Officials & Code Administrators
IEEE	Institute of Electrical and Electronics Engineers
MSS	Manufacturers Standards Society of the Valve and Fittings Industry
NEC	National Electrical Code

NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NSF	National Sanitation Foundation
SMACNA	Sheet Metal and Air Conditioning Contractors Association
UL	Underwriters Laboratories

1.07 SUBMITTALS, REVIEW AND ACCEPTANCE

A. Equipment, materials, installation, workmanship and arrangement of work are subject to review and acceptance. No substitution will be permitted after acceptance of equipment or materials except where such substitution is considered by the Architect to be in best interest of Owner.

B. Within 30 calendar days after award of contract, submit a complete material and equipment list for approval. List all proposed materials and equipment, indicating proposed manufacturer, type, class, model and other general identifying information.

C. After acceptance of material and equipment list, submit complete descriptive data for all items. Data shall consist of specifications, data sheets, samples, capacity ratings, performance curves, operating characteristics, catalog cuts, dimensional drawings, wiring diagrams, installation instructions, and any other information necessary to indicate complete compliance with contract documents. Edit submittal data specifically for application to this project. In general, additional data will not be required for materials such pipe and pipe fittings, provided such items are adequately described by material and equipment list.

D. Thoroughly review and stamp all submittals to indicate compliance with contract requirements prior to submission. Coordinate installation requirements and any electrical requirements for equipment submitted. Contractor shall be responsible for correctness of all submittals.

E. Submittals will be reviewed for general compliance with design concept in accordance with contract documents, but dimensions, quantities, or other details will not be verified.

F. Identify submittals, indicating intended application, location and service of submitted items. Refer to specification section or paragraphs where applicable. Clearly indicate exact type, model number, style, size, and special features of proposed item. Submittals of a general nature will not be acceptable.

G. Submit actual operating conditions or characteristics for all equipment where required capacities are indicated. Factory order forms showing only required capacities will not be acceptable.

H. Acceptance will not constitute waiver of contract requirements unless deviations are specifically indicated and clearly noted.

1.08 TEMPORARY FACILITIES

A. The General Contractor is responsible for temporary utilities and facilities for the building as required during construction as set forth under Section 01500, except as specified herein.

B. Where equipment provided under this Division is used for temporary plumbing, heating or ventilation, the contractor for this shall cooperate with the General Contractor and shall insure the proper and safe operation of such equipment at all times.

C. Should the Contractor at any time observe that equipment is being operated in a manner which would be injurious to or affect the final acceptance of the equipment, he shall immediately take such steps as he deems necessary to protect the equipment and his own interest.

1.09 GUARANTEE

A. The general guarantee requirements are specified under Division 1 of these specifications. Following are supplementary requirements: Guarantee all work under Division 15000 to be free from defects in materials and workmanship for a period of one year beginning from the day of final acceptance of the work or beneficial occupancy by the Owner, whichever occurs first. Work during the guarantee period shall be preformed promptly and at no additional cost to the Owner.

B. Guarantee shall apply to all materials, equipment, and services and shall include readjustment and rebalancing of systems and equipment where required.

C. During the guarantee period, make appropriate revisions or corrections to operating instructions, equipment manuals, and other as-built data.

1.10 INSTALLATION

A. All equipment and materials shall be installed according to manufacturer's instructions unless otherwise specifically directed by the Construction Documents. All piping, valves, connections, and other like items recommended by the manufacturer or required for proper operation shall be provided without additional cost to the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment installed as a permanent part of the project shall be new, unless otherwise indicated or specified, and of the indicted type and quality. Where no specific type and quality of material is given, a first-class standard article as approved by the Architect shall be furnished.

B. The listing of a particular manufacturer or model number is not intended to indicate a sole source but rather a minimum standard of quality or performance acceptable. Where material or equipment is identified by proprietary name, model number and/or manufacturer, furnish named item, or its equal, subject to approval by Architect. Substituted items shall be equal or better in quality and performance and must be suitable for available space, required arrangement, and application. Submit all date necessary to determine suitability of substituted items, for approval.

C. Where more than one item is named, only the first named item has been verified as suitable. Substituted items, including items other than first named shall be equal or better in quality and performance to that of the specified items, and must be suitable for available space, required arrangement and application.

D. The contractor shall be required to adapt all substituted materials and equipment without increase to the contract amount. Where substitutions involve more than minor deviations from the plans and specifications, such deviations shall be submitted to the Architect for approval prior to installation.

2.02 SHOP DRAWINGS

A. Prepare and submit shop drawings for all mechanical equipment proposed for use on this project.

B. Prepare and submit shop drawings for all specially fabricated items, modifications to standard items, specially designed systems where detailed design is not shown on the

contract drawings, or where the proposed installation differs from that shown on contract drawings.

C. No mechanical item shall be delivered to the site, or installed, until approved. After the proposed materials have been approved, no substitution will be permitted except where approved by the Engineer.

D. Submit data and shop drawings as listed below. Identify all shop drawings by the name of the item and system and the applicable specification paragraph number.

Items and Systems:

Valves - Gate, Angle, Control
Cleanouts and Access Covers
Plumbing Fixtures
Automatic Temperature Control System and Wiring Diagrams
Grilles, Registers and Diffusers
Thermal Insulation Materials
Vibration Isolation
Air Handling Units
Air Cooled Condensing Units
Pump

2.03 SUPPORTS, HANGERS AND FOUNDATIONS

A. Provide supports, hangers, braces, attachments and foundations required for the work. Support and set the work in a thoroughly substantial and workmanlike manner without placing strains on materials, equipment, or building structure.

B. Supports, hangers, braces, and attachments shall be standard manufactured items or fabricated structural steel shapes.

2.04 ESCUTCHEON PLATES

A. Escutcheon plates shall be nickel plated of the split ring type and sized to accommodate the pipe.

2.05 ELECTRICAL REQUIREMENTS

A. All power wiring from source up to and including final connection to equipment provided under Division 15000 of the specifications shall be provided under Division 16000 - Electrical.

B. Provide all disconnect switches, starters, controllers, motors, and individual component fusible protection for all electrical powered equipment in accordance with the NEC. Disconnect switches, starters, and controllers that are not to the Electrical Contractor for installation.

C. Disconnect switches shall be provided as required by NEC and shall be fused or non-fused as required by the equipment manufacturer's nameplate data or local code.

D. Motors, starters, and controllers shall be provided for each piece of equipment or as specified and shall conform to the latest NEMA standards and shall be suitable for use in the service intended at the locations indicated. Motors shall be sized not to exceed the nameplate rating when operating the specified equipment under the most severe conditions likely to be encountered. Controllers shall be manual or magnetic type, depending on the control requirements specified. Controller shall be complete with thermal overload protection in each phase, sized in accordance with NEC and the motor's nameplate full-load current rating.

E. All temperature control wiring, equipment control wiring, and interlock wiring for the equipment and system provided under Division 15000 shall be provided under Division 15000 of the specifications. All control wiring shall be run as required by local code and as specified.

F. All electrical work accomplished under Division 15000 of the specifications shall be in accordance with Division 16000 - Electrical.

2.06 ELECTRIC MOTORS

A. Motors shall be quiet operating, continuous duty type, suitable for the specific application. Select motors in accordance with nameplate ratings for voltage, horsepower, and ambient temperature. Size motors so that operating loads do not exceed nominal horsepower ratings, exclusive of any service factors.

B. Motors shall conform to applicable NEMA an IEEE standards.

C. Furnish and install adjustable motor slide bases for belt-connected motors to maintain proper alignment and belt tension. Slide bases shall include adjusting bolts and locknuts.

D. Furnish and install flexible couplings on close-coupled drives.

E. After final installation, align motors including factory-installed motors in accordance with equipment manufacturer's instructions.

F. Include complete motor data in submittals for driven equipment.

2.07 EQUIPMENT DRIVES

A. V-belt drives shall be rated for not less than 150% of connected load under applicable duty cycle.

1. Motor sheaves for adjustable drives shall be variable pitch. Select sheave sized so that design speed is at approximate mid-point of speed adjustment.

2. Belts for multi-belt drives shall be matched sets.

3. During system balance, change sheaves if necessary to obtain design performance of equipment.

4. Upon completion of systems balancing, motor pulleys shall be changed to fixed drives and the adjustable drives shall be turned over to the Owner.

B. Upon completion of work, furnish typewritten list of all belt-driven equipment and final belt and sheave sized provided.

2.08 DRIVE GUARDS

A. Provide safety guards on all exposed belt drives, motor couplings, condenser fans, and other rotating machinery. Provide fully enclosed guards where machinery as exposed from more than one direction.

B. Fabricate guards of heavy gauge steel, rigidly braced, removable, and finish to match equipment. Provide openings for tachometers. Guards shall meet OSHA requirements.

2.09 VIBRATION ISOLATION

A. Furnish and install vibration isolators, flexible connections, supports, anchors and/or foundations required to prevent transmission of vibration from equipment, piping or ductwork to building structure.

2.10 PROVISION FOR ACCESS

A. Furnish and install adequate access to all equipment, valves, dampers, controls, cleanouts, traps, and other devices requiring maintenance or manual operation.

B. Where access doors are necessary, furnish and install manufactured steel door assemblies consisting of hinged door, flush screwdriver camlocks, and frame, designed for particular wall or ceiling construction. Properly size and locate each door. Doors shall be Milcor Metal Access Doors as manufactured by inland-Ryerson, or equal:

1. Acoustical or cement plaster: Style B

2. Hard finish plaster: Style K or L

3. Masonry or dry wall: Style M

C. Where access is by means of liftout ceiling titles or panels, mark each panel using small color-coded or numbered tabs. Provide a chart or index for identification. Place markers in corner of tile.

2.11 IDENTIFICATION

A. Mark and permanently identify all systems and equipment in accordance with project nomenclature. Include piping, valves and controls. Use plaques, stencils, nameplates, tags, markers, or other acceptable means. Securely mount or attach all signs, nameplates and tags.

B. The method of identification shall suit the particular item to be identified and all similar items shall be identified in a like manner. Lettering shall be uniform, neat, legible, and professional in quality. Characters shall be readable at a normal distance of operation, access or general observation.

C. Identification methods shall be:

1. Plaques: For direct mounting on walls or large equipment; metal or laminated plastic; printed, engraved, or stenciled characters up to 2-inch size.

2. Stencils: For direct application on equipment, piping or ductwork; characters 1/2 inch size.

3. Tags: For attachment to valves, controls, and concealed equipment; brass or stainless steel; engraved and filled characters 1/2-inch minimum size.

4. Markers: For piping, preprinted plastic or fabric.

5. Embossed Plastic Tape: Prohibited, except where specifically approved in writing.

D. Identification by means of marking pens or other temporary methods will not be acceptable. Identification system shall be as manufactured by Seaton Nameplates Co., or equal.

PART 3 - EXECUTION

3.01 CUTTING AND PATCHING

A. Accomplish all cutting and patching necessary for the installation of work under Division 15000 unless specifically noted as work by other Divisions. Damage resulting from this work to other work already in place, shall be repaired at Contractor's expense. Where cutting is required, perform work in neat and workmanlike manner. Restore disturbed

work to match and blend with existing, using materials compatible with the original. Use mechanics skilled in the particular trades required.

B. Do not cut structural members without approval.

C. Sleeve all piping and duct penetrations.

3.02 WELDING

A. All welding performed under this division shall be performed by experienced welders in a neat and workmanlike manner. All welding on structural steel shall be performed only by persons who are currently qualified in accordance with ANSE B31. For pressure piping and certified by the American Welding Society, ASME or an approved independent testing laboratory, and each such welder shall present his certificate attesting his qualifications to the Architect whenever requested to do so on the job.

B. All pipe welding shall be oxy-acetylene or electric arc. High test welding rods suitable for the material to be welded shall be used throughout. All special fittings shall be carefully laid out and joints shall exercised to prevent the occurrence of protruded weld metal into the pipe. All welds shall be of sound metal free from laps, cold shuts, gas pockets, oxide inclusions and similar defects.

C. All necessary precautions shall be taken to prevent fire or other damage occurring as the result of welding operations.

3.03 PENETRATION OF WATERPROOF CONSTRUCTION

A. Coordinate the work to minimize penetration of waterproof construction, including roofs, exterior walls, the interior waterproof construction. Where such penetrations are necessary, provide waterproof sleeves, flashings, fittings and caulking as required to maintain waterproof integrity.

3.04 CLEANING, PAINTING AND FINISHES

A. Provide protective finishes on all materials and equipment. Use coated or corrosion-resistant materials, hardware and fittings throughout the work. Paint bare, untreated ferrous surfaces with rust-inhibiting paint.

B. Clean surfaces prior to application of insulation, adhesives, coatings, paint or other finishes.

C. Provide factory-applied finishes where specified. Unless otherwise indicated factory-applied paint shall be baked enamel with proper pretreatment.

D. Protect all finishes and restore any finishes damaged as a result of work under Division 15000 to their original condition.

E. The preceding requirements apply to all work, whether exposed or concealed.

F. Remove all construction marking and writing from exposed equipment, ductwork, piping and building surfaces. Do not paint manufacturer's labels or tags.

3.05 PROTECTION OF WORK

A. Protect work, material and equipment from weather and construction operations before and after installation. Properly store and handle all materials and equipment.

B. Cover temporary openings in piping, ductwork, and equipment to prevent the entrance of water, dirt, debris, or other foreign matter.

C. Cover or otherwise protect all finishes.

3.06 OPERATION OF EQUIPMENT

A. Clean all systems and equipment prior to initial operation for testing, balancing, or other purposes. Lubricate, adjust and test all equipment in accordance with manufacturer's instructions. Do not operate equipment unless all proper safety devices or controls are operational. Provide all maintenance and service for equipment which is operated during construction.

B. Where specified, or otherwise required, provide the services of the manufacturer's factory-trained servicemen or technicians to start up the equipment.

C. Do not use mechanical systems for temporary services during construction unless authorized. Where such authorization is granted, temporary use of equipment shall on no way limit or otherwise affect warranties or guarantees on the work.

D. Upon completion of work, clean and restore all equipment to new conditions; replace expendable items such as filters.

3.07 TESTING, BALANCING AND ADJUSTMENT

A. Perform all specified or required tests to demonstrate that the work is installed and operating properly. Where formal tests are required, give adequate notices and perform preliminary tests to assure that work is complete and ready for final test.

B. Balance and adjust all systems, equipment, and controls to operate at the proper capacities in a safe, efficient and stable manner, see Section 15990 "Performance Testing and Balancing".

3.08 RECORD DRAWINGS

A. Fully instruct the Owner's representatives in the operation and maintenance of all systems and equipment. Provide qualified manufacturer's representatives where specified or otherwise required.

B. Write step-by-step detailed instructions for turn-on, turn-off, seasonal changeover, and periodic checks of all systems and equipment. Include precautions and warnings.

C. Prepare a list of manufacturers of major equipment, installed under Division 15000, their local service representative and procedures for obtaining service.

D. Prepare a composite list of manufacturer's lubrication recommendations for all equipment, showing frequency and type of lubrication recommended for each item.

E. Prepare a composite list of equipment having elements such as filters, belts, etc., which require periodic replacement or renewal. Show required types, sizes and quantities for each piece of equipment.

F. Prepare valve lists, charts, or diagrams identifying and locating all tagged valves.

G. Mount under glass or approved plastic cover and post one copy each of instructions, lists, charts, and diagrams where directed.

H. Provide to the Owner two copies of the manufacturer's installation, operation, maintenance and service instructions for each item of equipment. Include replacement parts lists were applicable. Also include copies of posted instructions, lists and charts. Assemble the material in one or more heavy duty 8-1/2" x 11" loose leaf binders with tab separators. Submit one copy to the Engineer for approval prior to sending copies to the Owner.

I. Deliver two complete sets of accepted submittals to the Owner.

END OF SECTION

SECTION 15250 - MECHANICAL INSULATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Section 01010 Summary of Work and Section 15050, Basic Mechanical Materials and Methods, shall be considered a part of these specifications.

B. Piping insulation, jackets, and accessories.

C. Ductwork insulation, jackets, and accessories.

1.02 GENERAL

A. Install insulation in accordance with insulation manufacturer's recommendations. Any insulation work which does not conform to the accepted insulation will no be acceptable, and shall be removed and reinstalled in a manner acceptable to the Engineer.

B. Insulation material shall be non-combustible and jacketing material shall be fire-retardant with UL listing flame spread of not greater than 25, and shall conform to requirements of NFPA 90A. Adhere insulation jackets with self-sealing, vapor-proof lap or with non-flammable vapor-seal adhesive.

PART 2 - PRODUCTS

2.01 PIPE INSULATION

A. Domestic water, interior storm lines, interior condensate drain piping from HVAC rooftop units and wastewater pump discharge.

1. All piping (above finished floor) shall be covered with Armacell AP/Armaflex pipe insulation minimum ½”thick in accordance with ASTM C-534, grade I, type I for tubular materials and grade I, type II for sheet material.

2. Domestic hot water piping shall have the following minimum thicknesses unless additional thickness is required by drawings:

a. Piping 2” and smaller: 1” thick

b. Piping greater than 2” diameter: 1-1/2” thick

3. All joints shall be sealed with approved manufacturers adhesive.

4. All lines running outdoors shall have insulation protected from weather by two (2) coats of manufacturers approved finish.

5. Acceptable Alternate Manufacturer: Koolphen K CFC Free Phenolic foam, or Aerocel (by Aeroflex International Company) closed cell Elastomeric thermal insulation.

6. Finish pipe insulation with Owens-Corning Fiberglass "Fiberglass 25ASJ" (All Service Jacket). Johns Manville, CSG, Armstrong, or equal vinyl coated, reinforced and embossed vapor barrier laminate for hot, cold, concealed and exposed piping operating at temperatures from -60 degrees F. to +450 degrees F.

7. Jacket shall have water vapor permeance not greater than .02 Perms.

8. Jacket and butt strips shall have factory applied self-sealing pressure sensitive adhesive. Adhere jacket and butt strips by removing in center of each section

and working toward ends. Lap and butt strips must be pressurized by rubbing with hard tool such as nylon sealing tool. For cold water piping, seal ends of pipe insulation with Foster 30-35, or equal, at all flanges and valves.

9. In lieu of above jacket, in exposed areas, contractor may furnish glass cloth jacket with vapor barrier for heating/cooling water piping In lieu of pressure sensitive adhesive, jacket and butt strips may be sealed with Foster 85-20, or equal. Staples shall not be used under any circumstances.

B. Refrigerant Suction Lines and Cooler/Freezer Condensate Drains:

1. Similar to “A” except 1” thick inside building and 2” thick on outside of building with manufacturers weather-resistant protective finish. (2” thickness shall be achieved by 2 layers of 1” insulation applied per manufacturer recommendations).

2.02 DUCTWORK INSULATION

A. All ductwork shall be insulated, including but not limited to supply, return, exhaust, relief transfer duct, etc.

B. Ductwork Below Roof: The insulation shall consist of one layer 2” thick of Owens-Corning Type 75, .75 lbs./cu. Ft. density, with an installed R-value of 5.6 and vapor jacket. Acceptable Alternate Manufacturer: Johns-Manville.

C. Ductwork Above RoofLine: Similar to “B” except 3” thick insulation with an installed R-value of 8.3 and waterproof jacket.

2.03 INSULATION RATINGS

A. Flame spread shall be 25 or less.

B. Smoke developed shall be 50 or less.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install materials in accordance with the manufacturer’s instructions.

B. Apply insulation to clean, dry surfaces only, after piping and equipment have been tested and accepted. All piping insulation, jackets, or facings and adhesives used to adhere jacket or facing and to insulation, included fittings and butt strips, shall have noncombustible fire and smoke hazard system rating label as tested by ASTM E-84, NFPA 255, and UL 73 not exceeding Flame Spread 25, Fuel Contribution 50, Smoke Developed 50. Accessories such adhesives, mastics, cements, tapes and cloth for fittings shall have same ratings as listed above. All products or their shipping cartons shall bear the Underwriters' Label indicating that flame and smoke ratings do not exceed above criteria, except as specified above.

C. Insulation on domestic cold water shall be continuous through walls and floors. Sleeves shall be oversized to accommodate insulation. At each point of support including alignment guides, provide Insul-Shield, or insulation. Insulation on other piping need not be continuous through walls and floors provided insulation in neatly terminated and sealed at sleeve.

D. Insulate hot water and drain piping to lavatories for use by handicapped people with 1/2-inch foamed plastic insulation Type "O-C", joints and seams made tight with J-M No. 57 adhesive or equal.

E. Insulate fittings, with segments of pipe insulation, or molded fiberglass fittings covers of thickness equal to thickness of adjacent pipe insulation, wire in place, apply smoothing coat of insulating cement and vapor-seal with pre-sized glass cloth before two coats of Benjamin-Foster 30-35, or equal, fire resistant vapor barrier coating.

END OF SECTION

SECTION 15300 – FIRE PROTECTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Division 1, General Requirements, and Section 15050, Basic Mechanical Materials and Methods, shall be considered a part of these specifications.

B. B. The fire protection system work includes, but is not limited to, the following:

1. Furnish and install complete, operable fire protection system, with all related items. System shall be designed, fabricated and installed by a firm regularly engaged in this type of work and employing those skilled in the work involved.

2. Systems shall be in accordance with the applicable standards of the National Fire Protection Association (N.F.P.A.) and requirements of any authorities having jurisdiction.

3. Furnish and install monitoring system for fire sprinkler riser.

1.02 SUBMITTALS

A. The contractor shall submit to the Architect cut sheets of proposed fire sprinkler heads and shop drawings showing layout of sprinkler heads for verification of compatibility with architectural design.

PART 2 - PRODUCTS

2.01 GENERAL

A. All materials and devices essential to the successful operation of the Fire Protection System shall be UL Listed with the exception of steel pipe. Steel pipe shall conform to NFPA 13 Table 6.3.1.1. Backflow preventers shall be either UL Listed or classified.

B. Fire sprinkler system shall be designed so that piping suspended from the roof structure is no greater than 4” diameter.

2.02 FIRE DEPARTMENT CONNECTION

A. Provide flush brass-bodied 2-way connection with hose threads, drain, brass inlet caps with chains as approved by local fire jurisdiction.

2.03 AUTOMATIC SPRINKLERS

A. The manufacturer shall warrant assemblies for ten (10) years against defects in material and workmanship. Temperature rating of sprinkler shall be based on the maximum ambient temperature of the environment in which it is installed.

B. Listed corrosion-resistant sprinklers shall be installed in locations where chemicals, moisture or other corrosive vapors sufficient to cause corrosion of such devices exist.

C. Sprinkler heads:

1. Acoustic Panel Ceilings:

a. Assembly shall be a recessed pendent sprinkler head with escutcheon. Heads and escutcheon shall have white polyester finish

2. Gypsum Board Ceilings and Plaster/EIFS soffits:

a. Assembly shall be a fully concealed sprinkler head with cover plate having a baked enamel finish to match ceiling.

3. Exposed:

a. Sprinkler frame shall be bronze.

2.04 ACCESSORIES

A. Provide alarm bells, valves, drains, flow switches, and all other items required for a complete system.

B. Provide permanently marked, waterproof metal or rigid plastic identification signs or placards at all valves secured with corrosion-resistant chain.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General: Installation of the private service main shall conform to local requirements and shall be in accordance with requirements of Section 02190, Sitework/Excavation and Section 15400, Plumbing of the specifications.

B. Protection: Underground piping cover shall be measured from top of pipe to finished grade with due consideration given to future or final grade and nature of soil. Top of pipe shall be no less than one foot below local frost line. Minimum cover shall be 3 feet below pavements. No piping shall run under buildings except fire service main shall be permitted to enter the building adjacent to the foundation. Back filling shall be tamped in layers to prevent lateral movement or settlement and shall contain no ashes, cinders, refuse, organic, corrosive or frozen materials. In trenches cut through rock, tamped granular backfill shall be provided a minimum of 6 inches under and around piping with a minimum of 2 feet of granular cover.

C. Contamination: All system components shall be free of rust and other contaminants and clean inside and out.

D. System Entrance: Installation of the riser and trim for all its components shall be as compact as possible to conserve floor space.

E. Fire Department Coordination: No exterior component of the Fire Protection System shall be located within any fenced or walled area and shall be readily visible from the parking lot. Coordinate the locations of the fire department connection and exterior alarm device with the local fire jurisdiction and Architect of Record.

F. Piping: Design layout shall allow for suitable venting and drainage. Installation shall be coordinated with all other items in the construction and shall not obstruct lights, air outlets, dampers, valves, access doors and other items requiring access. Piping in areas having ceilings shall be concealed. Piping may be exposed elsewhere but kept high as possible. Piping passing through walls, floors and other building components must be sleeved. Piping penetrating finished spaces shall be fitted with chrome split-ring escutcheons. Sleeves shall be patched and sealed as required to maintain fire ratings where applicable. Install flow switches, tamper switches, alarms and any other required electrical components within the piping system. Coordinate with Architect of Record for locations of inspector’s test and main drain discharge points to ensure visibility, access and hard surface to receive and direct water to pavement for drainage.

G. Cutting: All openings for piping should be anticipated and indicated on the approved shop drawings. Any additional cutting or openings must have the written approval of the Architect of Record.

H. Access: Install hinged access panels for access to valves or similar operable components concealed in finished areas. Label panel door with identity of item concealed.

I. Sprinklers: Installation and location of sprinklers shall be coordinated with all other items in the construction and shall not obstruct lights, air outlets, access doors and other items requiring access. Sprinklers at finished ceilings shall form a symmetrical pattern carefully integrated into the ceiling layout. Provide proper protection of automatic sprinklers. Sprinklers that have had paint applied to them, by other than the sprinkler manufacturer, or otherwise damaged shall be replaced with new listed sprinklers of the same orifice size, thermal response and water distribution. Furnish and install, in close proximity to system riser, an emergency cabinet containing a minimum of two sprinklers of all types and ratings used in the system and one head wrench for each head type. One spare Tyco Model DS-C dry pendent sprinkler and DS-B sprinkler boot within manufacturer's shipping containers shall be attached to the sprinkler riser by nylon zip ties.

J. Provide a drain carried to the exterior capable of handling a full flow test. Exterior wall penetration shall be sealed, insulated and finished.

3.02 TESTING, INSPECTION AND ACCEPTANCE

A. Flushing: Underground, or other water supply piping, shall be completely flushed before connection is made to downstream fire protection system piping. The flushing operation shall be continued for a sufficient time to ensure thorough cleaning. Minimum rate of flow shall be not less that the hydraulically calculated water demand rate of the system, including any hose requirements, the flow necessary to provide a velocity of 10 feet per second or the maximum flow rate available to the system under fire conditions.

B. System test: Purge system of air prior to filling with supply water. After completion of the installation, the entire system shall be tested and inspected to meet the approval of the authorities having jurisdiction. A contractor's material and test certificate should be completed in accordance with NFPA 13.

C. Fire Department Connection: Inspect for visibility and accessibility. Firmly secure caps to resist casual vandalism. Verify that swivels have freedom of movement, hose threads are clean and in good condition and that the check valve in the connection piping is not obstructed or leaking.

D. System drainage: Verify exterior discharge points of main drain and inspector's test station for visibility, access and hard surface for conveying discharge water to pavement for drainage.

E. System documentation: Complete hydraulic design placard information and affix to system riser. Complete all component identification signage. Collect system documentation, including but not limited to, approved shop drawings, hydraulic calculations, material and test certificates, acceptance letters and insert all documents in holder.

END OF SECTION

SECTION 15400 - PLUMBING

PART I - GENERAL

1.01 DESCRIPTION

A. Division 1, General Requirements, and Section 15050, Basic Mechanical Materials and Methods, shall be considered a part of these specifications.

B. Codes, Ordinances, and Permits: All permits, connection fees, tap fees, licenses, approvals, and other arrangements including plumbing and riser diagrams, if required, shall be obtained by the plumbing contractor at his expense. Should any changes be necessary in the drawings, or specifications, to secure such approval, this contractor shall include in his bid all costs for such changes to comply with these departments, without extra costs to the Owner. It will be this contractor's responsibility to provide all systems complete and operable.

C. Scope of Work: Contractor shall furnish all materials, tools, equipment, labor, and services and pay all costs of whatever nature, as may be necessarily expended, for a proper workmanlike and fully operable installation, and completion of all plumbing and related work, including but not limited to the following:

1. Complete system of sanitary, soil, waste, and vent piping connecting each and every plumbing fixture or other piece of equipment requiring same, with sanitary sewer including pipe, fittings, and other necessary appurtenances.

2. Complete system of storm water drainage including downspouts, roof drains, pipe, fittings, and other necessary appurtenances.

3. Complete systems shall be connected to adequate source of supply or disposal of the local public utility company or municipality commonly serving the area. It will be the contractor's responsibility to provide all systems complete and operable.

4. Complete system of cold water supply and distributing piping of hot and cold water connecting to each and every plumbing fixture, cooling tower, evaporative condenser, or other pieces of equipment requiring same, including shut-off valves (for each piece of equipment), hangers, supports, and other necessary appurtenances.

5. Cold water supplies to refrigeration and condensers.

6. Funnel or other drains for air conditioning units, refrigeration, and fire protection piping.

7. All floor and wall sleeves.

8. All plumbing fixtures, except as hereinafter noted.

9. All pipe covering.

10. Water heaters/water coolers.

11. Connections to the supply lines of the fixtures and outlets for equipment furnished by other parties.

D. All plumbing materials, equipment and fixtures shall be new and of best grade, free of defects and complete with all required appurtenances and accessories.

1.02 GENERAL

A. Conceal piping unless specifically noted otherwise. Run exposed piping to lines of building and close to walls, or columns. Install all piping with proper pitch to permit proper draining and venting. Arrange piping to provide adequate clearances from all equipment or devices requiring servicing. Locate valves, pressure gauges, thermometers etc. to be easily accessible regardless of diagrammatic location indicated on the drawings.

B. Unless otherwise indicated do not install pressure piping underground beneath floor slabs within the building.

C. Furnish and install chromium plated escutcheons secured with set screws on all exposed uninsulated piping which passes through walls, floors or ceilings of finished spaces.

1.03 SUBMITTALS

A. This contractor shall submit product data for all plumbing fixtures, trim and accessories.

PART 2 - PRODUCTS

2.01 PIPING & VALVES

A. All sanitary sewers below floor shall be standard weight cast iron soil pipe.

B. All waste lines within building to 5 feet outside of building shall be standard weight cast iron pipes.

C. All interior downspout lines shall be standard weight cast iron pipe.

D. Sewer pipe underground more than 5 feet outside of building shall be standard weight cast-iron pipe and fittings. Vitrified clay pipe and fittings may be used beyond 5 feet outside the building only in areas not subject to loading from driveways, parking lots, structures, etc.

E. Drain tile shall be standard form tile to conform with ASTM standards. Drain tile shall be placed with open joints and wrapped with building paper, set true to grade, and pitched to drain to sump. All tiles shall be encased with a minimum of 6 inch clean gravel.

F. All rough-in for plumbing fixtures, including all waste lines and all branch soil pipe below floor from plumbing fixtures, shall be standard weight cast iron pipe.

G. Soil, waste and vent piping above ground within building shall be service weight uncoated cast iron soil pipe and fittings.

H. Where such use is acceptable to the authority having jurisdiction, all storm and sanitary lines and fittings, below floor, above floor, and outside building may be schedule 40 PVC DWV with solvent welded joints per ANSI/ASTM D2665 and D3311. All piping, valves, fittings and solvent shall be furnished by the same manufacturer.

I. Water main 2-1/2-inch diameter and over in the ground shall be class 150 cast iron water main pipe and fittings. Buried water main 2 inches diameter and under shall be “K” copper pipe and wrought copper fittings.

J. All hot and cold water lines within the building above floor shall be type “L” copper with wrought copper fittings. All fittings and couplings shall be soldered.

K. Where such use is acceptable to the authority having jurisdiction, all storm and sanitary lines and fittings both below and above floor may be schedule 40 PVC DWV with solvent welded joints.

L. Unless otherwise indicated, piping materials shall conform to the following specifications:

1. Cast Iron soil pipe and fittings: ASTM A74-72

2. Copper Tubing: ASTM B-88

3. Copper Drainage Tubing: ASTM B-306

4. Cast Iron pipe flanges and flanged fittings: ANSI B16.1

5. Malleable Iron screwed fittings: ANSI B16.4

6. Cast Iron screwed drainage fittings: ANSI B16.12

7. Wrought Copper solder joint fittings: ANSI B16.22

8. Cast Bronze solder joint drainage fittings: ANSI B16.23

9. Cast Iron Pressure Fittings: AWWA-C100

10. Pipe Hangers and Supports: MSS-SP-58

11. Non-Metallic gaskets for pipe flanges: ANSI B16.21

2.02 PIPE HANGERS AND SUPPORTS

A. Support piping securely in approved manner with hangers as manufactured by Grinnell, Carpenter and Patterson, Fee and Mason, or equal. Perforated strap, wire, or other makeshift devices will not be permitted. For copper pipe, provide copper plated hangers or steel hangers with sheet lead or plastic protective sleeves. Arrange hangers to maintain required grading of lines without deflection of piping, to prevent vibration and to provide for expansion and contraction.

B. Piping support components shall conform to Manufacturer's Standardization Society Specification SP-58. Unless otherwise specified, selection and application of pipe hangers and supports shall conform to Manufacturer's Standardization Society Specification SP-69.

C. Hangers for metallic piping shall be adjustable carbon steel clevis type. For uninsulated piping provide Fee and Mason hangers, Figure 239, Carpenter and Patterson, Grinnell, or equal. For insulation piping provide Fee and Mason hangers, Figure 103 Carpenter and Patterson, Grinnell, or equal.

D. Where three or more parallel pipes run as a group at the same elevation, approved trapeze gang hangers may be used.

E. Spacing of supports for steel and copper piping shall conform to Plumbing Code requirements, but in no case shall exceed the following limitations:

Pipe size, inches	1/2 & 3/4	1 to 1-1/2	2 to 3
Max. spacing, feet	6	8	10

F. Support cast iron pipe at each hub. Provide supports at changes in direction, both horizontally and vertically, regardless of spacing indicated in above table.

G. Rod sizes for single pipe shall be not less than that scheduled below:

Pipe Sizes, Inches	Min. Rod Dia., Inches
1/2 to 2	3/8

2-1/2 to 3	1/2

H. Support hangers rods from building construction in approved manner. Provide Fee and Mason Figure 255 or 246, Carpenter and Patterson, Grinnell, or equal, malleable iron beam clamps to support piping lag screw, Figure 219 or Figure 220 for wood construction.

I. Support vertical lines at their bases with hanger placed in vertical lines near riser, or base-type fitting set on pedestal, foundation or support.

J. Support piping on walls with hangers securely anchored into wall construction. Support raisers with split ring clamps spaced not greater than six (6) feet on centers, Support horizontal piping "J" hooks or "U" bolts and brackets or, where required for pipe movement, roll supports and brackets. Piping on roof shall be supported as specified for walls, or as detailed.

K. Support piping above floors with Fee and Mason Figure 291, Carpenter and Patterson, Grinnell, or equal, pipe supports.

2.03 PLUMBING FIXTURES

A. Contractor shall furnish and install all plumbing fixtures.

B. At all accessible sinks and at all sinks with exposed p-trap or other piping provide protective thermal wrap on p-trap and hot water supply lines. Acceptable product: Plumberex (800-475-8629) “Handy Shield” safety covers, color white, or equal.

C. Furnish and install all fixtures and trim necessary to complete fixture installation. Provide approved stop valves, to match fittings, on both hot and cold water supplies to each fixture. All fixtures requiring hot and cold water shall have cold water faucet on right and hot water on faucet on left. Exposed metal work, including fixture runouts, shall be chromium plated. Color of all fixtures shall be white, unless otherwise specified. (Note: The "P" identification symbol with each fixture identifies type shown on drawings). Where fixture tailpieces, traps and stop valves are not specified, same shall be provided to suit fixture.

2.04 VALVES

A. All valves shall be rated 125 SWP, except where noted.

B. Catalog numbers listed below are NIBCO, Inc., Jomar and other equal valves will be acceptable.

C. Gate Valves 3" and smaller shall be bronze, solid wedge, rising stem, screwed bonnet, NIBCO Figure No. S-111.

D. Angle valves 3" and smaller, shall be bronze, screwed bonnet, with renewable Teflon discs. Angle valves shall be NIBO Figure No. S-311-Y.

E. Drain valves shall be gate type, NIBCO, Stockham, Lunkenhimer, or equal, 3/4" minimum size with 3/4" hose end adaptors. Provide gasketed caps over hose threads. Extend clear of equipment and insulation.

2.05 WATER HEATING

A. Storage Type:

1. Water Heater: Provide water heater(s) as shown on plumbing drawings.

2. Hot water outlets shall be provided with hot water at a temperature of 105 degrees F. unless otherwise noted.

3. Flues: This contractor shall furnish and install type “B” vent flue. Flues shall be sized and run as required. Flues to be 3 feet above roof with rain cap, and Metal-Fab (or approved equal) tall-cone flashing with storm collar.

4. Combination temperature and pressure relief valve, McDonnell and Miller 202-NF 125-195 degrees or Watts 140-210 degrees, where fusible plug type is required by local code.

5. Pipe relief outlets to drain.

6. Thermometer on top of water heater. Range: 30 to 240 F. Only if required by code.

2.06 CLEANOUTS

A. Cleanouts shall be J.A. Zurn Manufacturing Company, Jay R. Smith, Josam, or equal of the following Zurn Catalog Numbers:

Location	Product
Cleanouts in Walls or round nickel bronze cover.	ZN-1460 Style to suit all finish with square
Cleanouts in Piping	ZA-1445 with raised head bronze plug.

2.07 WATER HAMMER ARRESTORS

A. Water hammer arrestors shall be as manufactured by Josam, Zurn, Smith or Wade.

B. Units shall be installed where indicated. Method of installation shall be in accordance with manufacturers specifications.

2.08 ELECTRIC WATER COOLER - As indicated on drawings.

2.09 DOWNSPOUT NOZZLES

A. Downspout nozzles shall be cast bronze, sized to match the downspout pipe size. Provide one of the following products:

1. Zurn Z199 series cast bronze downspout nozzle

2. Wade Drains 3940 series cast bronze downspout nozzle

PART 3 - EXECUTION

3.01 INSTALLATION

A. Cold Water Supply: Provide a cold water supply and meter, or meters. If water pressure on domestic service exceeds 60 PSI, the contractor shall furnish and install pressure reducing valve on main domestic service line set for 50 PSI.

B. Piping in General: All pipes shall be run with proper grades to provide for easy draining. They must be thoroughly reamed and cleaned before installation. This contractor shall consult and cooperate with other piping contractors as to obtain the proper grouping of pipes and to avoid interference. Pipes run overhead shall be placed as close to the roof deck as possible to maintain proper headroom and to present a neat appearance, all consistent with the correct pitching of pipes. The plumbing contractor shall consult with the construction superintendent before installation of any pipe lines, which will reduce the proper headroom in any way. Piping shall be run as shown on the drawings, but the construction superintendent reserves the right to make slight changes (without extra charge) to avoid conflict with other work.

C. Vent Pipes: All vent pipes that pass through roof openings shall be kept at a reasonable distance from the walls to permit proper application of built up roofing and base and counter-flashings. All vent pipes shall be flashed with 4 pound sheet lead turned down into pipe.

D. Floor Drains: Furnish and install all floor drains.

E. Cleanouts: Full sized brass screw plugs, cleanout plugs shall be furnished and installed at the foot of all soil and waste stacks, internal downspouts and at all points where necessary to permit the entire drainage system to be rodded out easily. Provide cleanouts at every turn in the waste line.

F. Connections to Equipment Furnished by Others.: This contractor shall rough in and connect all fixtures and equipment to be furnished by others. This shall include all hot and cold waters, waste, and vent piping required to completely connect to equipment.

G. Flues: Install per manufacturer's specifications.

H. Rough-in and make final connections to all equipment requiring plumbing connections.

I. Install and support all fixtures, equipment, and materials in a thoroughly substantial and workmanlike manner. Use manufactured hangers, supports, or carriers where specified or required.

J. Provide stop valves on the water supplies to all plumbing fixtures.

K. On all lavatories, install cold water on the right side and hot water on the left side.

3.02 PIPING JOINTS AND CONNECTIONS

A. All piping joints and connections shall be watertight under specified test pressures.

B. Soldered joints shall made with 95-5 tin-antimony solder ASTM B32 alloy grade 5 and non-corrosive paste flux. Acid flux will not be permitted. Make brazed joints with a silver brazing alloy. Solder for drainage piping shall be 50/50 tin-lead, ASTM B32 Grade 50 A. Do not overheat or burn joints. Remove valve internals or otherwise protect valves and specialties from overheating.

C. Threaded joints, use tapered threads conforming to ANSI B2.1. Carefully cut, fit, ream, deburr and clean all threaded joints. Assemble joints with pipe joint compound or teflon tape applied to the male threads only. Pipe joint compound shall be a manufactured product, lubricating, non-hardening, oil resistant, which prevents seizing or galling, and has temperature and pressure ratings suitable for the service. As an option contractor may provide grooved end joints where allowed by code.

D. Caulked joints in cast iron soil pipe shall be made with packed oakum and not less than one inch depth of molten lead. Caulk and finish lead to within 1/2" of the hub.

E. Mechanical joints in cast iron pressure piping shall conform to ANSI Standard A21.11. Provide concrete buttresses and anchors of all elbows.

F. Joints in polyvinylchloride pipe shall be made by cement method. Pipe shall be cut and joined using primer and cement in accordance with the manufacturer's recommendations.

3.03 PIPE SLEEVES

A. Furnish and install pipe sleeves wherever piping passes through walls, floors, partitions, roofs, and other building structure.

B. Sleeves through concrete or masonry construction shall be Schedule 40 galvanized steel pipe. Sleeves through other construction shall be galvanized steel pipe or 20 gauge

galvanized sheet metal. Sleeves through existing concrete walls if core drilled, do not require sleeves.

C. Size sleeves to suit the pipe, providing at least 1/2" annular space between the sleeve and pipe. Where pipe insulation is required to be continuous through floors, walls, etc., make sleeves equal in diameter to pipe with insulation. Align and support piping to center within sleeves.

D. Install sleeves as the building is constructed and when concrete is poured. Securely anchor sleeves to the structure using anchor lugs or flanges. In general, make wall sleeves flush with the wall surfaces.

E. Unless otherwise indicated, fill and space between all pipes and sleeves with fiberglass, calcium silicate or other non-flammable material and seal both sides with caulking. On all sleeves through floors, exterior walls, roofs, and waterproof construction, pack sleeves with fiberglass, calcium silicate or other non-flammable material and seal with waterproof caulking.

3.04 INSTALLATION AND PIPE FITTINGS

A. Piping shall be concealed or exposed as indicated. In general and unless specifically noted otherwise, piping in finished areas shall be concealed. Run exposed piping parallel with the lines of the building.

B. Maintain adequate headroom and clearances.

C. Install piping with proper pitch for draining and venting.

D. Locate valves, gages, controls, and similar devices to be readily accessible and/or readable.

E. Orient valves so that stems are not below horizontal, and so that leakage from packings will not fall on electrical work or other equipment.

F. Unless noted otherwise, equipment connections 3" and smaller shall be made with 150 lb. brass seat, ground joint iron unions. Finish of unions shall match adjacent pipe.

G. Carefully and thoroughly examine and inspect all pipe, valves, fittings and related materials and equipment prior to installation. Do not install defective pieces.

H. Make no direct welded, soldered, or brazed connections to equipment.

I. Provide pipe fittings at all changes in direction, pipe size, or where required for pipe connections. Unless otherwise indicated, pipe fittings shall be factory-made of the type, material, grade, and finish specified for the service. In general, fittings shall have finish to match the adjoining piping.

J. Use reducing tees, reducing elbows, or straight reducing fittings for all changes in pipe size.

K. Unless otherwise indicted, unions shall be the ground-joint type with metal-to-metal seats. Unions in steel pipe shall be malleable iron with brass seats. Unions in copper tubing shall be brass.

3.05 VALVE IDENTIFICATION

A. In general, provide numbered tags on all special fittings, valves, and other operating devices.

B. Tags may be omitted on shutoff valves at equipment or other items where, in the opinion of the Engineer, the function or identification is visually obvious.

C. Tags shall be non-ferrous metal tags with black embossed numbers and corrosion-resistant chains.

D. Provide schematic drawings or charts identifying all tagged valves. Mount drawings or charts, framed under glass, where directed.

E. Submit drawings or charts to the Engineer for approval before proceeding with the installation of tags.

3.06 TESTING

A. After plumbing fixtures are connected, all piping and fixtures shall be tested for proper operation.

B. Furnish all labor, materials, instruments, fuel and power required to perform the following tests. Repeat tests, if required, until satisfactory results are obtained. Remove defective materials and/or workmanship, replace same and repeat test without additional cost to Owner. All tests shall be coordinated with equipment manufacturer's recommendations to avoid any damage. The General Contractor shall be notified of all tests in sufficient time to coordinate the work and safety of other trades.

C. Domestic Hot and Cold Water Systems: 100 PSI (minimum) air for four hours without leakage.

D. Sewer Systems: 10 feet (minimum) hydrostatic for one hour without leakage.

3.07 DISINFECTION OF POTABLE WATER SYSTEMS

A. Prior to use, disinfect all portable water systems including domestic cold and hot water lines in accordance with requirements of the Plumbing Code.

B. Upon completion of the work, deliver to the Owner certificates of approval by the State Health Department, if required by local officials.

END OF SECTION

SECTION 15500 - HEATING, VENTILATING, AND AIR CONDITIONING

PART I - GENERAL

1.01 DESCRIPTION

A. Section 15050, Basic Mechanical Materials and Methods, shall be considered a part of these specifications.

B. Codes, Ordinances, and Permits: The air conditioning and heating contractor shall promptly obtain all permits, arrange for all necessary inspection, and furnish a certificate of inspection and approval from the public authorities having jurisdiction, at this contractor's expense, before any work has been started. Should any changes be necessary in the drawings or specifications to secure such approval, this contractor shall include in the base bid all costs for such changes, to comply with these departments before any work has been started, without additional costs to the Owner.

C. Furnish and install all material including labor, equipment and services necessary for and reasonably incidental to provide a complete and operating, heating, ventilating, and air conditioning system.

1.02 SUBMITTALS

A. This contractor shall submit to the Architect product data of the packaged rooftop HVAC units before starting work.

1.03 WARRANTY

A. Provide a one-year warranty of the packaged unit with an extended four-year warranty on compressors.

B. Provide a one-year warranty on electric strip heaters and a ten-year warranty on all natural gas fired heat exchangers for rooftop HVAC units, rooftop heaters, unit heaters, etc.

C. All warranties commence from date of acceptance of by the Owner.

PART II - PRODUCTS

2.01 ROOFTOP HEATING, VENTILATION, AND AIR CONDITIONING UNITS

A. Units shall be packaged combination heating and cooling type, consisting of compressor section, air-cooled condenser section, cooling section, heating section, air handling section, and mixing box/filter section assembled on a common base. Provide units complete with control panel. Units shall be prepiped and prewired. Provide 2 sets of throwaway type filters in accordance with manufacturer's specifications, with one set to be used during construction and the second set to be installed after substantial completion of construction. All compressor motors to have thermal overload, over and under voltage protection (loss-of-phase protection) on three legs (factory installed and wired). Disconnect switches shall be externally mounted and as described in Section 16400, "Factory installed (internal/integral) disconnect switches are **not** acceptable." All units shall be provided with roof curbs. Unit shall be U.L. and A.G.A. approved. Acceptable manufacturers - Carrier and Trane.

B. The units shall be A.G.A. approved and be a complete automatic heater. Controls furnished with the unit shall be supplied for the specific gas type and specification and in accordance with local utility regulations.

C. The heat exchanger shall be an integral, completely welded aluminized steel unit composed of venturi-shaped, baffle-free sections welded to top and bottom header plates. Flue gases shall be power vented. Separated combustion type shall be used when indicated with integral exhaust/combustion air inlet and concentric adapter.

D. Controls to include fan and limit controls, electronic ignition, pressure regulator, and shut-off cocks.

E. Unit shall be capable of fully automatic operation with ambient temperatures down to about (standard with manufacturer) 25 degree F for refrigeration cycle.

F. Rooftop units shall have factory-installed economizers with pressure relief dampers when specified on the mechanical drawings, or as required by Code. Units with economizers shall have outside air temperature control (at 50º F) and have the ability to close outside air intakes during unoccupied hours.

G. Unit sizes 7 1/2 ton and above shall be two-stage heating (medium and high) and two-stage cooling, complete with multiple refrigeration circuits and time delay.

H. All units shall be provided with roof curbs, at least 14" high.

I. All *Carrier* equipment shall be compatible with the *Honeywell* T-7300 programmable thermostat and *Trane* equipment shall use *Trane* programmable thermostats.

J. Provide 2 sets of throwaway type filters in accordance with manufacturer's specifications, with one set to be used during construction and the second set to be installed after substantial completion of construction.

K. External High-low pressure cutouts factory installed are required on all rooftop units.

L. Provide all necessary contactors, relays, motor starters, etc. for a complete operating unit.

M. Provide crankcase heaters for all Trane units. Provide crankcase heaters on Carrier units with a Humidimizer and on the Energy Recycler.

N. For all projects which are 5 miles or less from salt water coastlines, bays, tributaries, etc. furnish each unit with standard aluminum fins, copper tubing condenser coil(s), and *Carrier E-Coat* or *Trane Epoxy* coil treatment with a five-year warranty.

O. Housings shall be painted and weatherproofed with gasketed hinged access doors and factory insulated.

P. All units shall have belt driven evaporator fans with adjustable pitch. If not available, then direct drive will be acceptable.

Q. Vibration isolators shall be rubber-in-shear or spring type sized for the load encountered. They shall be installed as indicated on the drawings or specified herein.

R. Air handling units shall be internally insulated by the manufacturer.

S. Air handling unit fans shall be sized to deliver specified air quantities at no more than 900 RPM.

T. Contractor shall provide a one year service and maintenance contract on HVAC equipment.

U. A duct smoke detector (SD) shall be furnished and factory installed per NFPA 72 and 90A in each unit having a capacity greater than 2,000 cfm unless specified differently in the contract documents by the Engineer-of-Record and/or ordered otherwise by the contractor. Provide smoke sampling tube(s) as required for proper smoke detection. Each SD shall be factory wired to stop the respective fan on detecting the presence of smoke. The SD shall not be powered from the RTU. The manufacturer and model of SD shall be as specified in the fire alarm section of these specifications. The RTU manufacturer shall verify proper operation of the smoke detection system for each model, size and configuration of units they furnish. The RTU, with all components as shipped, shall be UL listed.

2.02 FLUES

A. Flues from all heating equipment shall be of double wall construction with type "B" vent classification.

B. Flues shall be sized and run as required. Flues to be 3 feet above roof with weather cap, unless otherwise noted.

2.03 GAS PIPING

A. The heating contractor (unless local jurisdiction requires the plumbing contractor) shall provide a complete system of gas piping extending to all equipment requiring the same.

1. Include valves, pipes, fittings, hangers, supports, gas pressure regulators, dirt legs and all other necessary appurtenances. Valves shall be at each piece of equipment.

2. Rough-in and connect all fixtures and equipment furnished by others, including all gas piping required to completely connect the equipment.

3. All gas piping to be standard weight black steel with standard weight malleable iron fittings and run within building, generally above ceilings, out through roof, within unit curb.

4. Valves shall be *Jomar* Model T/S100 ball type (or equal).

5. Test piping systems per Utility Company requirements.

2.06 CONDENSATE DRAIN

A. Furnish and install a condensate drain line with condensate control device from each air conditioning unit.

B. Condensate piping shall be supported as per manufacturer recommendations.

2.07 REFRIGERANT SYSTEM CHARGING

A. Follow manufacturer’s recommended charging procedure for both refrigerant and refrigerant oil.

B. Replace any refrigerant or oil lost from the system during the guarantee (one year) period at no expense to the Owner.

PART III - EXECUTION

3.01 INSTALLATION

A. Install units in accordance with the manufacturer’s instructions.

B. Set minimum outside air intake at 10% of total air quantity specified or as required by appropriate codes.

C. Equipment shall be of suitable dimension for the area in which it is to be installed. If the equipment dimensions and/or arrangements differ materially from that shown on the drawings, the Contractor shall be responsible for any redesign that is necessary.

D. Unless otherwise specified or shown on the drawings, equipment installation, duct connections, supports, vibrations isolation, suspension, piping and related arrangements shall be in accordance with the manufacturer's recommended installation for the service.

E. Air units supported by angle iron frames above the ceiling shall have vibration isolators between the unit and frame.

3.02 TESTING REFRIGERANT PIPING SYSTEM

A. The piping shall be pressure tested and load tested twice, and then blown out with dry nitrogen.

B. Expansion valves and compressor crankcases are not to be pressure tested.

C. All refrigerant gas piping shall be leak tested and comply with appropriate codes. Air test at 1 1/2 times working pressure for 1 hour with no loss in pressure unless otherwise noted.

END OF SECTION

SECTION 15880 - AIR DISTRIBUTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Section 15050, Basic Mechanical Materials and Methods, shall be considered a part of these specifications.

B. The sheet metal contractor, at his expense shall obtain all licenses, stamping, approvals, and arrangements for work, before any work has been started. Should any changes be necessary in the drawings or specifications to insure such approval, this contractor shall include in his base bid all costs for such changes, to comply with these departments before any work has been started, without additional cost to the Owner.

C. Scope of Work: The ventilation work includes, but is not limited to, the following:

1. Air conditioning fresh air ducts, return air ducts, insulation, grilles, supply unit, filters, fans, motors, supply air ducts, diffusers, and fire dampers.

2. Exhaust/ventilation system fans, blowers, ducts, grilles, diffusers, dampers, etc.

3. All roof curbs required for duct openings through roof.

PART 2 - PRODUCTS

2.01 DUCTWORK

A. All ductwork shall be constructed of galvanized sheet metal and erected in a first class workmanlike manner. The drawings are diagrammatic and do not attempt to show all offsets in ducts as necessary for the installation of the work. Where offsets are required, the angle of the offsets shall be as small as possible. Duct sizes, indicated on the drawings, are net inside dimensions. Round spiral duct is preferred, equivalent rectangular duct sizes may be utilized for limited installation area or to avoid structural interference. All rectangular ducts shall be marked with horizontal dimensions first.

B. Weight of Metal Duct: United States standard gauge shall be used to designate weight of all sheets. The gauge of sheets for duct sizes shall be as follows:

Rectangular Duct	Gauge
Up to 12 inches	26
13 inches to 30 inches	24
31 inches to 60 inches	22
61 inches to 90 inches	20
91 inches & over	18

Round Duct	Spiral Pipe Gauge	Fitting Gauge
3 to 14 inches	26	24
15 to 26 inches	24	22
27 to 36 inches	22	20
37 to 50 inches	20	20

C. Flexible ductwork shall be used only to connect to ceiling mounted registers and diffusers, for a maximum length of seven feet. All other ductwork must be rigid.

D. The fabrication and installation of all ductwork, together with related equipment, shall comply with the standards of the National Fire Protection Association, as set forth in NFPA Standard No 90A, as well s with the requirements of the Sheet Metal and Air Conditioning Contractors' National Association, Inc. HVAC Duct Construction Standards.

E. Unless otherwise indicated or specified, fabricate ductwork of galvanized sheet steel and support details shall conform to HVAC Duct Construction Standards as published by Sheet Metal and Air conditioning Contractor's Association, Inc.

F. All duct sizes shown are net inside clear dimensions. Unless otherwise indicated size runouts, drops, and connections to grilles, registers, diffusers, fans, coils, louvers, filters, and other equipment to the full size of the equipment connection.

G. Minor changes may be made in duct sizes where required to fit eh available space, provided the indicated net free area and approximate aspect ratio are maintained.

H. Smoothly transition all ductwork and prevent excessive or unnecessary turbulence or pressure loss.

I. Erect ductwork in a first-class, workmanlike manner secured in place rigidly and permanently. Provide suitable hangers, securely attached to building construction with bolts, clips or inserts. Hangers shall be structural shapes, flat bars, or formed strap hangers; use of wire will not be permitted. Hangers shall not pass through or be inside duct. All space around duct where they pass through any walls, or ceilings, shall be sealed tight with noncombustible inert material. Seal all duct joints and seams including low pressure supply and return, and exhaust ductwork with brush applied duct sealant.

J. Flexible connections of neoprene or other NFPA approved non-flammable fabric shall be provided in duct system at all fan inlet and outlet connections.

K. Provide duct turning vanes in all turns where centerline radius is less than one and one half (1-1/2) times the width of duct and in all square elbows greater than 6" in width. Turning vanes shall be air-foil type with extended trailing edges.

L. Provide duct collars and angle iron framework for mounting of automatic dampers.

M. Duct construction:

1. Determine duct gages for the longest duct side and use for all four sides. Joints and reinforcing requirements apply to the longest duct side.

2. Reinforce all ducts to prevent buckling, vibration, or noise as recommended in the referenced construction standards, and as required to suit the installed conditions.

3. Do not crossbreak duct which will receive rigid insulation covering.

4. Where tap sizes of divided-flow fittings are not indicated, make branch and main connection sizes proportional to their respective air flows and maintain uniform traverse velocities in the fitting.

5. Make radius elbows and radius tee connection with throat radius equal to or greater than 1-1/2 times and width of the duct. Use vaned elbows where shown and where radius elbows will not fit the space, and in all square bends.

6. Turning vanes shall be the airfoil type with extended trailing edges.

7. Bolt, screw, rivet or spotweld reinforcing members securely to the duct on not less then 6-inch center.

8. Paint all cut ends on galvanized angels, rods, and other uncoated surfaces with aluminum paint.

N. Ductwork visible behind registers, grilles and diffusers shall be given two coats of flat black paint.

2.02 FLEXIBLE DUCTWORK

A. Flexible ductwork shall be equal to Wiremold type WK 1 1/2” thick pre-insulated type. Acceptable Alternate Manufacturers - ATCO, Thermaflex and United McGill.

B. Use duct manufacturer's best quality clamps for each application. Joint treatment shall follow flexible duct manufacturer's recommendations, using Benjamin Foster Duct Sealer #30-02, or equal and 2 inches wide duct type equal to Arno C-520. Each flexible duct connection shall be smoothly taped and sealed so that the vapor barrier is continuous and no fibergalss is exposed.

C. Tap connections into rectangular ductwork shall utilize tap collars with scoop and volume damper in a locking quadrant.

D. Flexible ducts shall be not longer than 7'-0". Sections shall be continuous from tap connection to air terminal device. Piecing of small sections shall not be permitted.

E. Flexible duct sizes shown in the Drawings shall be inside diameters.

F. Provide a 6" wide, 28-gauge, galvanized metal band approximately 2" larger than the duct, midway between the take-off and ceiling diffuser. Support with 14-gauge galvanized wire attached to the structure above. Do not attach hanger wire to roof deck.

2.03 GRILLES, REGISTERS, AND DIFFUSERS

A. Supply grilles shall be Metal-Aire. Acceptable alternate manufacturers - Carnes, Krueger, Price, Titus and Tuttle & Bailey.

B. Return grilles shall be Metal-Aire. Acceptable alternate manufacturers - Carnes, Krueger, Price, Titus and Tuttle & Bailey.

C. Ceiling diffusers shall be Metal-Aire. Acceptable alternate manufacturers - Carnes, Krueger, Price, Titus and Tuttle & Bailey.

D. Supply air diffuser in lay-in ceilings shall not be installed directly adjacent to lighting fixtures.

2.04 LOUVERS & HOODS

A. All fresh air intakes, combustion air intake, and exhaust louvers will be furnished and installed by this contractor.

B. Ducts ending above the roof shall be terminated with Greenheck GRS gravity hood with bird screen. Acceptable alternate manufacturers - Acme, Carnes, Cook, Jenn and Penn.

2.05 EXHAUST AND SUPPLY FANS

A. All exhaust and supply fans and blowers as shown on drawings and schedule shall be furnished and installed by this contractor, unless noted otherwise.

2.06 AIR VOLUME CONTROLS

A. Furnish and install air volume control devices where indicated and where required to adjust and balance air flow in the systems.

B. Manual volume dampers in ductwork shall be factory-assembled units with rigid frame, opposed-blade action, and locking quadrant operator. Mark the extended damper shaft and align the operating handle to indicate the blade opposition. Dampers shall be as

manufactured by American Warming and Ventilating, Inc., Ruskin, United Sheet Metal, or equal. Rectangular dampers shall be Type DAA-P-50, with steel channel frame, 16 gauge steel blades, 9" maximum blade spacing, nylon bearings, galvanized finish with aluminum paint touchup.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Ductwork shall not be attached to the roof deck. Attach all ductwork directly to roof structure.

B. Galvanized sheet metal ductwork shall be installed in sizes and in location as indicated on plans. The cross-seams shall have slip cleats for top and bottom and drive cleats for the sides with the ends turned down. Where square corners are used, they shall be provided with Barber-Coleman or Titus factory-built thickness turning vanes. Spiral ductwork joints shall have sheet metal screws in addition to the rubber gaskets.

C. Stiffening and Bracing: The entire ductwork system throughout the building shall be rigidly supported and so constructed as to eliminate vibration or any objectionable noise when the ventilation machinery is in operation.

1. The horizontal and vertical surfaces of ductwork shall have stiffener angles of size, weight, and spacing not less than the following tables:

Surfaces Wide/High	Type of Transverse Joint Connections	Bracing
Up to 24 inches	S drive pocket of bar slips, on 7 foot 10 inch centers	None
25 inches to 40 inches	S drive 1 inch pocket or 1-inch bar slips on 7 foot 10 inch centers	1 x 1 x 1/8 angle 4 feet from joints
41 inches to 60 inches	1 1/2 inch angle connections, or 1 1/2 inch pocket or 1 1/2-inch bar slips with 1 3/8 inch x 1/8-inch bar reinforcing on 7 foot 10 inch centers	1 1/2 x 1 1/2 x 1/2 angles 4 feet from joints
61 inches to 90 inches	1 1/2 inch angle connections, or 1 1/2 inch pocket or 1 1/2-inch bar slips 3 feet 9 inches maximum centers with 1 3/8 inch x 1/8 bar reinforcing	1 1/2 x 1 1/2 x 1/8 inch diagonal angles or 1 1/2 x 1 1/2 x 1/8 inch angles 2 feet from joint
91 inches and up	2 inch angle connections, or 1 1/2 inch pocket or 1 1/2 inch slips 3 feet 9 inches maximum centers with 1 3/8 inch x 1/8 inch bar reinforcing	1 1/2 x 1 1/2 x 1/8 inch diagonal angles or 1 1/2 x 1 1/2 x 1/8 inch angles 2 feet from joint

1. The riveting of the sheets to the angles shall not exceed 6 inches on centers.

2. The spacing of stiffeners on flat surfaces of elbows and curves shall not exceed 30 inches on centers at the outside portion of elbow and curves.

D. Coordinate ductwork with other work and install ducts at proper elevations and locations to maintain indicated ceiling heights and clearances. Provide all elbows, transitions, offsets, connections, and other fittings necessary to fit the work into place or to connect to equipment or diffusers.

E. Substantially support ductwork with structural shapes, flat bars, or formed strap hangers securely attached to the building structure by means of bolts, clamps, or inserts. Support vertical ducts by angles attached to the duct supported by brackets or hangers shall be 24 gauge x 1" galvanized steel extending along the side of the duct and turned 1" under the bottom. Fasten with sheet metal screws (minimum of one in bottom and two on sides). Place all supports external to the ductwork at coils and other concentrated loads. Arrange supports so that duct weight is not transmitted to ceilings, fans or other equipment.

F. Prevent direct contact between ductwork and building surfaces or other equipment. Where ducts pass through walls, partitions, floors, ceilings, or roofs they shall be supported on each side of the opening and kept free from direct contact with the building construction. Pack and seal the space around the duct with an approved fire-safe inert material caulked in place, to comply with local fire codes, ordinances, etc.

G. Deflectors: Wherever branches are taken off, provide deflectors or splitters to regulate the airflow. On each deflector, provide a regulator to lock the deflector in a fixed position, where accessible through access panel. Where not accessible through panel, provide a key-operated Young regulator with indicator and ceiling plate.

H. Use galvanized or corrosion-resistant hangers, supports, brackets, and hardware.

I. Furnish and install NFPA approved flexible duct connections where shown and at all connections to fans. Use glass-reinforced neoprene fabric, roll-formed to sheet metal strips or flanges. Support adjacent ductwork to provide sufficient slack in the connection.

J. Flexible Connections: Furnish and install on the suction and discharge side of all fans and units, at least 4 inches of 10 oz. canvas or equivalent vinyl with heavy clamping bands. Canvas connection to all rooftop units shall be as close to unit as possible, just below roof curb.

K. Fire Dampers: Provide fire dampers in all duct locations where required by local authority. Ducts shall be enlarged where fire dampers are installed to maintain the same airflow through damper frame as unobstructed run of duct. Provide access to service fire dampers.

L. Belt Guards: For each belt drive, furnish a guard consisting of an angle iron frame with 1 inch mesh heavy wire guard supported and securely bolted in place, etc. to comply to local codes.

M. Access Panels: Provide tight sheet metal access doors (with gasket, hinges, and locks), or where access to plenum spaces or ducts are necessary. Access doors shall be of adequate size and installed per local codes.

N. Volume Controls for Balancing: Ample provision shall be made for control and for balancing the ventilation systems by installation of dampers, regulators, and controls.

O. Dampers for exhaust and outside air shall be equipped with motorized dampers with a maximum leakage rate of 3 cfm/ft at 1.0 w.g. when tested in accordance with AMCA Standard 500. Such dampers shall be closed when fans are off.

P. Painting: Paint all ductwork visible through grilles, registers, and diffusers a flat black.

Q. All joints, seams, screws and rivets shall be sealed air tight with duct sealant. Sealant must be approved for use in a ceiling plenum. Install per manufacturers and UL181A & B recommendations for square and rectangular ductwork. Sealant is not required for spiral gasketed ductwork.

3.02 DUCTWORK CLEANING

A. All ductwork shall be thoroughly cleaned out by this contractor.

B. The above work shall be done before any painting is done or acoustic ceiling installed.

END OF SECTION

SECTION 15950 - CONTROLS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Section 15050, Basic Mechanical Materials and Methods, shall be considered a part of these specifications.

B. The contractor under this heading shall be the heating and air conditioning contractor who shall furnish all control equipment, engineering services, job drawings, and field supervision for temperature control.

C. This specification is intended to cover equipment for the automatic temperature control of the Heating, Ventilation, and Air Conditioning Systems

1.02 GUARANTEE

A. The Control System herein specified shall be free from defects in workmanship and materials under normal use and service. After completion of the installation, the Control Manufacturer shall regulate and adjust all thermostats, control motors, and other equipment provided under this contract. The Contractor shall, after completion, provide any service and maintenance incidental to the proper performance of the Control System for a period of one (1) year. If any of the equipment herein described is proved to be defective in workmanship or material, it shall be replaced or repaired free of charge.

B. Upon completion of the work, the Contractor shall have completely adjusted the entire control system. He shall arrange to instruct the Owner's representative on the operation of the control system.

1.03 SUBMITTALS

A. Submit complete shop drawings, including component catalog cuts, for approval before starting any control work. Shop drawings shall be in accordance with Section 15100. Shop drawings shall indicate all control equipment, arrangements, locations, functions and description of operation.

B. Upon completion of his work, the Contractor shall provide three sets of description of operation and schematic drawings corrected to the as-built condition. This material shall be delivered to the Architect for approval prior to delivery to the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Motors, controllers, disconnect switches, transformers, relays, electrical devices, wiring, and accessories shall be in accordance with NEMA Code. and installed in accordance with National Electrical Code and electrical specifications.

B. All controllers, control panels, etc., shall be provided with permanently attached engraved Bakelite designation plates to indicate equipment served.

2.02 THERMOSTATS

A. Thermostats shall be wall mounted, provided with locking covers. Thermostats shall be digital programmable model in compliance with local energy efficiency codes.

B. Verify location of thermostats with Architect and Owner prior to installation.

2.03 FIRE PROTECTION

A. When required by code, firestats and/or smoke detectors shall be as described in other sections of the specifications.

PART 3 - EXECUTION

3.01 INSTALLATION

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

B. Coordinate controls with controlled equipment. Upon completion of work, calibrate and adjust all controls for proper function. Electric wiring, including interlock wiring for equipment such as the air handler, condenser, etc., shall be furnished and installed under this section. All electrical work shall conform to the applicable requirements of Division 16000.

C. All control wiring shall be run concealed throughout the building.

D. All control valves and damper motors, where required, shall be furnished and installed by the heating and air conditioning contractor.

E. All dampers shall be positioned by the ventilation contractor. Ventilation contractor shall also mark positions of dampers on "as built" layouts.

F. All control motors must be spring return and must have oiled immersed gear train.

G. All electrical wiring and mounting of temperature control devices shall be provided under the electrical contract and shall be in accordance with all existing codes. The electrical contractor shall run all wiring and conduit. This contractor shall provide wiring drawings to the electrical contractor for the installation.

H. All temperature control devices and sensors shall be labeled with the associated RTU or exhaust fan number. (ie:RTU-1, EH-1, EF-1, etc.)

3.02 PERFORMANCE

A. *Honeywell* T7300 or *Trane* Sequence of Operations: The heating and cooling setpoints shall be individually adjustable for both occupied and unoccupied periods. The thermostats shall have a minimum deadband of 2 degrees F and a maximum deadband of 5 degrees F (no mechanical heating or cooling shall operate within this deadband). Space temperature deviation above cooling setpoint or below the heating setpoint shall generate a demand signal to control the system as follows:

1. Heating: The thermostat shall control the heating outputs based on the demand signal communicated from the thermostat program, taking into account both space temperature deviation (proportional error) and the duration of that temperature deviation (integral error). The outdoor air damper shall be at a minimum position during the occupied period, and shall be closed during the unoccupied period of the heating mode. Auxiliary heat shall be controlled at 2 degrees F below heating setpoint on heat pump systems.

2. Cooling: The thermostat shall control the cooling outputs based on the demand signal communicated from the thermostat program, taking into account both space temperature deviation (proportional error) and the duration of that temperature deviation (integral error).

B. Heating Setback and Cooling Setup: Initiation of heating setback or cooling setup for each of 7 days shall be provided by a programmed time schedule manually entered into the thermostat. When all or a portion of a manually programmed schedule is unavailable, the thermostat shall control the unavailable program functions to occupied mode and default setpoint ranges as follows:

	TABLE OF DEFAULT SETPOINT RANGES			
	Occupied		Unoccupied	
	°F	°C	°F	°C
Heating	68	20	55	13
Cooling	78	26	90	32

C. Setpoint Recovery from Unoccupied to Occupied: The thermostat shall employ Intelligent Recovery™. This shall select the optimum time to begin building warm up or cool down based on setpoints and occupied program.

1. The temperature shall ramp 5 degrees per hour for both heating and cooling on a conventional system.

2. The temperature shall ramp 3 degrees per hour for heating and 5 degrees for cooling on a heat pump system.

D. A solid state differential enthalpy changeover control shall determine the capability of the outdoor air to provide free cooling. The system shall operate as follows:

1. Free Cooling Available from Outdoor Air: On a call for cooling, the system shall enable the economizer to provide free cooling. If this does not meet the space demand, the system shall call for mechanical cooling to satisfy the programmed setpoint.

2. Cooling Not Available from Outdoor Air: On a call for cooling, the system shall hold the economizer to minimum position and cooling shall be energized to satisfy the programmed setpoint.

E. Fan Operation:

1. HVAC unit fan operation shall be constant during the occupied period.

2. Fan operation shall be intermittent during the unoccupied period.

F. Heating and Cooling Operation Minimum On/Off Times: The temperature control system shall incorporate a program to maintain minimum-stage operation times of 2 minutes “on” and 4 minutes “off” for compressor stages, and 2 minutes “on” and 2 minutes “off” for heat (gas or electric resistive).

G. Economizer Interface:

1. The economizer’s minimum position shall be controlled such that when the occupied period is in effect, the economizer will operate as described in section E. During unoccupied periods, the control system shall defeat the economizer

minimum position. However, the economizer will be available for free cooling during the unoccupied period, if the outdoor air conditions permit.

END OF SECTION

SECTION 15990 – TESTING, ADJUSTING, BALANCING, AND COMMISSIONING

PART 1 - GENERAL

1.01 DESCRIPTION

A. The contractor shall provide testing, adjusting, balancing and commissioning of the HVAC system by an independent, certified national TAB laboratory acceptable to the owner.

B. The contractor shall coordinate with the mechanical and electrical sub-contractors in order to have the appropriate tradesmen on site to correct any deficiencies in wiring, ductwork, or equipment start-up.

C. The following must be complete prior to the testing, adjusting, balancing and commissioning:

1. All field-mounted accessories must be assembled and economizer/OA dampers installed and wired. Units must be properly tagged per design drawings.

2. Gas piping completed and gas turned on.

3. All power wiring completed, disconnects mounted, and power turned on, fan rotation checked.

4. All control wiring completed including thermostats and smoke detectors.

5. All doors and windows installed and ceiling tiles in place.

6. All ductwork with balancing dampers and diffusers fully installed.

7. Clean filters installed.

1.02 TESTING, ADJUSTING, BALANCING, AND COMMISSIONING

A. The purpose of testing, adjusting, and balancing the HVAC system is to ensure optimal performance, comfort, and energy efficiency for the Owner's benefit. This service covers all heating and air-conditioning and exhaust ventilation systems.

B. A certified report shall be submitted to the Owner (2 copies) within 2 weeks of completion.

C. The TAB work shall be completed in accordance with the following checklist:

GENERAL

1. Determine if there are any design, equipment, and installation problems.

2. Compare installed system to design mechanical plans.

3. Document design specifications for report.

4. Ensure all fans are running for balance.

5. Measure initial building pressure.

INSPECT THE HVAC SYSTEM

6. Inspect rooftop units and document any deficiencies.

7. Record unit nameplate data.

8. Check thermostats for proper wiring and settings.

9. Check for correct fan rotation (include condenser fans).

10. Check conditions of filters and coils.

11. Check position of outside air dampers.

12. Check gas lines and condensate lines.

13. Check belt tension and pulley alignment.

14. Check disconnects switches and covers.

15. Check any fan noise and vibration.

16. Check heating/cooling, and economizer modes of RTU's.

17. Check condensate trap (Costguard) installation

18. Check exhaust fans and distance between OA intake and exhaust

19. Check proper installation of all volume dampers

20. Check for proper installation of flexible ducts for bends, lengths and clamps.

TEST, ADJUST AND BALANCE THE HVAC SYSTEM

21. Leak test all low pressure ductwork and air distribution systems for 5% maximum leakage.

22. Measure and adjust diffuser supply and return airflow within 10% of the design, using balancing dampers and locking them in that position. Mark damper balance positions.

23. Adjust flows to provide design OA flow for proper pressurization.

24. Adjust RPM as necessary to achieve design.

    - Check actual amps versus motor FLA for evaporator fan, compressors and condenser fans.
    - Note adjustments made on pulleys.
    - Measure final RPMs.
    - Measure space temperatures and SA/RA/OA temperatures. Temperature readings shall be recorded after the system has been running over 8 hours and thermostats have been properly set in.

25. Adjust damper airflow at branch take-off first and at diffusers second.

26. Check for drafts and hot/cold spots.

27. Ensure slightly positive building pressure.

28. Fine tune position of OA dampers.

29. Measure final building pressure.

30. Adjust all fans to required speeds for design air flow.

31. Adjust all air terminal devices for proper throw, distribution, and quiet operation.

32. Test the capacity and performance of all equipment and adjust to design conditions.

33. Operate and test all systems under all sequences of operation and adjust equipment and controls for efficient and stable operation.

34. Test and balance all systems under adequate load condition. If, in the opinion of the Engineer, there is insufficient load to properly test and balance the systems, perform sufficient preliminary balancing and adjustment to permit operation of the systems until such time as final testing and balancing can be done.

FINAL REVIEW

35. Prepare the final test report.

36. Review report and data for completeness.

37. Discuss findings and results with the Owner.

38. Retest or rebalance the systems as required during the guarantee period.

D. Air quantities shall be balanced to within +/-10% of design as a general rule. However, in some cases, the air quantities may need to be adjusted differently in order to ensure acceptable comfort levels, positive building pressure, noise consideration etc. Any excessive variation at certain diffusers (over 20%) must be reported with explanations if it cannot be balanced as required. However the total RTU supply CFM must be within +/- 10%.

E. The contractor shall have the mechanical and electrical contractors available to promptly correct any problems (i.e. replace burned out motors, failed thermostats, incorrect wiring, bad circuit breakers and starters, dirty filters, missing dampers, undersized RTU outside air intakes).

1.03 REPORTS TO BE SUBMITTED

A. TAB SCHEDULING

1. Notify the Owner at least 2 weeks in advance of the TAB date.

B. SYSTEM STARTUP REPORT

1. RTU Startup report: Provide full report for each rooftop unit along with any deficiencies that need to be corrected.

C. AIR BALANCE REPORT

1. Provide air balance report for each diffuser and RTU/Exhaust fan to include design/actual CFM, along with store plan with diffuser and RTU locations and tag matching with CFM summary.

2. Provide exhaust CFM report along with exhaust fan locations on above plan.

3. Provide balance & pressurization schedule for the store.

4. Space temperatures, SA/RA/OA temperatures.

D. EQUIPMENT DATA

1. Provide RTU nameplate data listing make, model #, serial #, nominal tons, number of compressors, HP and model # of each compressor along with make, evaporator fan motor data, condenser fan motor data, final RPM of evaporative fan, pulley and belt sizes, filter sizes etc.

2. Exhaust fan make, model #, motor data, CFM.

E. ADDITIONAL INFORMATION (if any)

1. Include any additional information not listed above that might be useful for understanding the above reports.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 COORDINATION BY THE MECHANICAL CONTRACTOR

A. Coordinate the testing and balancing work with the work of other trades.

B. Furnish complete and up-to-date contract documents, shop drawings, installation and coordination drawings, submittal data, and other information to the testing and balancing agency so that the work is performed using all required system and equipment data.

C. Plan and schedule testing and balancing at required times during construction. Review all plans, schedules and procedures with the Engineer before proceeding.

D. Prepare all systems for testing and balancing. Provide clean filters in all air systems.

E. Make all necessary adjustments and repairs to the work, correcting any malfunctions or deficiencies which are disclosed by testing and balancing.

3.02 PROCEDURES

A. Perform all testing and balancing in complete accordance with AABC National Standards for Field Measurement and Instrumentation, Form No. 81266, Volume One.

B. Furnish all test instruments and equipment. All instruments must have been calibrated within six (6) months prior to use and shall be checked for accuracy prior to and during the work.

C. Review all system designs and equipment manufacturer's data and be completely familiar with the work before proceeding.

D. Plan all operations and procedures and review with the Engineer before proceeding. Make system layouts and diagrams where required.

E. Inspect all systems and determine that the work is complete and ready for testing and balancing before proceeding.

F. Maintain complete and accurate records of all test results showing initial and final conditions. Record all temperatures, pressures, flows, speeds, current voltages, control settings, ambient conditions, time, date and other pertinent data.

G. Where systems or equipment cannot be balanced or adjusted to design conditions, determine the cause and submit a complete report to the Architect.

H. Upon completion of the work and before final acceptance, submit three (3) copies of a complete testing and balancing report to the satisfaction of the Architect.

I. If, in the opinion of the Architect, test results or portions thereof are incomplete or inconclusive, repeat necessary portions of the work to the satisfaction of the Engineer.

END OF SECTION

SECTION 16050 - BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.01 ELECTRICAL GENERAL REQUIREMENTS

A. This section applies to all electrical work. The contractors involved shall check all sections of the specifications in addition to the particular section covering their specific trade. Each distinct section of the specifications aimed for one trade may have detailed information with regards to other trades, therefore, it is imperative that all sections be reviewed to get a complete picture of all other trades' functions and work required.

B. Provide all labor, materials, equipment and services necessary for the incidental to the complete installation and operation of all electrical work.

C. The drawings indicate the general layout of the complete electrical system.

1. "Field verification, of scaled dimensions on plans, is directed since actual locations, distances and levels will be governed by actual field conditions." All measurements shall be verified at the site.

2. The mechanical and electrical contractors shall check architectural, structural, plumbing, heating, ventilation, and air conditioning plans to avert possible installation conflicts. Should drastic changes from original plans be necessary to resolve such conflict, the contractor shall notify the architect and secure written approval and agreement on necessary adjustment before the installation is started.

3. Discrepancies shown between plans, or between plans and actual field conditions, or between plans and specifications shall promptly be brought to the attention of the Architect for a decision.

4. Drawings and specifications are intended to cover the completed installation of systems to function as described. The omission of the expressed reference to any item of labor and material necessary to comply with practice codes, ordinances, etc. shall not relieve the contractor from providing such additional labor and material.

5. The contract drawings serve as working drawings for the general layout of the various services. However, layout of equipment accessories, specialties, piping systems, and conduit runs are diagrammatic unless specifically dimensioned and do not necessarily indicate every required valve, fitting, transition, offset, turning vane, junction box, pull box, conduit size, etc. It will be the contractor's responsibility to provide all systems complete and operable. The contractor to make field verification of all services, systems, etc. as part of the total work required and the cost to be included in his base bid.

D. Coordinate the work of all trades.

E. Arrange conduit, wiring, equipment, and other work generally as shown, providing proper clearances and access. Carefully examine all contract drawings and fit the work in each location without substantial alteration. Where departures are proposed because of field conditions or other causes, prepare and submit detailed drawings for acceptance. The right is reserved to make reasonable changes in location of equipment, conduit and wiring up to the time of rough-in or fabrication.

F. Accessibility: Do not locate traps, controls, unions, pull boxes, etc. in any system at a location that will be inaccessible after construction is completed. Maintains accessibility for all components in mechanical, electrical, and plumbing systems.

G. Cutting and Patching: All cutting required shall be done by the contractor whose work is involved, without extra cost to the Owner. All patching and restoration including the

furnishing and installation of access panels in ceiling, walls, etc. within the building lines shall be done by the respective, responsible contractor. No cutting of structural steel, concrete, or wood shall be done without prior approval of the architect. All duct openings in walls, floors, ceiling, and roof shall be cut and patched by the respective, responsible contractor.

H. Relocation of Existing Duct, Conduits, Pipes and Utilities: The contractor, under whose jurisdiction the work may fall, shall provide labor, material, and tools required to cut, repair, protect, cap, or relocate existing pipes, conduits, or utilities interfering with or uncovered during work, per regulations of the authorities having jurisdiction.

I. Excavation and Backfill: Excavation and removal of material, shoring, and backfilling required for the proper laying of all pipes and conduits inside the building and premises, and outside as may be necessary, shall be done by the contractor whose work is involved, without extra cost to the Owner.

J. Vibration Eliminators: Rotating or reciprocating equipment, ducts, piping, etc. shall be isolated from the structure by means of approved vibration absorbing units as provided or recommended by the equipment manufacturer or architect.

K. Sleeves: Each contractor shall furnish required sleeves. Sleeves shall be extended 2" above the floor, wall, etc. unless noted otherwise and shall be galvanized steel pipe and of the required size. The contractor responsible for running pipes in the sleeve shall caulk the space between pipe and sleeve with oakum and seal with mastic cement or other approved material.

L. Electric Motors: Each contractor shall provide all electric motors for their respective work. Verify building voltage prior to ordering motors. Motors shall be N.E.M.A. standard design for quiet operation and of ample size to operate at their proper load and full speed continuously without causing undue noise or vibration. All motors to be drip-proof construction and have ball bearings. Provide all belted motors with guide rails, adjusting screws, anchor bolts, and cast iron bed plates. Furnish standard size V belts and pulleys. Provide full voltage magnetic starters for all three-phase motor-driven equipment. (General Electric CR7006 or Allen-Bradley Bul. 709.)

M. Electrical Wiring: The electrical contractor shall furnish all wiring required for the operation of motors and controls.

N. Damage to Other Work: Each contractor will be held rigidly responsible for all damages to their own or any other trades' work resulting from the execution of the involved contractor's work.

O. Large Equipment: All large equipment which is to be installed in the building that may be too large to enter through stairways, doorways, or shaft shall be brought on the job and placed in the proper space before the enclosing structure is completed, unless arrangements are made with other contractors to permit access at a later date, without additional cost to the Owner.

P. Rough-in for Connection to Equipment: It shall be the responsibility of each contractor to study the architectural, structural, electrical, and mechanical drawings, conferring with the various trades involved and checking with the supplier of equipment in order to properly rough-in for all equipment.

Q. Material and Equipment: All material and equipment shall be new and of the best quality used for the purpose in good commercial practice, and shall be the standard product of reputable manufacturers. The material and equipment must meet approval of state and local codes in the area it is being used.

R. Performance of Work: All work outlined in the various mechanical and electrical sections shall be done by the contractor under whose jurisdiction the work may fall. See drawings and specifications.

S. Roof decks shall not be used to support piping, conduit, equipment (except roof mounted) devices, etc.

T. Verify the location of all door swings prior to roughing-in for light switches.

U. Coordinate service entrance equipment and new layout with local power company.

V. Coordinate existing incoming telephone raceway with local utility and owner.

W. Coordinate new with existing conditions. Contractor shall visit site prior to bid and review existing conditions. No changes will be reviewed due to existing conditions not noted.

1.02 SUPPLEMENTARY CONDITIONS

A. Refer to other requirements of mechanical and electrical work in Division 1 without exception.

B. Visit to Site: Each contractor is directed to visit the site to verify dimensions and existing conditions of mechanical, electrical, and plumbing systems, and will thoroughly acquire information regarding grades, space conditions, limitations, and peculiarities of construction required for the building and site and will give due consideration to same in preparation of proposal. No exceptions will be considered after award of a contract, nor will the contractor be entitled to any extra compensation for their failure to verify conditions at the site.

C. Permits, Inspections, and Tests: All work is to be executed in compliance with, and each contractor is to observe and abide by, all applicable laws, regulations, ordinances, and rules of the national, state, county, and local governing agencies, or any other duly constituted public authority. Each contractor will, at all times, maintain proper facilities and provide safe access for inspection to all parts of the work and to the shops wherein the work is in preparation. No work will be enclosed or covered until approved by the architect, and should any work be enclosed or covered before all necessary inspections are completed, it will be opened for examination at the contractor's expense. All fees, licenses, tests, costs, etc. are contractor's responsibility. Deliver certificates to the Owner prior to final acceptance of the Work.

D. Rules, Regulations, and Codes:

1. All material and equipment shall conform to the standards, where available, or the National Electrical Manufacturers Association (N.E.M.A.), National Fire Protection Association (N.F.P.A.), National Electrical Code (N.E.C.), and Underwriters Laboratories (U.L.).

2. All work shall conform to all applicable federal, state, and local codes and utility companies' regulations.

E. Workmanship and Installation: Perform the work in a first-class, complete and workmanlike manner. If any material and/or equipment is not properly installed or finished, this contractor is obligated to replace the material or equipment wherever required and to reinstall the material or equipment in a manner entirely satisfactory at this contractor's expense.

F. Cooperation: There shall be complete cooperation with all trades in the matter of planning and execution of the work. Every reasonable effort shall be made to prevent conflict as to space requirements, dimensions, locations, leaving of opening, or other matters to obstruct or delay the work.

1.03 ELECTRICAL WORK UNDER OTHER DIVISIONS:

A. In general, power wiring is included under this Division, disconnects and motor equipment for mechanical equipment is included un Division 15. Control and interlock

wiring for HVAC system is included under Division 15. Carefully review the contract documents and coordinate the electrical work under the various Divisions.

1.04 CONTRACTOR QUALIFICATION

A. Any contractor performing work under this Division shall be fully qualified and acceptable. Submit the following evidence if requested.

1. A list of not less than five (5) comparable projects which the contractor completed.

2. Local and State license where required.

B. A contractor is any individual or firm performing work by contract or subcontract.

C. Acceptance of a subcontractor will not relieve the contractor of any contractual requirements or his responsibility to supervise and coordinate the various trades.

1.05 STORAGE AND PROTECTION OF EQUIPMENT

A. Conventional electrical construction materials such as building wire, outlet and junction boxes, wiring devices, conduit, lighting fixtures, fittings, etc., shall be stored in construction building, covered trailers or portable covered warehouses. Any equipment subject to damage or corrosion from excessive moisture shall be stored to prevent such damage. This includes plastic ducts and lenses.

B. Panelboards, circuit breakers, emergency lighting fixture, wiring devices, etc., if delivered to the construction site before installation is allowed, shall be warehoused and protected as follows:

1. All equipment shall be covered and protected from the elements and other damage and shall be stored in a clean, dry, heated atmosphere, under cover.

C. The equipment shall be protected against damage caused by installation of any building systems and equipment; or damage caused by carelessness of workmen who are installing equipment connected to or adjacent to the above electrical equipment.

D. Equipment damaged as s result of the above conditions shall be properly repaired at the Contractor's expense or shall be replaced at the Contractor's expense, if, in the opinion of the Engineer the equipment has been damaged to such an extent it cannot operate properly after repairs are made.

E. All electrical enclosures exposed to construction damages such as paint spots, speckling or plaster spatter, grout splashes, waterproofing compound, tar spots or runs and pipe covering compound splashes, shall be completely covered and protected against damage.

F. In the event leakage into the building of any foreign material or fluid occurs or may occur, the Contractor shall take all steps as described above to protect any and all equipment.

G. After connections to electrical equipment are complete and the equipment is ready for operation, all construction debris shall be removed from all enclosures. Such debris includes dust, dirt, wire clippings, tape and insulation removed in order to make the connection.

1.06 PENETRATION OF WATERPROOF CONSTRUCTION

A. Coordinate the work to minimize penetration of waterproof construction, including roofs, exterior walls and interior waterproof construction. Where such curbs, sleeves, shields, flashings, fittings and caulking to make the penetrations absolutely watertight.

1.07 OPERATION OF EQUIPMENT

A. Lubricate, clean, adjust and test all equipment and systems in accordance with the manufacturer's instructions prior to initial operation. Do not operate equipment unless proper safety devices and controls are operational. Provide all maintenance and service for equipment which is operated during construction and protect the equipment.

B. Where specified or otherwise required, provide the services of the manufacturer's factory-trained servicemen or technicians to start up the equipment.

1.08 TESTING AND ADJUSTMENT

A. Perform all tests which are specified or required to demonstrate that the work is installed and operating properly. Where formal tests are required, give proper notices and perform all necessary preliminary tests to assure that the work os complete and ready for final test.

B. Adjust all systems, equipment and controls to operate in a safe, efficient and stable manner.

C. On all circuits, 600 volts or less, provide circuits that are free from ground faults, short circuits and open circuits.

D. Other tests of a specific nature for special equipment shall be as specified under the respective equipment.

1.09 IDENTIFICATION

A. Mark and permanently identify all motor starters, disconnect switch controls, panelboards, terminal boards, and other equipment in accordance with the project nomenclature. Identification plates shall be laminated plastic, which and black engraved 1/4 inch high lettering. Attach identification plates with chrome plated phillips head steel or 316 grade stainless steel screws approved for the purpose.

B. Identification by means of marking pens, embossed plastic tape markers or other temporary methods will not be acceptable.

1.10 SUBMITTALS, REVIEW AND ACCEPTANCE

A. General:

1. The equipment, material, installation, workmanship, arrangement to work, final instruction and final documentation is subject to review and acceptance. Submit for review in clear and legible form the following documents:

a. Material and Equipment List

b. Descriptive Data

c. Shop Drawings

d. Contractor As-Built Drawings

2. Prepare all submittals specifically for this project and stamp each submittal in a form indicating that the documents have been contractor reviewed, are complete and are in compliance with the requirements of the plans and specifications.

3. Coordinate the installation requirements and any mechanical requirements for the equipment submitted. Submittals will be reviewed for general compliance with design concept in accordance with the contract documents. The Contractor is responsible for the correctness of all submittals. Reviews will not verify dimensions, quantities, or other details.

4. Identify all submittals, indicating and intended application, location, or service of the submitted item. Refer to specification sections or paragraphs where applicable. Clearly indicate the exact type, model number, size and special features of the proposed item. Submittals of a general nature will not be acceptable.

5. Submit actual operating conditions or characteristics for all equipment where required capacities are indicated. Factory order forms showing only required capacities will not be acceptable.

6. Acceptance will not constitute waiver of contract requirements unless deviations are specifically indicated and clearly noted.

7. Documents of general form indicating options shall be clearly marked to show what is specifically proposed for this project.

8. Submittals NOT IN COMPLIANCE with requirements of this section will be RETURNED WITHOUT REVIEW.

B. Material and Equipment List:

1. Within 30 calendar days after award of contract, submit a complete MATERIAL and EQUIPMENT LIST for preliminary review. List all proposed materials and equipment and the proposed manufacturer.

C. Descriptive Data:

1. After acceptance of the MATERIAL and EQUIPMENT LIST submit additional DESCRIPTIVE DATA for all items. Data shall consist of specifications, data sheets, samples, capacity ratings, performance curves, operating characteristics, catalog cuts, dimensional drawings, installation instructions and any other information necessary to indicate complete compliance with the contract documents.

D. Shop Drawings:

1. Prepare and submit SHOP DRAWINGS AND/OR DIAGRAMS for all specially fabricated items, modifications to standard items, specially designed system where detailed design is not shown on the contract drawings or where the proposed installation differs from that shown on the contract drawings.

2. Shop drawings shall include plans, elevations, sections, mounting details of component parts, point to point interconnection diagrams, elementary diagrams, single line diagrams, and any other drawings necessary to show the fabrication and connection of the complete item or system.

E. Shop drawings shall be provided for panelboards.

F. Contractor As-Built Drawings:

1. As the work progresses, record on a set of white prints, the installation locations, sizes of electric feeders, equipment, etc. Upon completions of the work, submit one (1) complete set of white prints with "as-built" information neatly recorded thereon in red ink.

2. Write step-by-step detailed instructions for turn-on, turn-off, seasonal changeover, and periodic checks of all systems and equipment. Include all precautions and warnings.

3. Prepare a list of the manufacturers of all major equipment, their local service representative and procedures for obtaining service.

4. Post one (1) copy of all instructions, lists, charts and diagrams at the equipment or where indicated, mounted under glass or approved plastic cover.

5. Furnish to the Owner two (2) copies of the manufacturer's installation, operation. Include replacement parts lists where applicable.

6. Deliver all instruction materials to the Owner prior to the formal instruction period.

7. Deliver two (2) complete sets of all approved submittals to the Owner for filing.

1.11 SUBSTITUTIONS

A. Material Substitution: The name of an article or its make, as given in the specifications and drawings, is used to establish a standard for the guidance of the contractor. He may propose substitution of other material or equipment (unless specifically stated no substitution accepted).

B. Should the contractor propose to furnish materials and equipment other than those specified, as permitted by the "acceptable alternate" clause, he shall submit a written request for any or all substitutions to the Architect. Such a request shall be accompanied with complete descriptive and technical data for all items (manufacturer, brand name, catalog number, descriptive literature, and capacity tables), stating in each case what addition to or deduction from the main bid is to be made if such alternates are accepted.

C. Where such substitutions alter the design or space requirements indicated on the plans, the contractor shall include all items of cost for the revised design and construction including cost of all allied trades involved.

D. Acceptance or rejection of the proposed substitutions shall be subject to the approval of the Architect, and if specific approval in writing is not received, it is understood that the requirements as outlined in the contract documents are to be met.

E. Substituted items or items other than those named shall be equal or better in quality and performance and must be suitable for the available space, required arrangement and application. Submit any and all data necessary to determine and suitability of substituted items.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Material and equipment installed shall be new and shall be approved by the Underwriters Laboratories, Inc.

B. Where material or equipment is identified by proprietary name, model number, and/or manufacturer, furnish the named item or equivalent thereof, subject to acceptance.

C. All materials, equipment, products, etc. shall be as specified and as shown unless approved otherwise in accordance with the provisions of the Supplementary Conditions.

PART 3 - EXECUTION

3.01 EXAMINATION OF SITE

A. Examine the site and observe the conditions under which the work will be done or other circumstances which will affect the contemplated work.

3.02 SUPERVISION AND COORDINATION

A. Provide complete supervision, direction, scheduling and coordination of all work under the contract, including that of subcontractors, using full attention and the best skill. Contractor shall be responsible for all work and make all sub-contractors, suppliers and manufacturers fully aware of all requirements of the contact.

B. Coordinate the rough-in of all work performed under Division 15 and 16.

C. Coordinate the installation of all necessary sleeves anchors and supports for conduit, wiring and other work performed under Division 15. and 16.

D. Coordinate the spacing and arrangement of lighting fixtures, diffusers, grills and access panels in ceilings to establish a symmetrical pattern.

E. Coordinate with all work provided by others such as security devices, communications, data, etc.

3.03 GUARANTEE

A. Guarantee obligations shall be as hereinbefore specified in the SPECIAL CONDITIONS of these specifications, except a as follows:

1. Each contractor shall guarantee each complete system for a period of one (1) year from the date of acceptance of the work by the Owner to be free of defects of material and workmanship and that any faulty material or workmanship will be repaired or replaced without additional cost to the Owner.

2. Also, during the guarantee period, be responsible for the proper adjustments of all systems, equipment and apparatus installed by him and do all work necessary to ensure efficient and proper functioning of the systems equipment.

3. Upon receipt of notice from the Owner of failure of any part of the electrical installation during the guarantee period, new replacement parts shall be furnished and installed promptly at no cost.

3.04 DEMONSTRATION

A. As part of this contract, the Contractor shall provide for the services of equipment manufacturer's or their established representatives to demonstrate to selected maintenance personnel the correct operation, safety and maintenance of all electrical equipment under this contract.

END OF SECTION

SECTION 16400 - SERVICE AND DISTRIBUTION

PART I - GENERAL

1.01 DESCRIPTION

A. Division 1, General Requirements and Section 16050, Basic Electrical Materials and Methods shall be considered a part of these specifications.

B. Codes, Ordinances, and Permits: All permits, licenses, stamping, approvals, and other arrangements for work shall be obtained by the electrical contractor. All expenses shall be included in the base bid. All electrical work shall be executed in strict accordance to the National Electrical Manufacturers Association (N.E.M.A.), National Board of Fire Underwriters (N.B.F.U.), National Electrical Code (N.E.C.), Underwriters Laboratories (U.L.), all electrical ordinances of the city, county, and state, and all others applicable to all codes and are of the minimum requirements. Any conflict between drawings, local power company, codes, etc., shall be brought to the attention of the Architect before bids are submitted.

C. Scope of Work: The work covered by this specification shall include furnishing all labor, tools, material, equipment and services to construct and install the complete electrical system as shown on the accompanying plans and as specified herein. This work includes, but is not limited to, the following:

1. Service entrance equipment bus to be standard aluminum alloy, including main distribution equipment, metering, secondary distribution equipment. Transformers with aluminum windings are acceptable. All wiring to be copper, Aluminum wiring, etc. is not approved, unless noted otherwise. The electrical utility company metering shall include a demand meter available for billing purposes.

2. Complete distribution system bus of standard aluminum alloy for lighting and power, including the necessary transformers, distribution panel boards, disconnect switches, control switches, and receptacles. All wiring to be copper (feeders, branch circuits, etc.)

3. Empty raceways as required.

4. Receiving, handling, setting, and connecting motors and controls.

5. Furnish and install a complete emergency lighting and/or exit lighting system if required by local codes.

6. Furnish and install all conduit and wiring for temperature control system. Wiring to be copper.

1.02 SUBMITTALS

A. This contractor shall submit to the Architect product data for Power distribution equipment before starting work.

PART II - PRODUCTS

2.01 MAIN DISTRIBUTION PANELBOARDS

A. Panelboards shall be manufactured by General Electric Co., Siemens or Square D.

B. Panelboards shall be molded case main circuit breaker type with factory installed service entrance type UL label. **Bus in all panelboards shall be standard aluminum alloy.** Panelboards and device contained therein shall have **fully rated** interrupting rating as shown on the drawings but **in no case less than 65,000 amperes rms.** Panelboard shall be labeled with UL short circuit withstand rating. Panelboards shall be assembled complete with bolt-on circuit breakers and spares. Circuit breakers shall be with thermal and magnetic trip elements and shall be quick-make, quick-break and trip indicating. Circuit breaker type, ampere rating and interrupting rating at common application voltages shall be marked on the circuit breaker in a manner that will be durable and visible after installation.

C. Equipment shall be enclosed in cabinets with proper gutter supports and hinged doors. Provide a laminated bakelite nameplate on the front of each panel and one at each branch circuit device.

D. Panelboard enclosures shall be marked per NEC 1999, Art.110-22 to indicate the downstream lighting panelboards fed from MDP have been applied with a series combination interrupting rating. The following typically readily visible label shall be permanently installed by the manufacturer on panel MDP enclosure:

"CAUTION"
SERIES RATED SYSTEM
To Maintain UL Series Combination Interrupting Rating
of Downstream Panelboards Replace Only with
GE 200 A Type SFHA Circuit Breakers.

E. The following safety sign shall be provided on Panel MDP enclosure:

"CAUTION"
Only Qualified Technician Shall reclose Circuit Breaker

F. Panelboard shall be equipped with an integral transient voltage surge suppressor (TVSS). The TVSS shall be factory installed as close as possible to the neutral bus. The TVSS shall satisfy the following minimum requirements:

1. Surge current per mode: 60 KA
2. Seven modes of protection
3. Status LED's
4. Audible alarm
5. Dry contact for remote monitoring
6. 5 year warranty

The following TVSS shall be utilized by the current vendors:
GE: TME120Y065PP (120/208V, 3 ph, 4 W), TME240D065PP (120/240 V, 3 ph, 3 W), THE240H65PP (120/240 V, 3 ph, 4 W).

Siemens: XF120 (120/208 V, 3 ph, 4 W)

Square D: FC21MA10 (120/208 V, 3 ph, 4 W), FC31MA10 (120/240 V, 3 ph, 4 W).

2.02 PANELBOARDS

A. Panelboards shall be manufactured by General Electric Co., Siemens, or Square D.

B. Panelboards shall be main lug only, assembled complete with circuit breakers and spares. **Bus in all panelboards shall be standard aluminum alloy.** Circuit breakers shall be rated at 10,000 amperes rms for 120/240 volt system. Panelboards shall also have additional series combination interrupting rating equal to the rating of the main distribution panel MDP by utilizing **UL tested and certified** circuit breaker combinations. Each lighting panelboard shall be marked per NEC 1999, Art. 110-22 and 240-86 to indicate that the series combination interrupting rating is applied. It shall also indicate **additional UL series combination interrupting rating** of the panelboard and type and size of replacement upstream and branch devices. The following typical readily visible label shall be permanently installed by the manufacturer on panel dead front:

"CAUTION"
SERIES RATED SYSTEM
To Maintain UL Series Combination Interrupting Rating
of Downstream Panelboards Replace Only with
GE Type THQB Circuit Breakers.
Short Circuit Rating: **65,000 Amperes RMS Symmetrical**
Feeder Breaker in MDP: **GE 200 A Type SFHA**

D. Circuit breakers shall be with thermal/magnetic trip, quick-make/quick-break and trip-free handles. For circuits that are not to be turned off, use handle lock-on. Breakers for either 120/240 or 120/208 volt shall be similar to General Electric Co. bolted in type THQB as furnished in "AQ" lighting panels. Panels shall have a minimum of 20% spare circuit breakers. Circuit breaker type, ampere rating and interrupting rating at common application voltages shall be marked on the circuit breaker in a manner that will be durable and visible after installation.

E. Provide a laminate bakelite nameplate on the front of each panel.

2.03 DISCONNECT SWITCHES

A. Disconnect switches shall be of positive action, quick-make/quick-break type with inter-locking cover that prevents opening door when the external operating handle is in the "on" position. Switches outside the building shall be NEMA type 3R rain tight enclosures. 240 volt switches shall be general duty, for voltages above 240 V switches shall be heavy duty.

2.04 OUTLET BOXES

A. Outlet boxes for concealed work shall be zinc-coated or cadmium plates sheet steel boxes suitable for the service and type outlet. Boxes and conduit fittings for outdoor and exposed work shall be NEMA 4 cast-aluminum, cast steel or cast iron type with threaded hubs for conduit entrance. Boxes and conduit fittings for outdoor work shall have gasketed cover plates. Extra large boxes shall be provided in accordance with the National Electrical Code where necessary to prevent crowding of wire in the box. Plastic boxes and cast "white metal" boxes classified in NEMA 4 will not be acceptable.

B. Outlet boxes in unplastered brick or block walls shall be provided with deep square-cut device covers. They shall be set so that the brick or block can be cut and fitted closely to the cover opening and so that the standard wall plate will cover the joint between the brick or block and the box.

C. All outlet boxes used for supporting fixtures shall be furnished, with malleable iron fixture studs of "no-bolt" type secured by locknut. Provide support for boxes occurring in suspended ceilings directly on bottom of joints shall be supported independent of ceiling construction. Outlets in suspended ceilings shall not be supported from ceiling construction.

D. All boxes, weatherproof outlets, junction pull, or equipment, shall be furnished with appropriate gasketed covers.

E. Sectionalized boxes shall not be used.

2.05 JUNCTION AND PULL BOXES

A. Junction and pull boxes shall be furnished and installed as shown or where required to facilitate pulling of wires or cables. Such boxes shall be installed in accessible locations. All boxes for concealed work shall be constructed of 12 gauge USS galvanized sheet steel minimum, unless otherwise specified or indicted and provided with mounting brackets and flat screw covers secured in position by round head brass or stainless steel 300 grade machine screws. Boxes for exterior work shall be cast aluminum or galvanized cast iron type with threaded hubs unless otherwise directed. Gasketed cover plates shall be furnished for outdoor installation.

2.05 RACEWAYS

A. Conduit, unless otherwise noted, shall be either rigid electrical metallic tubing (EMT) or rigid steel. All appropriate requirements for raceways of the authority having jurisdiction must be met.

B. EMT to be used above grade, where permitted by code, except for service and in moist areas. EMT shall be thoroughly protected from corrosion by electro-galvanizing, hot-dipped galvanizing, or an appropriate plating.

C. Hot-dip galvanized rigid steel conduit with bonded PVC jacket shall be used at bottom of subbase material (and above vapor barrier when required) of ground bearing floor slabs, where subject to damage, in moist or outdoor areas, and for underground installations--except where another type of raceway is specified. Rigid steel conduit, conduit bends, elbows, couplings, and nipples shall be hot-dipped galvanized. All conduit joints shall be cut square, threaded, reamed smooth, and drawn up tight. Bends or offsets shall be made with standard conduit els, field bends made with an approved bender or hickey, or hub-type conduit fittings. Number of bends per run shall conform to National Electrical Code limitations.

D. Plastic conduit (PVC) and fittings are acceptable below sub-base material of ground bearing floor slabs and direct earth burial. Type of PVC conduit must be UL listed for application and acceptable to the authority having jurisdiction. Minimum cover shall be as required by the NEC.

E. Hot-dipped flexible steel conduit shall be used for connections to vibrating or motorized equipment. In areas where such connections will be exposed to oil, grease, water, or weather, flexible liquid-tight conduit shall be used.

F. Provide liquid tight flexible metal conduit in short length for the connection of exterior equipment, and motors.

G. Provide hot-dip galvanized, rigid steel conduit for exposed exterior work, and for 4 inch size and larger.

H. Provide hot-dip galvanized, rigid steel conduit, galvanized intermediate metal conduit (IMC) or galvanized electrical metallic tubing (EMT), exposed interior work, for concealed work above suspended ceilings and within interior partitions. Maximum EMT size permitted is 2 inches.

I. Conduit shall be sized as indicated on drawings, or required by the National Electrical Code for number and size of conductors installed. Minimum conduit size shall be ½ inch.

J. BX, nonmetallic cable (NMC/ROMEX) or pre-wired flexible conduit systems are not acceptable.

1. Steel MC cable allowed above slab, color coded type W, when acceptable to the local code authority. Contact AFC @ (630) 968-8914 for more information.

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2. MC cable shall be properly secured and supported at intervals not exceeding 6 feet, per NEC article 330.

K. Minimum conduit size shall be 1/2 inch.

L. Aluminum conduit is prohibited.

2.06 CONDUCTORS

A. All wire and cable for feeder and branch circuits shall conform to the requirements of the current edition of the National Electrical Code.

B. All conductors shall be soft drawn copper and unless otherwise noted on the drawings, branch circuit conductors shall be type “THHN” and/or “THWN” insulated.

C. Branch circuit wires, shall not be smaller than number twelve (12) AGW, unless otherwise indicated. Conductors shall be continuous from outlet to outlet and from terminal board to point of final connection, and splice shall not be made except within outlet or junction boxes. All conductors shall be of the size indicated. All wires number eight (8) AWG and larger shall be standard. Wires and cables shall be as manufactured by Okonite Company, Rome Cable Corp., Southwore Co. or approved equal.

D. Control wiring shall not be less than number fourteen (14) AWG and shall be color coded using colors impregnated into the insulation. All wiring, contacts, and terminal blocks shall be suitably tagged or ease in identification and tracing of circuits. Identification and tracing of circuits. Identification tags shall be engraved fiber or plastic type, subject to acceptance. Wires shall be numbered and coded, using Brady "Quicklabels", or equal.

E. A color coding system, as listed below, shall be used throughout the building's network of feeders and circuits and used as a basis of balancing the load. Selection shall be based on applicable work covered by this contract.

System	Phase A	Phase B	Neutral	Ground
120/208V	Black	Red	White	Green

F. All control wiring shall be color coded with wires of colors different from those used to designate phase wires.

G. Joints of 10 AWG and smaller shall be made with properly insulated solderless type pressure connectors. Where stranded conductors or multiple solid conductors are connected to terminals, solderless lugs manufactured by Thomas and Betts Company or equivalent shall be used.

H. Joints of No. 8 AWG and larger in power and lighting circuits shall be of the type indented into the conductor by means of a hand or hydraulic pressure tool. Connectors shall be Burndy "Hy-dent", T&B "Sta-Kon", or approved equal. Connectors for control wiring shall be Burndy "Hy-Lug", or approved equal. Split bolt type connectors shall not be used.

I. Data cable shall be as indicated on the drawings, if applicable.

2.07 WIRING DEVICES

A. Wiring devices shall include all receptacles and wall switches with high impact nylon cover plates, ivory in color.

B. Light switches shall be ivory in color. Hubbell (A.C. rated) 1200 or 1220 series. Acceptable Alternate Manufacturers: Pass and Seymour (P&S), General Electric Co. (G.E. Co.) or Leviton.

C. General purpose receptacles shall be ivory in color. Acceptable Manufacturers: Hubbell, Pass and Seymour (P&S), General Electric Co. (G.E. Co.) or Leviton.

D. Transient voltage surge suppressor receptacles, ivory in color, shall be as manufactured by Pass and Seymour (P&S). (No substitutions.)

2.08 FITTINGS

A. All fittings to match conduit material and to be suitable for the purpose intended.

B. Provide compound filled sealing fittings for conduits passing from interior to exterior.

C. Provide expansion fittings with bonding jumpers where conduits cross expansion joints or where otherwise required to compensate for thermal expansion and contraction.

D. Fasten rigid steel conduit with threaded galvanized steel fittings, double locknuts, and insulated bushings. Insulated bushings shall be "OZ" type "B", or approved equal.

E. Fasten EMT conduit with "Concretight" or "Raintight" compression fittings made from galvanized steel or malleable iron. Fittings using set crew or indentations as a means of attachment or made from cast "white metal" are prohibited. All connectors shall have insulated throats.

F. Fasten liguid-tight conduit with fittings incorporating a threaded ferrule, nylon sealing ring, and steel or malleable iron compression nut and body. Furnish Grouse Hinds metallic liquid-tight fittings, or approved equal.

G. Fasten flexible metallic conduit with T&B "Tite-Bite" insulation connectors, or equal.

2.09 SUPPORTS

A. All parts and hardware used for support of equipment, conduits, and fittings shall be galvanized for dry locations and galvanized with PVC bonded jacket for exterior, damp, or wet locations. Provide galvanized fasteners for dry locations and stainless steel (316 grade, minimum) for exterior, damp, or wet locations.

B. Support groups of suspended conduits run in parallel on trapeze hangers constructed of "Kindorf" channels with C-149 conduit straps or approved equal, and suspended with 1/2 inch hanger rods.

C. Support groups surface using one hole pipe straps or two hole pipe straps. Strap spacing maximum 6 feet on centers.

D. Fasten pipe straps and hangers to concrete using inserts or expansion bolts and to hollow masonry using toggle bolts. Wooden plugs and shields will not be permitted.

E. Supports for PVC coated conduits to have PVC bonded coating.

2.10 SAFETY DISCONNECT SWITCHES

A. Provide safety disconnect switches as shown on the drawings and where required by the National Electrical Code. Switches shall be horsepower rated where applicable, and shall be of the sizes required.

B. Switches shall be general duty type fused or unfused, as indicated; side handle operated, NEMA 1 for general interior work and NEMA 3R, NEMA 4 stainless steel for exterior, damp, or wet locations. Switches shall be equipped with a cover interlock to prevent operation with cover open.

C. Switches shall be visible blade, externally operated, with all current carrying parts silver or tin plated. All switches shall have provisions for not less than two external padlocks. Grounds in switch box shall be terminated in a terminal lug to the box, grounds under screw heads are unacceptable.

D. Provide fuses for all fusible safety switches. Switches shall be as manufactured by Square D, General Electric, or approved equal.

2.11 MAGNETIC CONTACTORS AND MOTOR STARTERS

A. Motor starters shall be 3 pole, 60 hertz, full-voltage magnetic type with NEMA 1 enclosures, as required. For exterior, damp, or wet locations, enclosures shall be NEMA 3R OR NEMA 4 stainless steel.

B. Where indicated, or required by the NEC starters shall be of the combination circuit breaker type.

C. Starters shall be equipped with "hand-off-automatic" selector switches start-stop pushbuttons, pilot indicating lights (minimum "red" and "green"), auxiliary contacts, fuses, etc., as required and as necessary for proper operation, hereinafter specified, or as specified, or a specified in other Divisions.

D. Each magnetic starter shall have a 120 volt coil and a fuse for protection of control wiring. Control power transformers shall have primary and secondary fuse protection.

E. Circuit breakers for combination type starters shall be of the molded case, magnetic only type motor circuit protector.

F. Furnish Square D Company Class 8536 and Class 8538 or equivalent by General Electric, or approved equal.

G. Magnetic contactor units for electric heating equipment shall be same as starters specified above except without overload protection. Furnish Square D Company Class 8502, or equivalent by General Electric, or approved equal.

2.12 WIRING DEVICES

A. Wiring devices shall be provided as indicated on the drawings. Devices shall be Underwirter's Laboratories Standard conforming to the NEC. Devices shall be Leviton, or approved equal by Slater, Pass and Seymour or Hubbell.

B. Device Plates:

1. A device plate shall be provided for each outlet requiring one. Plates in finished areas shall be the same color as indicated for wiring devices, except where specifically called for to be otherwise in these specifications or drawings.

2. Plates on unfinished walls shall be of zinc coated sheet steel having round or beveled edges.

3. Plates for telephone and data outlets shall match other device plates. Provide modular telephone jack for telephone and single bushed hole plate for data outlets.

4. Special wiring devices and cover plates shall be provided as noted on the drawings.

5. Where wiring devices are noted to be weatherproof, they shall be mounted in cast metal boxes with gasketed, spring-hinged lid-type covers having corrosion resistant finish.

6. Where device plates are noted to be brushed brass, plates shall be of 70% copper, 30% zinc allow, with a minimum .040" thickness and lacquered to prevent corrosion.

2.13 PHOTOCELL SWITCH

A. UL listed hermetically sealed cadmium-sulphide cell rated 120-277 volts ac, 60 hertz with single-throw contacts rated 1800 watts. Mount switch in a cast weatherproof aluminum housing. The switch shall burn on below 3 footcandles and off at 10

footcandles. A time delay shall prevent accidental switching from transient light sources. Mount a directions lens in front of the cell to prevent fixed light sources from creating a turnoff condition. Aim switch according to manufacturer's recommendations. Roof penetrations shall be as required by the Architect.

PART III - EXECUTION

3.01 INSTALLATION

A. Install all wiring in conduit.

B. Temporary Light and Power: Electrical contractor shall furnish all labor and material required to provide temporary light and power. The general contractor shall pay all charges for electric current used for temporary lighting and power.

C. Electrical Service: Electrical service and meters shall be installed and shall conform to the requirements of serving utility and codes. The type and voltage must be checked with serving utility and any conflict between drawings and utility shall be immediately brought to the attention of the Architect.

D. Main Distribution Panelboards, Panelboards, and Cabinets: Electrical contractor shall furnish and install the main distribution boards, power and lighting panelboards, and cabinets.

E. Disconnect and Safety Switches: Electrical contractor shall furnish and install fusible and/or non-fusible safety switches.

F. Electric Heaters: Electrical contractor shall furnish and install all electric-type heaters.

G. The electrical contractor shall install all starters, switches, and electrical equipment furnished under other contracts and shall furnish and install all disconnect switches and electrical that is required for the completion of the job.

H. Conduit shall be installed concealed wherever possible and tight to bar joist, except where otherwise indicated. Install the conduit exposed in mechanical and electrical rooms, or similar spaces. Conduit shall be separated by at least 12 inches from parallel runs of steam or hot water piping.

I. Conduits shall be continuous from outlet to outlet, from outlets to cabinets, pull, or junction boxes, and shall be secured to all boxes with locknuts and bushings (insulating type) in such a manner that each system shall be electrically continuous throughout. Conduit ends shall be capped to prevent entrance of foreign materials during construction. Conduits shall be securely and rigidly supported.

J. Furnish and install pull boxes and junction boxes where necessary in the raceway system to facilitate conductor installation (allow for pulling tension and other National Electrical Code criteria).

K. Receptacle Circuits:
   1. No wire smaller than #12 shall be used for any branch circuit supplying convenience outlets. Branch circuit wiring shall be sized to limit the voltage drop to National Electrical Code requirements. All wire to be copper.

2. Receptacle circuits shall be circuit breaker controlled.

3. Receptacle for specific areas shall be of the size and type required.

L. Lighting Circuits:

1. No wire smaller than #12 shall be used for any lighting branch circuit.

2. Branch circuit wiring shall be sized to limit the voltage drop to National Electrical Code requirements.

3. No 120 volt lighting shall exceed 1600 watts. No 277 volt lighting circuit shall exceed 3600 watts.

M. Panel 'LP-CR' Feeder and branch circuit conductors must be run separate from other panel conductors. **DO NOT** run through a common raceway or trough.

N. Lighting Controls: Certain circuits in lighting panels LP-1, LP-SP and LP-2 shall be remotely controlled to control individual lighting circuits. Power wiring between relays and circuit breakers shall be furnished by the manufacturer. Refer to lighting control system drawings E2.1A, E2.1B and E2.1C.

O. Critical Loads: Provide lock-on hardware for all Critical loads (such as: cooler/freezer equipment, computers, cash registers, etc.).

P. Temperature Control Wiring: All conduit and control wiring for mechanical equipment, unit heaters, circulating pumps, air conditioning equipment, and ventilation fans shall be installed by the electrical contractor, as directed and supervised by the temperature control contractor.

Q. Equipment Connections: All equipment provided under this section of the specifications or other sections of these specifications requiring electrical service, including all equipment furnished and installed by others, shall be completely wired and connected under this section.

R. Labeling: All circuits shall be labeled. Panel schedules shall be typed and securely mounted on the inside of the electrical panel box doors.

S. Support all conduit not embedded in concrete or masonry so that strain is not transmitted to outlet boxes and pull boxes, etc. Supports to be sufficiently rigid to prevent distortion of conduits during wire pulling.

T. Keep all conduits minimum 6 inches away from hot water pipes or other hot surfaces above 77 degrees F.

U. Install exposed conduits parallel and perpendicular to walls, structural members, ceilings and interior surfaces; install plumb.

V. Provide a nylon pull line in each conduit to be left empty.

W. Make angle bends in exposed runs of conduits with manufactured elbows, screw jointed conduit fittings or conduit bent to radius of manufactured elbows.

X. Install concealed conduits in as direct line as possible with a minimum number of bends using long radius elbows and bends.

Y. Use caped bushings or "push penny" plugs to prevent foreign matter from entering the conduit system during construction.

Z. Clean and plug or cap all conduits left empty for future use.

AA. Where conduit risers are installed in masonry walls, install conduits before the walls are built and accurately set all outlets served.

BB. Where exposed conduit is installed on water bearing walls and walls below grade, provide stand-off brackets to maintain a minimum 1/2 inch air space between the conduit and the mounting surface.

CC. Lubricants for pulling wires shall be approved for use with the wires and conduits installed.

DD. Provide all supports, hangers, braces, attachments and foundations required for the work.

EE. Supports, hangers, braces and attachments shall be standard manufactured items or fabricated structural steel shapes.

3.02 CUTTING AND PATCHING

A. Provide all cutting and patching necessary for the installation of the electrical work. Any damage done to the work already in place by reason of this work shall be repaired at the Contractor's expense by a qualified mechanic experienced in such work. Patching shall be uniform in appearance and shall match with the surrounding surface.

B. Do not cut structural members without approval by Structural Engineer.

3.03 TESTING

A. After wires are in place and connected to devices and equipment, the system shall be tested for shorts and grounds. All hot wires, if shorted or grounded, shall be removed and replaced if trouble is within circuit.

B. Any wiring device or apparatus furnished under this contract, if grounded or shorted shall be removed and the trouble rectified by replacing all defective parts of materials as directed.

3.04 CLEANING, PAINTING AND FINISHES

A. Clean all surfaces prior to application of adhesives, coatings, paint, or other finishes.

B. Provide factory-applied finishes where specified. Unless otherwise indicated, factory-applied paints shall be baked enamel with proper pre-treatment.

C. Protect all finishes and restore any damaged finishes to their original condition.

D. The above requirements apply to all work, whether exposed or concealed.

E. Remove all construction markings and writing from exposed equipment, conduit and building surfaces.

F. The color of finishes shall be as approved.

G. Submit colors of factory-finished equipment for approval prior to ordering.

3.05 PROVISIONS FOR ACCESS

A. Provide required access to all equipment, junction boxes, switches, controls and other devices.

B. Where access doors are necessary, provide manufactured steel door assemblies consisting of hinged door, flush screwdriver camlocks and frame, designed for the particular wall or ceiling construction. Properly size and locate each door. Doors shall be Milcor Metal Access Doors as manufactured by Inland-Ryerson, or equal.

END OF SECTION

SECTION 16500 - LIGHTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Section 01010 Summary of work and Section 16050, Basic Electrical Materials and Methods, shall be considered part of these specifications.

B. The electrical contractor shall furnish and install a complete lighting system consisting of, but not limited to, fixtures complete with ballasts, lamps, sockets, auxiliaries, and electrical wiring.

C. The electrical contractor shall furnish all labor and materials required to install all lighting fixtures including those furnished by others.

D. Fixture Labels: U.L. listed and labels I.B.E.W.-A.F. of L.

E. No substitution of light fixtures will be accepted.

F. Outdoor Lighting - Building and Parking Areas: Provide 5.0 maintained average foot candle level with an average to minimum uniformity ratio of 3:1. Submit computer calculations showing conformance (point-by-point, 10 feet on center) for both new and existing buildings.

1.02 SUBMITTALS

A. This contractor shall submit to the Architect product data for all light fixtures before starting work.

B. When requested, samples of the fixtures, shall be provided. Pendent supporting method for pendant hung fixtures shall be submitted to and approved by the Architect. Details required to adequately indicate the installation shall be submitted and approved.

1.03 GUARANTEE

A. Provide a one (1) year guarantee against mechanical defects in manufacture.

1.04 GENERAL

A. Provide a lighting fixture for each fixture symbol shown on the drawing, of the design and quality described herein. Furnish fixtures complete including lamps of the wattage and type indicated.

B. Provide only UL listed and labeled fixtures with UL listed wiring. Wiring shall be suitable for the fixture temperature listing.

C. Recessed fixtures shall be removable from below to allow access to an outlet box in the ceiling, as required by the National Electrical Code.

D. Data listed for each fixture type are minimum requirements and no exceptions will be made. Fixtures submitted not meeting these requirements will be returned "Not Approved". Independent laboratory test data shall be submitted to verify that fixture meets minimum performance data listed. Test data shall include catalog number of fixture being submitted.

E. All fixtures shall be supported independently of ceiling grid with four tie wires at four corners.

F. Coordinate location of all switches with door swings before rough-in.

G. Manufacturer shall provide all fixture framing kits, hardware, etc., as required. Mount fixture in ceiling system provided. See Architectural drawings for ceiling construction.

PART 2 - PRODUCTS

2.01 LIGHT FIXTURES

A. Light fixtures shall be as listed on the lighting fixture schedule.

2.02 BALLASTS

A. Fluorescent Ballasts: Shall be ETL and UL approved and shall be Premium Class P except that Super Premium Class P ballasts or ballasts with even higher thermal characteristics require them. Fixtures shall be designed for use with these P ballasts and shall have thermal characteristics that will minimize operation of ballast over-heat devices under all normally expected operation conditions. Ballast shall be energy saving type where indicated. Ballasts shall have a Class A sound rating and shall be manufactured by GENERAL ELECTRIC, UNIVERSAL, JEFFERSON, or equal.

B. HID Ballasts: UL 1029 and ANSI C82.4 and shall be constant wattage autotransformer (CWA) or regulator, high power factor type, unless otherwise indicated. Ballasts shall be designed to operate on the voltage system to which they are connected. Single-lamp ballasts shall have a minimum starting temperature of minus 30 degrees C. Ballasts shall be designed for installation in normal ambient temperature of 40 degrees C. Ballasts shall be constructed so that open circuit operation will not reduce the average life. High Pressure Sodium (HPS) ballasts shall have a solid-state igniter/starter which an average life in the pulsing mode of 90 degrees C. Average life if defined as the time after which 50 percent will have failed and 50 percent will have survived under normal conditions.

C. All ballasts for outdoor use or where indicated shall be of the low temperature type, (0 degrees F.).

D. Ballasts which are not quiet and hum-free will be rejected and shall be replaced by the Contractor at no additional cost to Owner.

2.03 LAMPS

A. Lamps shall be as listed on the lighting fixture schedule.

B. Lamps shall be as follows, unless otherwise noted:

1. Incandescent: 130 volts inside frosted.

2. Capsylite incandescent: 130 volts.

3. Fluorescent: full spectrum SPX-35 (3500 degrees K).

4. Compact fluorescent: full spectrum SPX-35 (3500 degrees K).

5. Metal Halide: coated.

6. High Pressure Sodium: clear

C. Lamps shall be as manufactured by Sylvania, Westinghouse or General Electric.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install lighting fixtures and accessories in accordance with the manufacturers' instructions.

B. Exit Lights and Emergency Lighting System: Furnish and install a complete emergency lighting and/or exit lighting system. System and provisions shall comply with local requirements and codes.

C. Support fixtures independent of ceiling systems, ducts and piping. Provide hangers from purlins, joists, beams, etc., for support of all boxes and fixtures. Provide trapeze hanger supports for fixtures located directly under ductwork. Provide galvanized steel for all support hangers, channels, bolts, etc., except suspended fixtures which stems shall match the fixture finish, and cables.

D. Provide proper framing of the ceiling for all recessed fixtures. Provide plaster frames for recessed fixtures in plaster ceiling.

E. Coordinate fixture installation with ceiling installation and other ceiling devices to provide a total system presenting a neat and orderly appearance.

F. Provide aligned hangers for all stem suspended fixtures so that fixtures hang level with vertical stems or cables.

G. Fixtures frames and trim shall match color of ceiling.

H. Exterior pole mounted fixtures in straight runs shall be in a straight line. Dig holes for pole setting large enough to permit the proper use of tampers to the full depth of the hole. Place backfill in the hole 6-inch maximum layers and thoroughly tamp. Place surplus earth around the pole in a conical shape and pack tightly to drain water away.

I. Exterior Signs:

1. The electrical contractor shall provide outlets from the appropriate panel to the exterior face of the building or canopy for all tenant-supplied exterior signage.

3.02 TESTING

A. Any lighting fixture furnished under this contract, if grounded or shorted, shall be removed and the trouble rectified by replacing all defective parts of materials as directed.

END OF SECTION

SECTION 16600 - SPECIAL SYSTEMS

PART I - GENERAL

1.01 DESCRIPTION

A. Division 1, General Requirements, and Section 16050, Basic Electrical Materials and Methods shall be considered a part of these specifications.

B. Furnish and install, complete with all related items, the preparation rough-in wiring and partial installation for the following special systems (where required by the drawings):

1. Ethernet
2. Satellite
3. Burglar alarm
4. Closed circuit television (CCTV)
5. Telephone
6. Sound

A. All work shall be done under the supervision of an accredited installation company in the low voltage systems specified.

B. This contractor shall furnish all labor, materials, tools, and the necessary appurtenances to install the special system.

C. For plenum ceiling installations, all appropriate requirements for raceways and cable of the authority having jurisdiction shall be met.

D. Install the aforementioned special systems consisting of conduits, boxes, wiring, and equipment.

E. Except where a conduit only system is specified, the system shall be completely wired (in conduit except where otherwise shown or specified) and operating, any items required to achieve this shall be provided whether or not they are specifically mentioned herein. Wiring shall be in accordance with the manufacturer's recommendations.

F. Wherever conduit is required or used, it shall be concealed and outlets shall be flush except as otherwise directed. "Conduit only" system(s) shall have nylon fish wire for future installation of wiring.

G. All wiring within pieces of equipment shall be point-to-point with appropriate terminal connections for every wire and component termination.

PART II - PRODUCTS (NOT USED)

PART III – EXECUTION (NOT USED)

END OF SECTION

SECTION 16720 - FIRE ALARM SYSTEM

PART I - GENERAL

1.01 STANDARDS

A. Furnish and install complete, electrically supervised, closed circuit fire alarm system when required by the local authority having jurisdiction.

B. The fire alarm system shall conform to the requirements in this specification, Section 16A, Electrical General Conditions, and comply with the latest adopted edition of the following:

1. NFPA 72 (Chapters 1-7 as applicable)

2. NFPA 90A

3. The International Building Code

4. Local building & fire codes (as applicable)

C. All equipment comprising the fire alarm system shall be listed, labeled, or approved by Underwriters Laboratories, Inc. for use as fire alarm equipment.

1.02 DESCRIPTION OF WORK

A. Provide a complete, supervised fire alarm system including conduit (by the electrical contractor), wire, boxes, control panel, smoke detectors, pull stations, audio/visual signal devices, and sprinkler water flow and supervisory switches. The sprinkler switches shall be provided under Section 15, Work (See letter H – under 2.01 Fire Alarm Devices), and connected to the fire alarm system by the fire alarm supplier.

B. It is the fire alarm vendor's responsibility to contact the local authority having jurisdiction to determine the exact minimum requirements. The contractor/fire alarm vendor shall provide all materials and labor required to meet local fire safety regulations, codes, adopted ordinances, and local requirements of the local authority having jurisdiction, whether enumerated herein, shown on plans, or not.

C. The complete fire alarm system, including installation, is the responsibility of the contractor.

D. If approved by the local authority having jurisdiction, the fire alarm system supplier may eliminate conduit and run approved type open wiring above suspended ceilings and within exposed bar joists. Where wiring is required down exposed walls in warehouse or stock areas, wiring is to be installed in EMT to the height of 10 feet above floor level. All wiring supports and installation shall conform to the National Electrical Code.

E. The electrical contractor shall provide power to and the shut down associated with duct detectors (see 2.01 – letter G).

1.03 QUALITY ASSURANCE

A. Provide products which have been tested, listed, and labeled by Underwriters Laboratories, Inc., which comply with NEMA standards, and are approved by Factory Mutual Research.

PART II - PRODUCTS

2.01 FIRE ALARM DEVICES

A. A fire alarm control panel shall be Silent Knight, 5208, Fire Lite M5-9200, Fire Lite M5-5024, Fire Lite M5-5210, including dual battery harness, dual phone line switches, and two 8-foot telephone cords Telephone jacks (if required) shall be RJ31X, ground GND. The fire alarm control shall include battery backup, BP-BP17-12-T2, BP-BP7-12-T2, BP-BP26-12-T2; Fire Lite BB-17, Fire Lite BB55 (if required); Silent Knight model 5217, zone expander module, Silent Knight model 5495, Fire Lite FCPS24F (if required), and direct connect module, Silent Knight model 5220 (if required).

B. Fire alarm annunciator shall be Remote keypad/Annunciator, Silent Knight model 5235, Fire Lite LCD40, or Fire Lite models RAZ-5F, or LED-10 (if required).

C. Manual pull station shall be Fire Lite, model BG12LX, BG12 (if required).

D. Fire alarm indicating devices shall be horn/strobe, Wheelock AS Series, MT Series, and RSS Series (if required).

E. Smoke detectors shall be Sentrol SE-429CT, Sentrol SE-449CT, Fire Lite SD350T. Included shall be one (1) End of Line power supervision relay, Silent Knight model 160150 for each zone of smoke detectors (if required).

F. Heat detectors shall be Edwards ED-282B (if required).

G. Duct smoke detector, supplied and installed by the mechanical contractor, shall be System Sensor model DH100ACDCP. Included with each detector shall be one (1) Remote Indicator/Test Switch, System Sensor model RTS451, one (1) set of sampling tubes, System Sensor models ST5 or ST10. Included shall be one (1) End of Line power supervision relay, Silent Knight model 160150, for each zone of detectors. A remote disconnect switch (AC-RP44) shall be installed in the electrical room for the duct smoke detectors. This switch will only disconnect monitoring of the alarm/supervisory signal to the Fire Alarm Control Panel only, and will not affect the function of the duct smoke detector. Instructions shall be mounted on the front of the surface mount box.

H. The fire-suppression system contractor shall provide water flow and valve tamper switches.

PART III - EXECUTION

3.01 INSTALLATION

A. The fire alarm control panel shall be mounted where shown on drawings provided by the Fire alarm contractor. A dedicated 120 VAC, 20-ampere circuit, termination to the Fire alarm control panel shall be provided by the electrical contractor. The remote

keypad/annunciator shall be mounted where required by local code and/or authority having jurisdiction.

B. The fire alarm system shall be installed under the supervision of a factory-trained supervisor. Prior to final inspection, the supervisor shall test all operating features and consequently make all necessary adjustments and corrections to the equipment comprising the fire alarm system provided as work under this section.

C. Install complete wiring system as required for the fire alarm system. Conceal wiring except in stockrooms and areas where other conduit and piping are exposed.

D. Code all conductors appropriately and permanently, by number and/or color, for the purpose of identification and servicing of the fire alarm system within the control panel, and at each point of termination outside the control panel.

END OF SECTION