Project Manual for:

FELLOWSHIP AND EDUCATION CENTER

for

FIRST BAPTIST CHURCH
RICHLANDS, NC

100 Rand Street
Richlands, NC
Onslow County, N.C.

Architect:

Brian D. Garrett Architect, P.A.
790 Sunset Blvd. N, Suite 105
Sunset Beach, NC 28468
910.575.9005

Project No.: 1106

Owner's Representative:

BRIAN D. GARRETT ARCHITECT
910.575.9005

Table of Contents

NOTICE TO BIDDERS
By Invitation Only

A. Sealed proposals will be received by: Brian D. Garrett Architect, P.A.

B. Location of Bid Receipt: Brian D. Garrett Architect, P.A.
790-5 Sunset Blvd. N. - Sunset Beach, N.C.

C. Bid opening Time: Bids are due by 2:00 p.m. Thursday, August 25, 2011

D. Bid opening will be private at the office of Brian D. Garrett Architect.

E. Name and Address of Project to Bid: **FELLOWSHIP AND EDUCATION CENTER**
FIRST BAPTIST CHURCH RICHLANDS, NC

F. The project will be awarded under a single contract, the General Contractor being the "prime bidder", with Plumbing, HVAC, Electrical, and all other trades as subcontractors to him. The Prime Bidder shall note on the Proposal Form in the spaces provided, the names of the prime subcontractors whom he proposes to use and the proposed project superintendent.

G. Prime Bidders may get one copy of the bid documents in disc form from the Architect for bidding purposes. Additional prints of drawings and specifications for other parties will be issued on a cost of reproduction (non-refundable basis as follows):

Drawings $6.00/sheet
Complete Spec. $10.00
Each Spec. Sheet $0.25/sheet
Postage/Handling $5.00

H. Project Description:

I. Bid Bond: None Required

J. Performance and Payment Bonds: None Required

K. General Statutes: All contractors are hereby notified that they must have proper license under the state laws governing their respective trades.

L. Payment: Payment will be made on the basis of 90% of monthly estimates and final payment made upon the completion and acceptance of the work.

M. Bid Withdrawal: No bid may be withdrawn after the scheduled closing time for receipt of bids for a period of thirty (30) days.

N. Owner's Right: Bids will be opened privately. The Owner reserves the right to reject any or all bids, or to accept the lowest legal bid deemed in the best interest of the Owner, and to waive informalities.

By: Brian D. Garrett Architect, P.A.
Sunset Beach, NC - 910-575-9005

INSTRUCTIONS TO BIDDERS

PROPOSALS: Proposals must be made in strict accordance with the Form of Proposals provided, and all blank spaces for bids and alternates properly filled in. When requested alternates are not bid, the proposal may be considered incomplete. The Bidder agrees that bids on Forms of Proposals detached from specifications will be considered and will have the same force and effect as if attached thereto. Numbers shall be stated both in writing and in figures and the complete form shall be without any lineation, alterations, or erasures. In accepting the proposal, the Owner and Architect will assume that no such alterations have been made, and if they appear afterwards, they shall not be binding upon either of them.

Any modifications to the Form of Proposal (including alternates) will qualify the bid and may cause the bid to be rejected.

Proposals shall be addressed as indicated on the Bid of Proposal and shall be delivered enclosed in an opaque sealed envelope, marked Proposal and bearing the title of the work, name of bidder, and the bidder's license number.

It shall be the specific responsibility of the Bidder to deliver his bid to the proper official at the appointed place and prior to the announced time for the opening of bids. Later delivery of a bid for any reason, including delivery by United States Mail, shall disqualify the bid.

Modifications of bids will be acceptable only if delivered in writing or in telegram to the place of the bid opening prior to the time for opening bids. Should the bidder find discrepancies in or omissions from the drawings or documents, or should he be in doubt as to their meaning, he shall at once notify the Architect and/or the Owner=s Project Representative who will send a written instruction to all bidders. If plans and specifications are found to disagree after contract is awarded, the Architect shall be the judge as to which was intended.

BID SECURITY: None required.

BULLETINS AND AGENDA: Any bulletins or addenda to specifications issued during the time of bidding are to be considered covered in the proposal, and in closing a contract, they will become a part thereof. Receipt of addenda shall be acknowledged by the bidder on the proposal form.

AWARD OF CONTRACT: The award of the contract will be made to the lowest responsible bidder as soon as practicable, provided that in the selection of equipment and materials, a contract may be awarded to a responsible bidder other than the lowest in the interest of standardization or ultimate economy if the advantage of such standardization or ultimate economy is clearly evident. The Owner reserves the right to reject any or all bids.

Before awarding a contract, the Owner may require the apparent low bidder to qualify himself to be a responsible bidder by furnishing any or all of the following documentary data:

1) A financial statement showing assets and liabilities of the company current to date within thirty (30) days of the date of the opening bids or other information satisfactory to the Owner.
2) A listing of not less than three (3) completed projects of similar scope and nature. (Steel frame construction)
3) Permanent name and address of place of business.
4) The number of regular employees of the organization and length of time the organization has been in business under the present name.
5) The name and home office address of the Surety proposed and the name and address of the responsible local claim agent.
6) The names of members of the firm who hold appropriate trade licenses, together with the license numbers.

Should the Owner adjudge that the apparent low bidder is not the lowest responsible bidder by virtue of the above information furnished, said apparent low bidder will be so notified and his bid security shall be returned to him without prejudice.

PERFORMANCE AND LABOR AND MATERIAL BONDS: Performance and Labor and Material Payment Bonds are not required. See Division 1, Supplementary Conditions for other requirements.

EXAMINATION OF CONDITIONS: Submission of a bid will assume that the contractor has fully examined the site and knows existing conditions and has made every provision for operation under existing conditions, and has included all necessary items.

PAYMENTS: Monthly requests for payment will be forwarded to the Architect for approval and payment made upon issuance of Certificate of Payment to the Owner by the Architect in accordance with the Contract Documents.

BIDS TO BE RETAINED: No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of thirty (30) days pending the execution of a contract by the successful bidder. Should the successful bidder default and not execute a contract, then if the next low bidder be in line, the contract would be offered to the next lowest and responsible bidder.

END OF INSTRUCTIONS
Prepared By:
Brian D. Garrett Architect, P.A.
790 Sunset Blvd. N, Suite 105 - Sunset Beach, NC

BID DESCRIPTION

This project consists of items described as Base Bid.

BASE BID

The base bid shall consist of the construction of the Building and Site as shown on the plans.
It is the intent to have a completed turn key project.

PROJECT DESCRIPTION

This project consists of, but is not limited to Site Demolition, Site Utilities, Stormwater, Grading, Paving, Walks, Curbs, Construction of a Pre-engineered Metal Building, all Interior finishes, Plumbing, Mechanical, and Electrical.

There is no soils report. Soil conditions are as stated in the Structural set.

BID PROPOSAL

Having examined the Building Site, figured at cost and familiarized myself with the plans and specifications, I am, or we are, submitting to you the following bid, subject to all the terms, conditions and requirements, exhibited in these plans and specifications as prepared by Brian D. Garrett Architect, P.A., McDowell Engineers, and Woods Engineering.

We will furnish all labor, materials, tools, apparatus, and equipment necessary for the erection and completion of all portions of the work included in the Contract Documents outlined below, for the sum indicated.

GENERAL CONTRACTOR:

_____

(Prime Bidder) (Name)

CONSTRUCTION TIME: 270 days from Notice to Proceed

STATE LICENSE
NUMBER:_____

THE GENERAL CONTRACTOR SHALL ACT AS PROJECT EXPEDITER FOR ALL PRIME SUB-CONTRACTS.

BASE BID:

_____($_____)

The bidder further proposes and agrees hereby to commence work under his contract on a date to be specified in a written order under the Architect and shall fully complete all work there under within the Provisions as set forth in the Bid Proposal.

RESPECTFULLY SUBMITTED THIS _____ DAY OF
_____, 2011

_____

(Name of firm or corporation making bid)

WITNESS BY:

_____

TITLE:_____
(Proprietorship or Partnership)

ATTEST BY:

_____

ADDRESS:

_____

TITLE: _____ LICENSE NO. _____
(Corporation secretary or asst. secy. only)

RECEIPT OF ADDENDA:

ADDENDUM NO. 1
ADDENDUM NO. 2
ADDENDUM NO. 3

CORPORATE SEAL

GENERAL CONDITIONS

"General Conditions of the Contract for Construction, A.I.A. Document A201 1997 Edition" shall be considered a part of the Contract Documents and is available for review.

The following is a table of the Articles contained in A.I.A. Document A201:

1. General Provisions
2. Owner
3. Contractor
4. Administration of the Contract
5. Subcontractors
6. Construction by Owner or by Separate Contractors
7. Changes in the Work
8. Time
9. Payments and Completion
10. Protection of Persons and Property
11. Insurance and Bonds
12. Uncovering and Correction of Work
13. Miscellaneous Provisions
14. Termination or Suspension of the Contract

SUPPLEMENTARY CONDITIONS:

The following supplements modify the " general conditions of the contract for Construction", A.I.A. Document A201, 1997. Where a portion of the General Conditions is modified or deleted by these supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

ARTICLE 1; GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

Add the following to the end of Subparagraph 1.2.1:

In the case of an inconsistency between drawings and Specifications or within either Document not classified by addendum, the better quality or greater quantity of work most detailed shall be provided in accordance with the Architects interpretation.

ARTICLE 2; OWNER

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

Delete Subparagraph 2.2.5 and substitute the following:

2.2.5 The Contractor will be furnished free of charge five copies of Drawings and Project Manuals. Additional sets will be furnished at the cost of reproduction, postage and handling.

ARTICLE 3; CONTRACTOR

3.4 LABOR AND MATERIALS

Delete Subparagraph 3.4.2 and substitute the following:

3.4.2 After the Contract has been executed, the Owner and the Architect will consider a formal request for the substitution of products in place of those specified only under the conditions set forth in the Project Manual (Division 1 of the Specifications).

3.4 Add the following subparagraph to section 3.4:

3.4.4 By making requests for substitutions based on Subparagraph 3.4.2 above the Contractor.

1. Represents that the Contractor has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified.
2. Represents that the Contractor will provide the same warranty for the substitution that the Contractor would for that specified.
3. Certifies that the cost data presented is complete and includes all related costs under this Contract except the Architects Redesign costs, and waves all claims for additional costs related to the substitution which subsequently become apparent; and
4. Will coordinate the installation of the accepted substitute, making such changes as may be required for the work to be complete in all respects.

3.15 CLEANING UP

Add the following to the end of Subparagraph 3.15.1;

3.15.1 The job site shall be maintained in a reasonably neat and orderly condition and kept free from accumulation of waste materials. All paper and flammable materials shall be removed from the building area at the end of each working day. The interior areas shall be cleaned immediately upon the completion of each Trade's work. Prior to the Installation of landscape materials, Rake thoroughly, and remove all nails and small debris. Before final inspection and acceptance of the building, the contractor shall clean the building and grounds, including glass, hardware fixtures and equipment, all floors and completely prepare the Building and Grounds for use by the Owner, with no additional cleaning required by the Owner. Upon completion of the work, remove temporary facilities, fences, building materials, rubbish, and leave the building and grounds in the condition described above for cleaning up.

ARTICLE 7; CHANGES IN THE WORK

7.3 CONSTRUCTION CHANGE DIRECTIVES

Modify Subparagraph 7.3.6 as Follows:

7.3.6 In the first sentence, delete the words " a reasonable allowance for overhead and profit" and substitute " an allowance for overhead and profit in accordance with Clauses 7.3.10.1 through 7.3.10.6 below."

Add the following Subparagraph 7.3.10 to Paragraph 7.3:

7.3.10 In Subparagraph 7.3.6 the allowance for the combined overhead and profit included in the total cost to the Owner shall be based on the following schedule:

1. For the Contractor, for work performed by the contractors own forces, ten percent of the cost.
2. for the contractor, for work performed by the Contractor's Subcontractor, ten percent of the amount due the Subcontractor,
3. for each Subcontractor or Sub-Subcontractor involved, for work performed by that Subcontractor's own forces, ten percent of the cost.
4. for each Subcontractor, for work performed by the Subcontractor's Sub-Subcontractor's, ten percent of the amount due the Sub-Subcontractor.
5. Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 7.3.6.
6. In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs, including labor, materials and Subcontracts. In no case in a change involving over two hundred dollars be approved without such itemization.

ARTICLE 8; TIME

8.2 PROGRESS AND COMPLETION

Add the following:

8.2.4 The contractor shall commence work to be performed under this agreement on a date to be specified in a written order from the Architect and shall fully complete all work as called for on the Bid Proposal.

ARTICLE 9; PAYMENTS AND COMPLETION

9.3 APPLICATIONS FOR PAYMENT

Add the following sentence to subparagraph 9.3.1:

9.3.1 The form of application for Payment shall be a notarized A.I.A. Document G-702, Application and Certification for Payment, supported by A.I.A Document G-703, continuation sheet. Add the following clause 9.3.1 to 9.3.1:, Until final Payment the Owner shall pay ninety (90%) of the amount due the Contractor on account of progress Payments. For each work category shown to be fifty (50%) or more complete in the application for Payment, the Architect may, without reduction of previous Retainage, certify any remaining progress Payments for each Work category to be paid in full provided Work has progressed to the satisfaction of the Owner.

9.8 SUBSTANTIAL COMPLETION

Add the following sentence to subparagraph 9.8.3:

9.8.3 The payment shall be sufficient to increase the total payments to (95%) ninety-five percent of the Contract sum, less such amounts as the Architect shall determine for incomplete Work and unsettled claims.

ARTICLE 11; INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

Delete the semicolon at the end of clause 11.1.1.1. and add the following:

11.1.1.1 Including private entities performing Work at the site and exempt from the coverage on account of number of employees or occupation, which entities shall maintain voluntary compensation coverage at the same limits specified for mandatory coverage for the duration of the Project.

Delete the semicolon at the end of clause 11.1.1.2. and add the following:

11.1.1.2 or persons or entities excluded by statue from the requirement of Clause 11.1.1.1. but required by the Contract Documents, to provide the insurance required by that clause.

Add the following clause 11.1.1.9 to Subparagraph 11.1.1:

11.1.1.9 Liability Insurance shall include all major divisions of coverage and be on the comprehensive basis including:

1. Premises Operations (including X,C, and U coverage as applicable).
2. Independent Contractor's Protective
3. Products and Completed Operations
4. Personal Liability With Employment Exclusion Deleted
5. Contractual, Including specified provision for Contractor's obligation under Paragraph 3.18
6. Owned, Non -Owned and hired motor vehicles.
7. Broad form Property Damage including Completed Operations.

Add the following Clause 11.1.2.1 to Subparagraph 11.1.2:

11.1.2.1 The insurance required by Subparagraph 11.1.1 shall be written for not less than the following limits or greater, if required by law:(in thousands ;)

1. Worker's Compensation
   a) State: Statutory
   b) Applicable Federal: Statutory
   c) Employer's Liability: (1,000) per Accident
   (1,000) Disease, Policy Limit
   (1,000) Disease, Each Employee

2.* Comprehensive or Commercial General Liability (including Premises-Operations; Independent Contractor's Protective: Products and Completed Operations: Broad Form Property Damage)

3.* Contractual Liability:
   a) Bodily Injury:
   (1,000) Each Occurrence
   (1,000) Aggregate
   b) Property Damage
   (1,000) Each Occurrence
   (1,000) Aggregate

4. Personal Injury, with Employment Exclusion deleted (only for comprehensive form.):
   (1,000) Aggregate

5.* Business Auto Liability (Including owned, non-owned and hired vehicle)
   a) Bodily Injury
   (1,000) Each Occurrence
   (1,000) Each Person
   b) Property Damage
   (500) Each Occurrence

6. If the general Liability coverage is provided by a Commercial Liability Policy, the:

   a) General Aggregate shall not be less than (1,000) and it shall apply, in total, to this project only.
   b) Fire Damage Limit shall be not less than(1,000) on any one fire,
   c) Medical expense Limit shall not be less than (500,000) on any one person.

7. Umbrella Excess Liability: (1,000) over primary insurance, (100) retention for self insured hazards each occurrence.

Add the following sentence to Subparagraph 11.1.3:

11.1.3 if this insurance is written on the Comprehensive General Liability policy form, the certificates shall be A.I.A., Document G705, Certificate of Insurance, If this insurance is written on a Commercial General Liability policy form, acord form 25S will be acceptable.

GENERAL AND SPECIAL OWNER REQUIREMENTS

INDEMNIFICATION:

Hold Harmless Agreement. The Contractor(s) agree to defend, indemnify and hold harmless the Owner and the Architect, from all loss, liability, claims or expense (including reasonable attorney's fees) arising from bodily injury, including death or property damage to any person or persons caused in whole or in part by the negligence or willful misconduct of the Contractor except to the extent some are caused by the negligence or misconduct of the Owner or the Architect.

It is the intent of this section to require the Contractor to indemnify the Owner and the Architect to the extent permitted under North Carolina General Statutes.

It is understood and agreed that the Contractor is at all times herein acting as an independent contractor.

SUBSURFACE INVESTIGATION: Specific subsurface information is not available for this site. Foundation design is based on familiarity with local conditions and not actual soil borings and laboratory testing. The contractor shall hire a qualified soils testing company to verify information in the plans and provide the architect with a copy of the report. If conditions are found during construction that is inadequate, unsuitable, or questionable, the Contractor shall notify the Architect before proceeding further with the work. Additional costs and delays in time will be adjusted by Change Order when required.

SECTION 01010-SUMMARY OF WORK

PART 1-GENERAL

1.1 RELATED DOCUMENTS

A.) Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A.) The Project consists of the construction of an addition to an existing church sanctuary.

1. Property Location: Richlands, NC
2. Owner. First Baptist Church Richlands

B.) Contract Documents, dated August 1, 2011, were prepared for the project by Brian D. Garrett Architect, PA, 790-5 Sunset Blvd., Sunset Beach, N.C.

C.) The Work includes all site and utility work along with the construction of a Pre-engineered steel building with brick and block veneer. The work includes all interior finishes and PME.

D.) The Work will be constructed under a single Prime Contract.

1.3 CONTRACTOR USE OF PREMISES

A.) General: During the construction period the Contractor shall have full use of the premises for construction operations, including use of the site. The Contractor's use of the premises is limited only by the Owner's right to perform work or to retain other Contractors on portions of the project.

1. Driveways and Entrances: Keep Driveways and Entrances serving the premises clear and available to the Owner, the Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials, schedule deliveries to minimize and time requirements for storage of materials and equipment on site.

2. See the drawings for additional material storage requirements and work sequences.

1.4 OCCUPANCY REQUIREMENTS

A.) Partial Owner Occupancy; The Owner reserves the right to occupy and to place and install equipment in completed areas of the building prior to Substantial Completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. The Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to the Owner occupancy.

2. Obtain a Certificate of Occupancy from local building officials prior to Owner Occupancy.

3. Prior to Owner occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed. Upon Occupancy, the Owner will operate and maintain mechanical and electrical systems serving occupied portions of the building.

4. Upon occupancy, the Owner will assume responsibility for maintenance and custodial service for occupied portions of the building.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01010

SECTION 01020 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing allowances.

1. Selected materials and equipment are specified in the Contract Documents by allowances. In some cases, these allowances include installation. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional Information is available for evaluation. If necessary, additional requirements will be issued by Change Order.

B. Types of allowances include the following:

1. Lump-sum allowances.
2. Unit-cost allowances.

C. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section "Modification Procedures" specifies procedures for submitting and handling Change Orders.

1.3 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise the Architect of the date when the final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At the Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by the Architect from the designated supplier.

1.4 SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

B. Submit invoices or delivery slips to show the actual quantities of materials delivered to the site for use in fulfillment of each allowance.

1.5 UNUSED MATERIALS

A. Return unused materials to the manufacturer or supplier for credit to the Owner, after installation has been completed and accepted.

1. When requested by the Architect, prepare unused material for storage by Owner where it is not economically practical to return the material for credit. When directed by the Architect, deliver unused material to the Owner's storage space. Otherwise, disposal of unused material is the Contractor's responsibility.

PART 2 - PRODUCTS (Not Applicable)

PART 3 -
EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly upon delivery for damage or defects.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. Brick: Provide Face Brick at the cost of $350/ 1000 Brick.

END OF SECTION 01020

SECTION 01027 - APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.

B. Related Sections: The following Sections contain requirements that relate to this Section.

1. Schedules: The Contractor's Construction Schedule and Submittal Schedule are specified in Division 1 Section "Submittals."

1.3 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.

1. Correlate line items In the Schedule of Values with other required administrative schedules and forms, including

a. Contractor's Construction Schedule.
b. Application for Payment forms, Including Continuation Sheets.
c. List of subcontractors.
d. Schedule of allowances.
e. Schedule of submittals.

B. Submit the Schedule of Values to the Architect at the earliest possible date but no later than 7 days before the date scheduled for submittal of the initial Applications for Payment.

C. Format and Content: Use the Project Manual table of contents as a guide to establish the format for the Schedule of Values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the Schedule of Values:

a. Project name and location.
b. Name of the Architect.
c. Project number.
d. Contractor's name and address.
e. Date of submittal.

2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:

   a. Related Specification Section or Division.
   b. Description of Work.
   c. Dollar value.

      1) Percentage of Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the project Manual table of contents. Break principal subcontract amounts down into several line items.

4. Round amounts to nearest whole dollar; the total shall equal the Contract Sum.

5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed.

   a. Differentiate between items stored on-site and items stored off-site. Include requirements for insurance and bonded warehousing, if required.

6. Unit-Cost Allowances: Show the line-item value of unit-cost allowances, as a product of the unit cost, multiplied by the measured quantity. Estimate quantities from the best indication in the Contract Documents.

7. Margins of Cost: Show line items for indirect costs and margins on actual costs only when such items are listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete. Include the total cost and proportionate share of general overhead and profit margin for each item.

   a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at the Contractor's option.

1.4 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.

   1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.

B. Payment-Application Times: The date for each progress payment is the 15th day of each month. The period covered by each Application for Payment starts on the day following the end of the preceding period and ends 15 days prior to the date for each progress payment.

C. Payment-Application Forms: Use AIA Document G702 and Continuation Sheets G703 as the form for Applications for Payment.

D. Application Preparation: Complete every entry on the form. Include notarization and execution by a person authorized to sign legal documents on behalf of the Contractor. The Architect will return Incomplete applications without action.

1. Entries shall match data on the Schedule of Values and the Contractor's Construction Schedule. Use updated schedules if revisions were made.

2. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.

E. Transmittal: Submit 4 signed and notarized original copies of each Application for Payment to the Architect by a method ensuring receipt within 24 hours. One copy shall be complete, including waivers of lien and similar attachments, when required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate Information related to the application, in a manner acceptable to the Architect.

F. Waivers of Mechanics Lien: With each Application for Payment, submit waivers of mechanics liens from subcontractors, sub-subcontractors and suppliers for the construction period covered by the previous application. Submit partial waivers on each item for the amount requested, prior to deduction for retainage, on each item or full waivers.The Owner reserves the right to designate which entities involved in the work must submit waivers.

G. Waiver Forms: Submit waivers of lien on forms, and executed in a manner, acceptable to the Owner.

H. Initial Application for Payment: Administrative actions and submittals, that must precede or coincide with submittal of the first Application for Payment, include the following:

1. List of subcontractors.
2. List of principal suppliers and fabricators.
3. Schedule of Values.
4. Contractor's Construction Schedule (preliminary if not final).
5. Copies of building permits. Certificates of insurance and insurance policies.
6. Certificates of insurance and insurance policies.

I. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Appilcation for Payment.This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work. Administrative actions and submittals that shall precede or coincide with this appilcation include:

1. Occupancy permits and similar approvals.
2. Warranties (guarantees) and maintenance agreements.
3. Test/adjust/balance records.
4. Maintenance instructions.
5. Meter readings.
6. Startup performance reports.
7. Changeover information related to Owner's occupancy, use, operation,and maintenance.
8. Final cleaning.
9. Advice on shifting insurance coverages.
10. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.

J. Final Payment Application: Administrative actions and submittals that must precede or coincide with submittal of the final Application for Payment include the following:

1. Completion of Project closeout requirements.
2. Completion of items specified for completion afterSubstantial Completion.
3. Ensure that unsettled claims will be sethed.
4. Ensure that incomplete Work is not accepted and will be completed without undue delay.
5. Transmittal of required Project construction records to the Owner.
6. Removal of temporary facilities and services.
7. Removal of surplus materials, rubbish, and similar elements.
8. Change of door locks to Owner's access.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01027

SECTION 01035- MODIFICATION PROCEDURES

PART 1 -GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract. including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing contract modifications.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section "Allowances" for procedural requirements governing the handling and processing of allowances.

2. Division 1 Section "Submittal" for requirements for the Contractor's Construction Schedule.

3. Division 1 Section "Applications for Payment" for administrative procedures governing Applications for Payment.

4. Division 1 Section "Product Substitutions" for administrative procedures for handling requests for substitutions made after award of the Contract.

1.3 MINOR CHANGES IN THE WORK

A. The Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or Contract Time, on AIA Form G710, Architect's Supplemental Instructions.

1.4 CHANGE ORDER PROPOSAL REQUESTS

A. Owner-initiated Proposal Requests: The Architect will issue a detailed description of proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal requests issued by the Architect are for information only. Do not consider them as an instruction either to stop work in progress or to execute the proposed change.

2. Within 20 days of receipt of a proposal request, submit an estimate of cost necessary to execute the change to the Architect for the Owner's review.

a. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.

b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

c. Include a statement indicating the effect the proposed change in the work will have on the Contract Time.

B. Contractor-Initiated Proposals: When latent or unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Architect.

1. Include a statement outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.

2. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.

3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

4. Comply with requirements in Section "Product Substitutions" if the proposed change requires substitution of one product or system for a product or system specified.

C. Proposal Request Form: Use AIA Document G709 for Change Order Proposal Requests

1.5 ALLOWANCES

A. Allowance Adjustment: For allowance-cost adjustment, base each Change Order Proposal on the difference between the actual purchase amount and the allowance, multiplied by the final measurement of work-in-place. Where applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in the purchase amount only where indicated as part of the allowance.

2. When requested prepare explanations anddocumentation to substantiate the margins claimed.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or the Contractor's handling, labor, installation, overhead, and profit. Submit claims within 21 days of receipt of the Change Order or Construction Change Directive authorizing work to proceed. The Owner will reject claims submitted later than 21 days.

1. Do not include the Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in Contract Documents.

2. No change to the Contractor's indirect expense is permitted for selection of higher or lower-priced materials or systems of the same scope and nature as originally indicated.

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: When the Owner and the Contractor disagree on the terms of a Proposal Request, the Architect may issue a Construction Change Directive on AIA Form G714. The Construction Change Directive instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. The Construction Change Directive contains a complete description of the change in the Work. It also designates the method to be followed to determine change in the Contract Sum or Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.7 CHANGE ORDER PROCEDURES

A. Upon the Owner's approval of a Proposal Request, the Architect will issue a Change Order for signatures of the Owner and the Contractor on AIA Form G701.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01035

SECTION 01045 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for cutting and patching.

1 .3 QUALITY ASSURANCE

A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:

a. Foundation construction.
b. Bearing and retaining walls.
c. Structural steel.
d. Lintels.
e. Timber and primary wood framing.
f. Miscellaneous structural metals.

B. Operational Limitations: Do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safety.

C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace construction cut and patched in a visually unsatisfactory manner.

1. If possible retain the original Installer or fabricator to cut and patch the exposed Work listed below. If It is impossible to engage the original Installer or fabricator, engage another recognized experienced and specialized firm.

a. Stucco and ornamental plaster.
b. Carpeting.
c. HVAC enclosures, cabinets, or covers.

1.4 WARRANTY

A. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void any warranties required or existing.

PART 2 -PRODUCTS

2.1 MATERIALS, GENERAL

A. Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible if identical materials are unavailable or cannot be used. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 -EXECUTION

3.1 INSPECTION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of work to be cut.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

3.3 PERFORMANCE

A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.

B. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining construction. Where possible, review proposed procedures with the original Installer; comply with the original Installer's recommendations.

1. In general, where cutting, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.

3. Cut through concrete and masonry using a Carborundum saw or a diamond-core drill.

4. Comply with requirements of applicable Division 2 Sections where cutting and patching requires excavating and backfilling.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.

2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3. Where removing walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

a. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing the patch after the area has received primer and second coat.

3.4 CLEANING

A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

END OF SECTION 01045

SECTION 01095 - REFERENCE STANDARDS AND DEFINITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications Sections, apply to this Section.

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. Indicated: The term indicated refers to graphic representations, notes, or schedules on the Drawings, or other paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as shown, noted, scheduled, and specified are used to help the reader locate the reference. Location is not limited.

C. Directed: Terms such as directed, requested, authorized, selected, approved, required, and permitted mean directed by the Architect, requested by the Architect, and similar phrases.

D. Approved: The term approved, when used in conjunction with the Architect's action on the Contractor's submittals, appilcations, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.

E. Regulations: The term regulations includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

F. Furnish: The term furnish means supply and deliver to the ProJect Site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. Install: The term install describes operations at the Project Site including the actual unloading, unpacking, assembly, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. Provide: The term provide means to furnish and install, complete and ready for the intended use.

I. Installer: An Installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.

1. The term experienced, when used with the term Installer, means having a minimum of 5 previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of the authority having jurisdiction.

2. Trades: Using terms such as carpentry does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as carpenter. It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

3. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for furfilling Contract requirements remains with the Contractor.

   a. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulaffons governing the Work. It is also not intended to interfere with local trade union Jurisdictional settlements and similar conventions.

J. Project Site is the space available to the Contractor for performing construction activities, either exclusively or in conJunction, with others performing other work as part of the ProJect. The extent of the ProJect Site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.

K. Testing Agencies: A testing agency is an independent entity engaged to perform specific inspections or tests, either at the ProJect Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 1 6-Division format and MASTERFORMAT numbering system.

B. Specification Content: This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:

1. Abbreviated Language: Langucae used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words impiled, but not stated, shall be interpolated as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.

2. Imperative and streamlined language is used generally in the Specifications.Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.

a. The words "shall be" are implied wherever a colon (:) is used within a sentence or phrase.

1.4 INDUSTRY STANDARDS

A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly Into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents.

C. Conflicting Requirements: Where compliance with 2 or more standards is specified and where the standards may establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different but apparently equal and uncertainties to the Architect for a decision before proceeding.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the Architect for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on the ProJect is required to be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source.

E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-generating organization, authority having jurisdiction, or other enffty applicable to the context of the text provision. Refer to the "Encyclopedia of Associations," published by Gale Research Co., available in most libraries.

F. Abbreviations/Symbols:
A list of abbreviations for commonly abbreviated terms used on the drawings is as follows:

A.

A	above	ADJ	adjustable
ABR	abrasive	ALT	alternate
A.B.	anchor bolt	ALUM	aluminum
ACO	acoustic	A.P.	access panel
ACOT	acoustic tile	APPROX.	approximately
A.D.	area drain	ARCH.	architectural
ADDT'L	additional	ASB.	asbestos

	ASPH.	architectural
	A.T.	asphalt tile
	@	at
	<	angle
B.	B	bath
	B.C.	brick courses
	B.D.	board
	B.D.R.M.	bedroom
	B.F.E.	base flood elevation
	B.L.	brick ledge
	B.M.	beam
	B.L.D.G.	building
	BLK.	block
	B.M.	bench mark
	B.O.	bottom of
	B.R.	brick
	BRDG.	bridging
	BRG.	bearing
	BSMT	basement
	BTM	bottom
	BTWN	between
	B.W.V.	back water valve
	C.	clock
	CAB	cabinet
	C.B.	concrete block
	C.B.C.	concrete block courses
	CEM	cement
	CER	ceramic
	C.F.M.	cubic foot per minute
	CHNL	chanel
	C.I.	cast Iron
	C.J.	construction joint
	CL	centerline
	CLG	ceiling
	CLO	closet
	CLR	clear
	C.M.U.	concrete masonry unit
	CNTLR	cantilever
	COL	colum
	COMP	compactor
	CONC	concrete
	CONN	connection
	CONS.	construction
	CONT.	continuous
	CONTR.	contractor
	CONV.	convector
	CRC	coil rolled copper
	CSK	countersink
	CT	ceramic tile
	CTL.J.	control joint
	CU.FT.	cubic feet
	C.W.	cold water
D.	DBL.	double
	DEG	degree
	DET	detail
	D.F.	drinking fountain
	DIA	diameter
	DIAG	diagonal
	DIM	dimension
	DMPFG	damproofing
	DMPR	damper
	DN	down
	DNG.RM	dining room
	DP	deep
	DPTH	depth
	DRN	drain
	D.S.	downspout
	DWG.	drawing
E.	EA.	each
	ED.	edging
	EF	each face
	E.I.P.	existing iron pipe .
	EL.	elavation
	ELEC.	electric
	ELEV.	elevation/elevator
	ENCL.	enclosure/enclose
	E.P.	electrical panel
	EQ	equal
	EQUIP	equiptment
	E.W.	each way
	E.W.C.	electric water cooler
	EXC.	excavated
	EXGR.	existing grade
	EXH.	exhaust
	EXP	expansion
	EXP.JT.	expansion joint
	EXST'G.	existing
	EXT	exterior
	E.W.H.	electric water heater
G.	G	gas
	GA	gauge
	GALV.	galvanized
	G.B.	grab bar
	GEN.	general
	G.I.	galvanized iron
	G.L.	glass
	G.L.L.	glue laminated lumber
	G.S.T.	glazed structural tile
	GR.	grade
	GRL.	grille
	GRND.	ground
	GYP.BD.	gypsum board
H.	H.	high
	H.B.	hose bibb
	H.B.C.	hose bibb cabinet
	H.D.G.	hot dipped galvanized
	HDR.	header
	HDWD	hardwood
	HDWE	hardware
	HGT	height
	HOR	horizontal
	HTD	heated

	HTR.	heater	N.	NIC	not in contract
	HVAC heating, ventalation,air cond.			NIP	new iron pipe
				NO	number
I	ID	inside diameter		NOM	nominal
	IE	invert elevation		NTS	not to scale
	I.M.	ice machine			
	IN	inch or inches	O.	O	oxygen
	INFO	information		OB GL	obscure glass
	INSUL.	insulation		O.C.	on center
	INT.	interior		O.D.	outside diameter
	INV.	invert		OPN'G	opening
				OPP	opposite
J.	JAN	janitor		ORN.	ornamental
	J.B.	junction box		OZ.	ounce
	JST	joist			
	JT	joint	P.	P.A.	public address
				P.H.	paper holder
K.	K.C.	keone's cement		P.L.	plate
	KIP(or K)	thousand pounds		PLAS	plaster
	KIT	kitchen		PLBG.	plumbing
				PLSTC.	plastic
L.	L.	line		PLYWD	plywood
	LAB	laboratory		PNTRY	pantry
	LAD	ladder		POL.	polished
	LAM	laminate		PR.	pair
	LAV.	lavoritory		P.R.V.	power roof ventalation
	LB	pound		P.S.F.	pounds per square foot
	LCTN	location		P.S.I.	pounds per square inch
	LIN	linear/linen		P.T.	pressure treated
	LINO	linoleum		PT.	paint
	LTG	lighting		PTN.	partition
	LVG.RM.	living room		PWDR	powder
	LVL	laminated veneer lumber		%	percent
	LWCB	lightweight concrete block			
M.	M.	mirror	Q.	Q.T.	quarry tile
	MACH.RM.	machine room		QTR.	quarter
	MAT'L	material			
	MAX	maximum	R.	R.	risers
	MECH.	mechanical		R. & S.	rod and shelf
	MECH.RM	mechanical room		RADN.	radiation
	MED. CAB.	medicine cabinet		RADR.	radiator
	MET	matal		R.A.G.	return air grill
	MEZ	mezzanine		R.D.	roof drain
	MFGR	manufacture		REF.	reference
	MH	manhole		REG.	register
	MICRO	microwave		REINF.	reinforcing
	MIN.	minimum		REQD.	required
	MR&S	mirror and shelf		REV.	revision/revised
	MISC.	miscellaneous		RF.	roof
	MLDG.	molding		RGH.	rough
	MO	masonry opening		RM.	room
	MRBL	marble		RND.	round
	MRBL. THR	marble threshold		R.O.	rough opening
	M.S.	mop sink		R.S.	rough sawn
	MTG.	mounting		RUB	rubber
	MTG.RM.	meeting room		R.W.L.	rain water leader
	MTL.	metal			
	MTL. THR.	metal threshold	S.	SCRNG.	screening
	MULL	mullion		S.D.	soap dispencer

	SECT.	section
	S.F.	square foot
	S.F.T.	structural facing tile
	SH	shower
	SHT.	sheet
	SIM	similar
	S.J.	steel joist
	SLR	sealer
	S.M.	section modules
	SPECS.	specifications
	S.Q.	square
	SQ. FT.	square foot
	S.R.	soap retainer
	S/S	stainless steel
	STD	standard
	STG	storage
	STIFF	stiffeners
	STL	steel
	STNLSS	stainless
	STRUCT	structural
	SUBFLR	subfloor
	SUSP.	suspended
	SYM.	symbol
T.	T.	tread (or treads)
	T&B	top and bottom
	T&G	toungr and grouve
	T.B.	towel bar
	T.C.	trash compactor
	TELE	telephone
	TER	terrazzo
	T.H.	test hole
	THK	thickness
	THR.	threshold
	THRU	through
	TL	tile
	T.O.	top of
	T.P.H.	tissue paper holder
	TRAN.	transom
	T.V.	television
	TYP.	typical
U.	U.H.	unit heater
	U.O.N.	unless otherwise noted
	UR.	urinal
	U.V.	unit ventilator
V.	VERT	vertical
	VEST	vestibule
	VOL	volume
	V.O.P.	vitrified clay tile pipe
	VT.	vent
	V.T.	vinyl tile
W.	W.	washing machine
	W/	with
	W.B.	washer box
	W.C.	water closet
	WD.	wood
	WDW	window
	W.F.	wide flange beam
	W.G.L.	wire glass
	W.H.	water heater
	W.H.F.	whole house fan
	W.I.	wrought iron
	W/O	without
	W.P.	waterproof
	WSCT	wainscot
	WT	weight
	W.W.F.	welded wire fabric
X.	X by (as 6' x 8')	
	X with (hardware)	

SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUBMITTALS SUMMARY

A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including;

1. Contractor's construction schedule.
2. Submittal schedule.
3. Shop Drawings.
4. Product Data.
5. Samples.

B. Administrative Submittals: Refer to other Division-1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:

1. Permits.
2. Applications for payment.
3. Insurance certificates.

C. The Schedule of Values submittal is included in Section "Applications for Payment."

D. Inspection and test reports are included in Section "Quality Control Services."

1.3 SUBMITTAL PROCEDURES

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.

2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.

a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

3. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.

a. Allow two weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Architect will promptly advise the Contractor when a submittal being processed must be delayed for coordination.

b. If an intermediate submittal is necessary, process the same as the initial submittal.

c. Allow two weeks for reprocessing each submittal.

d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.

B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.

1. On the transmittal Record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar- chart type Contractor's construction schedule. Submit within 30 days of the date established for "Commencement of the Work".

1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values".

2. Within each time bar indicate estimated completion percentage in 10 percent increments. As Work progresses, place a contrasting mark in each bar to indicate Actual Completion.

3. Prepare the schedule on a sheet, or series of sheets, of stable transparency. or other reproducible media, of sufficient width to show data for the entire construction period.

4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.

5. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.

6. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures necessary for certification of Substantial Completion.

B. Work Stages: Indicate important stages of construction for each major portion of the Work including testing and installation.

C. Area Separations: Provide a separate time bar to identify each major construction area for each major portion of the Work. Indicate where each element in an area must be sequenced or Integrated with other activities.

D. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the project meeting room and temporary field office.

1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

E. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.5 SUBMITTAL SCHEDULE

A. After development and acceptance of the Contractor's construction schedule, prepare a complete schedule of submittals. Submit the schedule within 10 days of the date required for establishment of the Contractor's construction schedule.

B. Distribution: Following response to initial submittal, print and distribute copies
to the Architect, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the project meeting room and field office.

C. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1 .6 SHOP DRAWINGS

A. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.

B. Shop Drawings include fabrication and installation drawings, setting diagrams,schedules, patterns, templates and similar drawings. Include the following information:

1. Dimensions.

2. Identification of products and materials included.

3. Compliance with specified standards.

4. Notation of coordination requirements.

5. Notation of dimensions established by field measurement.

6. Sheet Size: Except for templates, patterns and similar full- size Drawings, submit Shop Drawings on sheets at least 8-1/2" x 1 1" but no larger than 36" x 48".

7. Initial Submittal: Submit 2 blue- or black-line prints for the Architect's review: one will be returned.

8. Final Submittal: Submit 3 blue- or black-line prints: submit 5 prints where required for maintenance manuals. 2 prints will be retained: the remainder will be returned.

9. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.

1.7 PRODUCT DATA

A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings."

1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:

a. Manufacturer's printed recommendations.

b. Compliance with recognized trade association standards.

c. Compliance with recognized testing agency standards.

d. Application of testing agency labels and seals.

e. Notation of dimensions verified by field measurement.

f. Notation of coordination requirements.

2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.

3. Preliminary Submittal: Submit a preliminary single-copy of Product Data where selection of options is required.

4. Submittals: Submit 2 copies of each required submittal: submit 4 copies where required for maintenance manuals. The Architect will retain one, and will return the other marked with action taken and corrections or modifications required.

   a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

5. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.

   a. Do not proceed with installation until an applicable copy of Product Data applicable is in the installer's possession.

   b. Do not permit use of unmarked copies of Product Data in connection with construction.

1.8 SAMPLES

A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.

1. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to match the Architect's Sample. Include the following:

   a. Generic description of the Sample.
   b. Sample source.
   c. Product name or name of manufacturer.
   d. Compliance with recognized standards.
   e. Availability and delivery time.

2. Submit Samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.

   a. Where variation in color, pattern, texture or other characteristics are inherent in the material or product represented, submit multiple units (not less than 3), that show approximate limits of the variations.

3. Preliminary submittals: Where Samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit a full set of choices for the material or product.

   a. Preliminary submittals will be reviewed and returned with the Architect's mark indicating selection and other action.

4. Submittals: Except for Samples Illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 3 sets; one will be returned marked with the action taken.

5. Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout the course of construction.

   a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

   b. Sample sets may be used to obtain final acceptance of the construction associated with each set.

B. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the work. Show distribution on transmittal forms.

1. Field Samples specified in individual Sections are special types of Samples. Field Samples are full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the Work will be judged.

   a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.10 ARCHITECT'S ACTION

A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect will review each submittal, mark to indicate action taken, and return promptly.

1. Compliance with specified characteristics is the Contractor's responsibility.

B. Action Stamp: The Architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:

1. Final Unrestricted Release: Where submittals are marked "Approved," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.

2. Final-But-Restricted Release: When submittals are marked "Approved as Noted," that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.

3. Returned for Resubmittal: When submittal is marked "Not Approved. Revise and Resubmit," do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare anew submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.

   a. Do not permit submittals marked "Not Approved, Revise and Resubmit" to be used at the project site, or elsewhere where work is in progress.

4. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Action Not Required".

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION (Not Applicable).

END OF SECTION 01300

SECTION 01400 - QUALITY CONTROL SERVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for quality control services.

B. Quality control services Include inspections and tests and related actions including reports, performed by independent agencies, governing authorities, and the Contractor. They do not include Contract enforcement activities performed by the Architect.

C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.

D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.

1. Specific quality control requirements for individual construction activities are specified in the Sections that specify those activities. Those requirements, including inspections and tests, cover production of standard products as well as customized fabrication and installation procedures.

2. Inspections, test and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Document requirements.

3. Requirements for the Contractor to provide quality control services required by the Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 RESPONSIBILITIES

A. Owner Responsibilities: The Owner will provide inspections, tests and similar quality control services specified to be performed by independent agencies and not by the Contractor, except where they are specifically indicated as the Contractor's responsibility or are provided by another identified entity. Costs for these services are not included in the Contract Sum.

1. The Owner will employ and pay for the services of an independent agency, testing laboratory or other qualified firm to perform services which are the Owner's responsibility.

B. Duties of the Testing Agency: The independent testing agency engaged to perform inspections, sampling and testing of materials and construction specified in individual Specification Sections shall cooperate with the Architect and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.

1. The agency shall notify the Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

2. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the work.

3. The agency shall not perform any duties of the Contractor.

C. Coordination: The Contractor and each agency engaged to perform inspections, tests and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition the Contractor and each agency shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.

1. The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities.

1.4 SUBMITTALS

A. The independent testing agency shall submit a certified written report of each inspection, test or similar service, to the Architect, in duplicate. unless the Contractor is responsible for the service. If the Contractor is responsible for the service, submit a certified written report of each inspection, test or similar service through the Contractor, in duplicate.

1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.

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

a. Date of issue.
b. Project title and number.
c. Name, address and telephone number of testing agency.
d. Dates and locations of samples and tests or inspections.
e. Names of individuals making the inspection or test.
f. Designation of the Work and test method.
g. Identification of product and Specification Section.
h. Complete inspection or test data.
i. Test results and an interpretations of test results.
j. Ambient conditions at the time of sample-taking and testing.
k. Comments or professional opinion as to whether inspected or tested work complies with Contract Document requirements.
l. Name and signature of laboratory inspector.
m. Recommendations on retesting.

1.5 QUALITY ASSURANCE

A. Qualification for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, which are prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.

1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the State in which the Project is located.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: Upon completion of inspection, testing, sample-taking and similar services. Repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for "Cutting and Patching."

B. Protect construction exposed by or for quality control service activities, and protect repaired construction.

C. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

END OF SECTION 01400

SECTION 01500 - TEMPORARY FACILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 specification Sections, apply to this Section.

1 .2 SUMMARY

A. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.

B. Temporary utilities required include but are not limited to:

1. Water service and distribution.
2. Temporary electric power and light.
3. Telephone service.

C. Temporary construction and support facilities required include but are not limited to:

1. Temporary heat.
2. Field office and storage sheds.
3. Temporary roads and paving.
4. Sanitary facilities, Including drinking water.
5. Temporary enclosures.
6. Temporary Project identification signs and bulletin boards.
7. Waste disposal services.
8. Rodent and pest control.
9. Construction aids and miscellaneous services and facilities.

1.3 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations if authorities having Jurisdiction, including but not limited to:

1. Building Code requirements.
2. Health and safety regulations.
3. Utility company regulations.
4. Police, Fire Department and Rescue Squad rules.
5. Environmental protection regulations.

B. Standards: Comply with NFPA Code 241, "Building Construction and Demolition Operations", ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", and NECA Electrical Design Library "Temporary Electrical Facilities."

1. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared Jointly by AGC and ASC, for industry recommendations.

2. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National ElectricCode (NFPA 70).

C. Inspections: Arrange for authorities having Jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.4 PROJECT CONDITIONS

A. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

PART 2 -PRODUCTS

2.1 - MATERIALS

A. General: Provide new materials; if acceptable to the Architect, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.

B. Lumber and Plywood: Comply with requirements in Division-6 Section "Rough Carpentry."

1. For Job-built shops and sheds within the construction area, provide UL labeled, fire treated lumber and plywood for framing, sheathing and siding.
2. For signs and directory boards, provide exterior type, Grade B-B High Density Concrete Form Overlay Plywood conforming to PS-1, of sizes and thickness indicated.

C. Paint: Comply with requirements of Division-9 Section "Finish Painting."

1. For sign panels and applying graphics, provide exterior grade alkyd gloss enamel over exterior primer.
2. For interior walls of temporary offices, provide two coats interior latex flat wall paint.

D. Tarpaulins: Provide waterproof, fire-resistant, UL labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures provide translucent nylon reinforced laminated polyethylene or polyvinyl chloride fire retardant tarpaulins.

E. Water: Provide potable water approved by local health authorities.

2.2 EQUIPMENT

A. General: Provide new equipment; if acceptable to the Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.

B. Water Hoses: Provide 3/4~ heavy-duty, abrasion-resistant, flexible rubber hoses
100 ft.long, with pressure rating greater than the maximum pressure of the water distribution system; provide adjustable shut-off nozzles at hose discharge.

C. Electrical Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.

D. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities ore in progress.

E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.

F. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM or another recognized trade association related to the type of fuel being consumed.

G. Temporary Offices: Provide prefabricated or mobile units or similar job-built construction with lockable entrances, operable windows and serviceable finishes.

H. Temporary Toilet Units: Provide self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material.

1. First Aid Supplies: Comply with governing regulations.

I. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide hand-carried. portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.

1. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where the company provides only part of the service. provide the remainder with matching, compatible materials and equipment: comply with the company's recommendations.

1. Arrange with the company and existing users for a time when service can be interrupted, where necessary, to make connections for temporary services.

2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.

3. Obtain easements to bring temporary utilities to the site, where the Owner's easements cannot be used for that purpose.

4. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner or Architect, and will not be accepted as a basis of claims for a Change Order.

B. Water Service: Install water service and distribution piping of sizes and pressures adequate for construction until permanent water service is in use.

1. Sterilization: Sterilize temporary water piping prior to use.

C. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload protected disconnects, automatic ground-fault interrupters and main distribution switch gear.

1. Except where overhead service must be used, install electric power service underground.

2. Power Distribution System: Install wiring overhead, and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts. AC 20 ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.

D. Temporary Lighting: Whenever overhead ceiling has been installed, provide temporary lighting with local switching.

1. Install and operate temporary lighting that will fulfill security and protection requirements, without operating the entire system, and will provide adequate illumination for construction operations and traffic conditions.

E. Temporary Telephones: Provide temporary telephone service for all personnel engaged in construction activities, throughout the construction period. Install telephone on a separate line for each temporary office and first aid station.

3.3 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

A. Locate field offices, storage sheds, sanitary facilities and other temporary construction and support facilities for easy access.

1. Maintain temporary construction and support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.

B. Provide incombustible construction for offices, shops and sheds located within the construction area, or within 30 feet of building lines. Comply with requirements of NFPA 241.

C. Temporary Heat: Provide temporary heat required by construction activities, for curing or drying of completed installations or protection of installed construction from adverse effects of low temperatures or high humidity. Select safe equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce the ambient condition required and minimize consumption of energy.

D. Heating Facilities: Except where use of the permanent system is authorized, provide vented self-contained LP gas or fuel heaters with individual space thermostatic control.

1 . Use of gasoline-burning space heaters, open flame, or salamander type heating units is prohibited.

E. Field Offices: Provide an insulated, weather tight temporary office of sufficient size to accommodate required office personnel at the project site. Keep the office clean and orderly for use for small progress meetings.

F. Storage and fabrication Sheds: Install storage and fabrication sheds, sized, furnished and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on the site.

G. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.

H. Dewatering Facilities and Drains: For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of applicable Division-2 Sections. Where feasible, utilize the same facilities. Maintain the site, excavations and construction free of water.

I. Temporary Enclosures: Provide temporary enclosure for protection of construction in progress and completed, from exposure, foul weather, other construction operations and similar activities.

1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.1.
2. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 square feet or less with plywood or similar materials.
3. Close openings through floor or roof decks and horizontal surfaces with loadbearing wood-framed construction.
4. Where temporary wood or plywood enclosure exceeds 100 square feet in area, use UL-labeled fire-retardant treated material for framing and main sheathing.

J. Project Identification and Temporary Signs: Prepare project identification and other signs of the size indicated; install signs to inform the public and persons seeking entrance to the Project. Support on posts or framing of preservation treated wood or steel. Do not permit installation of unauthorized signs.

1. Project Identification Signs: Engage an experienced sign painter to apply graphics. Comply with details indicated.
2. Temporary Signs: Prepare signs to provide directional information to construction personnel and visitors.

K. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.

L. Rodent and Pest Control: Before deep foundation Work has been completed, retain a local exterminator or pest control company to recommend practices to minimize attraction and harboring of rodents, roaches and other pests. Employ this service to perform extermination and control procedures at regular intervals so the Project will be relatively free of pests and their residues at Substantial Completion. Perform control operations in a lawful manner using environmentally safe materials.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations."

1. Locate fire extinguishers where convenient and effective for their intended purpose.

2. Store combustible materials in containers in fire-safe locations.

3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.

4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.

B. Barricades, Warning Signs and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed provide lighting, including flashing red or amber lights.

C. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.

1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

D. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.5 OPERATION, TERMINATION AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.

C. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation and similar facilities on a 24-hour day basis where required to achieve indicated results and to avoid possibility of damage.

1. Protection: Prevent water filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

2. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.

3. Materials and facilities that constitute temporary facilities are property of the Contractor. The Owner reserves the right to take possession of Project identification signs.

4. At Substantial Completion, clean and renovate permanent facilities that have been used during the construction period, including but not limited to:

   a. Replace air filters and clean inside of ductwork and housings.
   b. Replace significantly worn parts and parts that have been subject to unusual operating conditions.
   c. Replace lamps that are burned out or noticeably dimmed by substantial hours of use.

END OF SECTION 01500

SECTION 01600 - MATERIALS AND EQUIPMENT
PART 1 - GENERAL

1 .1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1 .2 SUMMARY

A. This Section specifies administrative and procedural requirements governing Contractor's selection of products for use in the Project.

B. The Contractor's Construction Schedule and the Schedule of Submittals are included under Section "Submittals."

C. Standards: Refer to Section "Definitions and Standards" for applicability of industry standards to products specified.

D. Administrative procedures for handling requests for substitutions made after award of the Contract are included under Section "Product Substitutions."

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well recognized meanings in the construction industry.

1. "Products" are items purchased for incorporation In the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

a. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature, that is current as of the date of the Contract Documents.

2. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

1.4 QUALITY ASSURANCE

A. Source limitations: To the fullest extent possible, provide products of the same kind, from a single source.

1. When specified products are available only from sources that do not or cannot produce a quantity adequate to complete project requirements in a timely manner, consult with the Architect for a determination of the most important product qualities before proceeding. Qualities may include attributes relating to visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources that produce products that possess these qualities, to the fullest extent possible.

B. Compatibility of Options: When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

C. Foreign Product Limitations: Except under one or more of the following conditions provide domestic products, not foreign products, for inclusion in the Work:

1. No available domestic product complies with the Contract Documents.

2. Domestic products that comply with Contract Document are only available at prices or terms that are substantially higher than foreign products that also comply with the Contract Documents.

D. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.

2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface which is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

a. Name of product and manufacturer.
b. Model and serial number.
c. Capacity.
d. Speed.
e. Ratings.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.

1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.

2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.

3. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.

4. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.

5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.

6. Store heavy materials away from the project structure in a manner that will not endanger the supporting construction.

7. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.

1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.

2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

3. Where products or manufacturers are specified by name, accompanied by the term "or equal," or "or approved equal" comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:

1. Non-Proprietary Specifications: When the Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

2. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise compiles with Contract requirements.

3. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.

    a. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.

4. Compliance with Standards, Codes and Regulations: Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.

5. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.

    a. Where no product available within the specified category matches satisfactorily and also complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category, or for noncompliance with specified requirements.

6. Visual Selection: Where specified product requirements include the phrase as selected from manufacturer's standard colors, patterns, textures or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern and texture from the product line selected.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS:

A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.

1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION 01600

SECTION 01631 - PRODUCT SUBSTITUTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling requests for substitutions made after award of the Contract.

B. The Contractor's Construction Schedule and the Schedule of Submittals are included under Section "Submittals."

C. Standards: Refer to Section "Definitions and Standards" for applicability of industry standards to products specified.

D. Procedural requirements governing the Contractor's selection of products and product options are included under Section "Materials and Equipment."

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.

B. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by each prime Contractor after award of the Contract are considered requests for "substitutions." The following are not considered substitutions:

1. Revisions to Contract Documents requested by the Owner or Architect.

2. Specified options of products and construction methods included in Contract Documents.

3. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.4 SUBMITTALS

A. Substitution Request Submittal: Requests for substitution will be considered if received within 45 days after commencement of the Work. Requests received more than 45 days after commencement of the Work may be considered or rejected at the discretion of the Architect.

1. Submit 3 copies of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required for Change Order proposals.

2. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:

   a. Product Data, Including Drawings and descriptions of products, fabrication and installation procedures.

   b. Samples, where applicable or requested.

   c. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.

   d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors, that will become necessary to accommodate the proposed substitution.

   e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.

   f. Cost information, including a proposal of the net change, if any in the Contract Sum.

   g. Certification by the Contractor that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time, that may subsequently become necessary because of the failure of the substitution to perform adequately.

3. Architect's Action: Within one week of receipt of the request for substitution, the Architect will request additional Information or documentation necessary for evaluation of the request. Within 2 weeks of receipt of the request, or one week of receipt of the additional information or documentation, which ever is later, the Architect will notify the Contractor of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute cannot be made or obtained within the time allocate, use the product specified by name. Acceptance will be in the form of a Change Order.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Conditions: The Contractor's substitution request will be received and considered by the Architect when one or more of the following conditions are satisfied, as determined by the Architect: otherwise requests will be returned without action except to record noncompliance with these requirements.

1. Extensive revisions to Contract Documents are not required.
2. Proposed changes are in keeping with the general intent of Contract Documents.
3. The request is timely, fully documented and properly submitted.
4. The request is directly related to an "or equal" clause or similar language in the Contract Documents.
5. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
7. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or separate Contractors, and similar considerations.
8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.
9. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.
10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provide the required warranty.
11. Where a proposed substitution involves more than one prime Contractor. each Contractor shall cooperate with the other Contractors involved to coordinate the Work, provide uniformity and consistency, and to assure compatibility of products.

B. The Contractor's submittal and Architect's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01631

SECTION 01700- PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract. including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:

1. Inspection procedures.
2. Operating and maintenance manual submittal.
3. Submittal of warranties.
4. Final cleaning.

B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions-2 through -16.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.

1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.

   a. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.

2. Advise Owner of pending insurance change-over requirements.
3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.
5. Deliver tools, spare parts, extra stock, and similar items.
6. Make final change-over of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of change-over in security provisions.
7. Complete start-up testing of systems, and instruction of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.
9. Complete final clean up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.

B. Inspection Procedures: On receipt of a request for inspection, the Architect will either proceed with inspection or advise the prime Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection, or advise the prime Contractor of construction that must be completed or corrected before the certificate will be issued.

1. The Architect will repeat inspection when requested and assured that the Work has been substantially completed.

2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE

A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. Use exceptions in the request.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.

2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.

3. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Architect.

4. Submit final meter readings for utilities. a measured record of stored fuel, and similar data as of the date of Substantial Completion, or when the Owner took possession of and responsibility for corresponding elements of the Work.

5. Submit consent of surety to final payment.

6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

7. Submit record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey, and similar final record information.

B. Reinspection Procedure: The Architect will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Architect.

1. Upon completion of reinspection, the Architect will prepare a certificate of final acceptance, or advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.

A. Plastic Foam Joint Fillers: Preformed, compressible, resilient, nonstaining, non-waxing, non-extruding strips of flexible plastic foam of material indicated below and of size, shape, and density to control sealant depth and otherwise contribute to producing optimum sealant performance:

1. Closed-cell polyethylene foam, nonabsorbent to liquid water and gas, non-outgassing in unruptured state.

B. Elastomeric Tubing Joint Fillers: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, capable of remaining resilient at temperatures down to -26 deg F (-32 deg C). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and otherwise contribute to optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible Joint filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable,

2.6 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction Joint sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming in any way Joint substrates and adjacent nonporous surfaces, and formulated to promote optimum adhesion of sealants with joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with Joint sealants and surfaces adjacent to joints.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance. Do not proceed with installation of joint sealants until unsatisfactory conditions have been corrected.

C. Available Products: Subject to compliance with requirements, latex Joint sealants that may be incorporated in the Work include, but are not limited to, the following:

1. Acrylic-Emulsion Sealant:
   a. "AC-20," Pecora Corp.
   b. "Sonolac," Sonneborn Building Products Div., ChemRex, Inc.
   c. "Tremco Acrylic Latex 834," Tremco, Inc.

2.4 ACOUSTICAL JOINT SEALANTS

A. Acoustical Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following requirements:

1. Product is effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies per ASTM E 90.

2. Product has flame spread and smoke developed ratings of less than 25 per ASTM E 84.

B. Acoustical Sealant for Concealed Joints: Manufacturer's standard, nondrying, non-hardening, non-skinning, non-staining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.

C. Available Products: Subject to compliance with requirements, acoustical Joint sealants that may be incorporated in the Work include, but are not limited to, the following:

1. Acoustical Sealant:
   a. "SHEETROCK Acoustical Sealant," United States Gypsum Co.
   b. "AC-20 FTR Acoustical and Insulation Sealant," Pecora Corp.

2. Acoustical Sealant for Concealed Joints:
   a. "BA-98," Pecora Corp.
   b. "Tremco Acoustical Sealant," Tremco, Inc,

2.5 JOINT SEALANT BACKING

General: Provide sealant backings of material and type that are nonstaining: are compatible with joint substrates, sealants, primers and other Joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than allowed by joint sealant manufacturer for application indicated.

C. Joint Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.

PART 2 PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with Joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

B. Colors: Provide color of exposed joint sealants to comply with the following:

1. Provide selections made by Architect from manufacturer's full range of standard colors for products of type indicated.

2.2 ELASTOMERIC JOINT SEALANTS

A. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing elastomeric sealants that comply with ASTM C 920 and other requirements indicated on each Elastomeric Joint Sealant Data Sheet at end of this Section, including those requirements referencing ASTM C 920 classifications for Type, Grade, Class, and Uses.

B. Available Products: Subject to compliance with requirements, elastomeric sealants that may be incorporated in the Work include, but are not limited to, the products specified in each Elastomeric Sealant Data Sheet.

2.3 LATEX JOINT SEALANTS

A. General: Provide manufacturer's standard one-part, nonsag, mildew-resistant, paintable latex sealant of formulation indicated that is recommended for exposed applications on interior that accommodates Indicated percentage change in joint width existing at time of installation without failing either adhesively or cohesively.

B. Acrylic-Emulsion Sealant: Provide product complying with ASTM C 834 that accommodates joint movement of not more than 5 percent in both extension and compression for a total of 10 percent.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that have been produced and installed to establish and to maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.

B. Provide joint sealants for interior applications that have been produced and installed to establish and maintain airtight continuous seals that are water resistant and cause no staining or deterioration of joint substrates.

1.4 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data from manufacturers for each joint sealant product required.

C. Certificates from manufacturers of Joint sealants attesting that their products comply with specification requirements and are suitable for the use indicated.

1.5 QUALITY ASSURANCE

A. Single Source Responsibility for Joint Sealant Materials: Obtain joint sealant materials from a single manufacturer for each different product required.

1.6 DELIVERY, STORAGE. AND HANDLING

A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multi-component materials.

B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Conditions: Do not proceed with installation of Joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer.

2. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer or below 40 deg F (4.4 deg C).

3. When joint substrates are wet.

SECTION 07901 - JOINT SEALANTS

PART 1 - GENERAL

1 .1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes joint sealants for the following locations:

1. Exterior joints in vertical surfaces and non-traffic horizontal surfaces as indicated below:

a. Joints between different materials listed above.
b. Perimeter joints between materials listed above and frames of doors and windows.
c. Other joints as indicated.

2. Exterior joints in horizontal traffic surfaces as indicated below:

a. Control, expansion, and isolation Joints in cast-in-place concrete slabs.
b. Joints between different materials listed above.
c. Other joints as indicated.

3. Interior joints in vertical surfaces and horizontal non-traffic surfaces as indicated below:

a. Perimeter joints of exterior openings where indicated.
b. Perimeter joints between interior wall surfaces and frames of interior doors, windows, and elevator entrances.
c. Perimeter joints of toilet fixtures.
d. Other joints as indicated.

4. Interior Joints in horizontal traffic surfaces as indicated below:

a. Control and expansion joints in cast-in-place concrete slabs.
b. Other joints as indicated.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 7 Section "Flashing and Sheet Metal" for sealing Joints related to flashing and sheet metal for roofing.

2. Division 9 Section "Gypsum Drywall" for sealing concealed perimeter joints of gypsum board partitions to reduce sound transmission.

SECTION 07630 - ROOFING SPECIALTIES

PART 1 - GENERAL

Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 - Specification sections apply to work specified in this section.

1.1 DESCRIPTION

A. Work Included

1. Gutters and Downspout
2. Aluminum Fascia and Soffits

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experiences in necessary crafts and who are completely familiar with specified requirements and methods needed for proper performance of the work.

B. Scope

1. Furnish and install complete pre-finished aluminum gutter and downspout system including all corners, elbows, sealant, and accessories.

2. Furnish and install complete prefinished aluminum fascia and soffits, including all trim and accessories.

C. General

1. Gutters and downspout shall meet or exceed American Architectural Manufacturer's Association (AAMA) Specification 1405.1

PART 2- PRODUCTS

2.1 MATERIAL

A. Gutters and Downspout shall be Alcoa System 320 or equal, continuous aluminum sheet gutters .027, downspout .019, and accessories .019. Install a perforated strainer at each downspout.

1. Coating: Baked on enamel. Color to be selected from standard colors.

2. Installation: Gutters and downspout shall be installed in accordance with manufacturer's written instructions, straight, and true without dents or other defects. Touch paint scratches or chipped paint, and clean at completion.

B. Aluminum Soffits

1. Material: Alcoa Building Products, or approved equal 6" V groove aluminum soffit and accessories, 0.019" Gauge.

2. Coating: 2 coats baked on high performance acrylic.

3. Installation: Install in accordance with manufacturer's written instructions.

4. At completion, clean fascia.

G. Hem all raw edges on flashings.

3.04 CLEANING

A. Dispose of excess materials and debris from the job site.

B. Leave panels clean and free from fringes, marks, grease and stains.

C. Thoroughly clean and touch-up any areas scarred during installation with a touch-up paint approved by panel manufacturer. Only minor scratches and fastener heads shall be touched-up; any other damaged material shall be replaced.

END OF SECTION

D. Underlayment: 30 lb. roofing felt, horizontally lapped, staggered and applied from eave to ridge.

E. Plywood deck: 3/4-in. (16mm) nominal thickness.

F. Flashing and accessories: fabricated from matching PAC-CLAD Kynar 500 Aluminum in accordance with standard SMACNA procedures and details.

2.3 FABRICATION

A. Panels 40-ft. (12.2m) and less will be in one continuous length.

B. Panels fabricated by a portable roll former will not be approved.

C. Fabricate trim and flashings from same material as the roof system.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspect roof deck to verify deck is even, smooth, sound and free of depressions, waves or projections and properly sloped.

B. Installer shall examine all substrates on which work is to be applied. Any surface not suitable for application of metal panel system shall be conveyed in writing to the architect.

3.2 PREPARATION

A. Provide horizontal layers of 30# roofing felt parallel to the eave. Shingle rows of felt from eave to ridge with a 6-in. overlap and stagger felt ends.

3.3 INSTALLATION

A. Conform to standards set forth in the SMACNA architectural sheet metal manuals.

B. Install panel plumb, level and straight with seams and ribs parallel, conforming to the design as indicated.

C. Install panels so that they are weathertight - without waves, warps, buckles or distortions - and allow for expansion and contraction. Exercise care in handling panels to prevent surface damage.

D. Caulk all flashing and panel joints that require caulking to prevent water penetration.

E. Ribbed pans will be vertically broken under ridges and hooked at the eaves to insure weathertightness.

F. Remove masking on trim flashings immediately after installation.

D. Water Infiltration: No evidence of water penetration at an inward static air pressure differential of not less than 6.24 PSF and not more than 12.00 PSI as per ASTM E 331.

E. Factory fabricated components shall be crated in cartons marked with the manufacturer's name or trademark and a UL 90 label where applicable.

F. Field measurements will be taken prior to fabrication to assure symmetry.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, protect and handle products to site under provisions of Section 01600.

B. Stack prefinished material to prevent twisting, bending, abrasion, scratching and denting. Elevate one end of each skid to allow for moisture run-off.

C. Prevent contact with material that may cause corrosion, discoloration or staining.

D. Store material in a safe, dry, above-ground location.

E. Trim with strippable film shall not be exposed to direct sunlight or extreme heat.

F. Protect all materials and installations from damage by other trades.

G. Do not all material storage or traffic on installed panel surface.

1.8 WARRANTY

A. Panel applicator shall provide a two-year weathertightness warranty.

B. Panel manufacturer shall provide a 20-year non-prorated warranty for the paint finish covering cracking, checking, blistering, peeling, flaking, chipping, chalking and fade.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Petersen Aluminum Corporation, 1005 Tonne Rd., Elk Grove, IL 60007.

2.2 MATERIALS

A. PAC-CLAD .032 Aluminum Redi Roof standing seam panels with a 70% Kynar 500 (PVF_2) finish. Panels to be 12-in. (300mm) on center with a minimum seam height of 1-1/2". Underside of panels to be protected by a polyester washcoat with a dry film thickness of 0.3 mils and panel color to be selected from Petersen Aluminum's standard color chart.

B. Concealed fastening clips: [6061-T6 extruded aluminum), spaced 18-in on center.

C. Fasteners: 1-in. #10 wood screw with a #2 Phillips head size and a pancake head.

SECTION 07612-STANDING SEAM METAL ROOFING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Standing Seam Metal Roofing.

B. Related Flashing and Accessories.

1.2 RELATED SECTIONS

A. Section 06100 - Rough Carpentry: Plywood and Underlayment.

B. Section 07210 - Insulation.

C. Section 07901- Joint Sealers: Sealants and Caulking.

1.3 REFERENCES

A. ASTM B 209: Aluminum and Aluminum Alloy Sheet and Plate.

B. ASTM E 283: Static Air Infiltration.

C. ASTM E 331: Static Water Infiltration.

D. SMACNA: Architectural Sheet Metal Manual.

1.4 SYSTEM DESCRIPTION

A. Factory formed, prefinished standing seam metal roofing system with concealed fasteners over solid substrate. Perimeter trim to match.

B. Panels manufactured in continuous lengths up to 40-ft.

1.5 SUBMITTALS

A. Shop drawings showing layout of panels, details of edge conditions, joints, corners, panel profiles, clips, trim, flashing and special details shall be submitted for approval.

B. Samples illustrating gauge, finish, color and texture of materials to be used shall be submitted for approval.

C. Panel manufacturer shall submit certification that the panels will be tension leveled during the roll forming process.

D. Provide verification that the standing seam panels are factory roll formed and UL 90 rated.

1.6 QUALITY ASSURANCE

A. Panels adhere to the previously mentioned criteria as proven by the submittals.

B. Underwriters Laboratories wind uplift resistance classification: Roof assembly shall be classified as class UL 90 as defined by UL 580 specifications.

C. Static Air Infiltration: Completed roof system shall have a maximum of 0.06 CFM/sq. ft. with 6.24 PSF air pressure differential as per ASTM E283

3.2 CLEANING AND PROTECTION

A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.

B. Protection: Advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction to ensure that work will be without damage or deterioration other than natural weathering at time of Substantial Completion.

3.3 WARRANTY

A. Provide standard manufacturers standard 5-year warranty on APCO flashing.

END OF SECTION 07600

2.2 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" and other recognized industry practices. Fabricate for waterproof and weather resistant performance, with expansion provisions for running work, efficient to permanently prevent leakage, damage, or deterioration of the work. Form work to fit substrates. Comply with material manufacturer instructions and recommendations for forming material. Form exposed sheet metal work without excessive oil-canning, buckling, and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.

B. Seams: Fabricate nonmoving seams in sheet metal with flat-lock seams. For metal other than aluminum, tin edges to be seamed, form seams, and solder.

C. Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used or would not be efficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within Joints).

D. Sealant Joints: Where movable, nonexpansion 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.

E. Separations: Provide for separation of metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.

PART 3 EXECUTION

3.1 INSTALLATION REQUIREMENTS

A. General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations and with SMACNA "Architectural Sheet Metal Manual." Anchor units of work securely In place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, Joints, and seams that will be permanently watertight and weatherproof.

B. Nail flanges of expansion Joint units to curb nailers, at maximum spacing of 6 inches o.c. Fabricate seams at joints between units with minimum 3-inch overlap, to form a continuous, waterproof system.

C. Install AFCO copper fabric at heads and sills and thru wall as per manufacturers requirements.

D. Install copper at all exposed areas.

SECTION 07600- FLASHING AND SHEET METAL

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Metal counter flashing and base flashing .
2. Metal wall flashing and expansion joint.
3. Miscellaneous sheet metal accessories.
4. Weep flashing
5. Copper flashing

1.3 PROJECT CONDITIONS

A. Coordinate work of this section with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance and durability of work and protection of materials and finishes.

PART 2 PRODUCTS

2.1 SHEET METAL FLASHING AND TRIM MATERIALS

A. Sheet Aluminum: ASTM B 209, alloy 3003, temper H14, AA-C22A41. Bright aluminum finish: 0.032-inch thick (20 gage) except as otherwise indicated.

B. Weep Flashing: Copper laminated concealed flashing AFCO copper fabric - A full sheet of 5 oz. copper bonded to and between 2 layers of asphalt impregnated fiberglass fabric.

C. Copper: 20 oz. Copper flashing. Use at all exposed areas.

D. Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with tape of type recommended by vapor retarder manufacturer to create an airtight seal between penetrating objects and vapor retarder.

E. Repair any tears or punctures in vapor retarders immediately before concealment by other work. Cover with tape or another layer of vapor retarder.

3.6 PROTECTION

A. General: Protect installed insulation and vapor retarders from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation will be subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 07210

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering insulation products that may be incorporated in the work include, but are not limited to, the following:

1. Manufacturers of Glass Fiber Insulation:

a. CertainTeed Corp.
b. Manville: Building Insulations Div., Manville Sales Corp.
c. Owens/Corning Fiberglass Corp.

2.2 INSULATING MATERIALS

A. General: Provide insulating materials that comply with requirements and with referenced standards.

1. Preformed Units: Sizes to fit applications indicated, selected from manufacturer's standard thicknesses, widths, and lengths.

B. Faced Mineral Fiber Blanket/Batt Insulation: Thermal insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 for Type ill, Class A (blankets with reflective vapor-retarder membrane facing with flame spread of 25 or less); foil-scrim-kraft or foil-scrim-polyethylene vapor retarder membrane on one face, and as follows:

1. Mineral Fiber Type: Fibers manufactured from glass or slag.
2. Surface Burning Characteristics: Maximum flame spread and smoke developed values of 25 and 50, respectively.

3. Flanged Units: Provide blankets/batts fabricated with facing incorporating 4 inch-wide flanges along their edges for attachment to framing members.

2.3 VAPOR RETARDERS

A. Polyethylene Vapor Retarder: ASTM D 4397, 6.0 mils thick, with a maximum permeance rating of 0.13 perms.

B. Tape for Vapor Retarder: Pressure sensitive tape of type recommended by vapor retarder manufacturer for sealing joints and penetrations in vapor retarder.

2.4 AUXILIARY INSULATING MATERIALS

A. Adhesive for Bonding Insulation: Product with demonstrated capability to bond insulation or mechanical anchors securely to substrates indicated without damaging or corroding either insulation, anchors, or substrates.

B. Protection Board: Premolded, semi-rigid asphalt/fiber composition board, 1/4 inch thick, formed under heat and pressure, standard sizes.

C. Eave Ventilation Troughs (insulation stops): Preformed rigid fiberboard or plastic sheets designed and sized to fit between roof framing members and to provide cross ventilation between insulated attic spaces and vented eaves.

SECTION 07210- BUILDING INSULATION

PART 1 - GENERAL

1 .1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Building insulation in batt form.

B. Related Sections: The following sections contain requirements that relate to this section:

1. Division 9 Section indicated below for thermal insulation and sound attenuation insulation installed as part of wall and partition assemblies:

a. "Gypsum Drywall."

1.3 DEFINITIONS

A. Thermal Resistivity: Where the thermal resistivity of insulation products are designated by "revalues," they represent the reciprocal of thermal conductivity (k-values). Thermal conductivity is the rate of heat flow through a homogenous material exactly 1 inch thick. Thermal resistivities are expressed by the temperature difference in degrees F between the two exposed faces required to cause one BTU to flow through one square foot per hour at mean temperatures indicated.

1.4 QUALITY ASSURANCE

A. Fire Performance Characteristics: Provide insulation materials identical to those whose indicated fire performance characteristics have been determined per the ASTM test method indicated below, by UL or other testing and inspecting organizations acceptable to authorities having Jurisdiction. Identify products with appropriate markings of applicable testing and inspecting organization.

1. Surface Burning Characteristic: ASTM E 84.

2. Fire Resistance Ratings: ASTM E 119. Combustion Characteristics: STME136.

B. Single-Source Responsibility for Insulation Products: Obtain each type of building insulation from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying process of the Work.

1.5 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 recommendations for handling, storage, and protection during installation.

C. Fit carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.

D. Apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber and plywood.

E. Securely attach carpentry work as indicated and according to applicable codes and recognized standards.

F. Countersink nail heads on exposed carpentry work and fill holes with wood filler.

G. Use fasteners of appropriate type and length. Predrill members when necessary to avoid Splitting wood.

3.2 WOOD TRIM INSTALLATION

A. Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Cope at returns and miter at corners to produce tightfitting joints with full-surface contact throughout length of joint. Use scarf joints for end-to-end joints.

1. Match color and grain pattern across joints.

2. Install trim after gypsum board joint finishing operations are completed.

3. Install to tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm) for plumb and level. Install adjoining trim with 1/32-inch (0.8-mm) maximum offset for flush installation and 1/16-inch (1 .6-mm) maximum offset for reveal installation.

END OF SECTION 06105

SECTION 06105 - MISCELLANEOUS CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Interior wood trim.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Keep materials under cover and dry. Protect from weather and contact with damp or wet surfaces. Stack lumber, plywood, and other panels. Provide for air circulation within and around stacks and under temporary coverings.

PART 2 -PRODUCTS

2.1 INTERIOR WOOD TRIM

A. Softwood Trim: Provide finished lumber and moldings complying with the following requirements including those of the grading agency listed with species:

1. Species: Eastern white pine; NELMA or Idaho white, lodgepole, ponderosa, or sugar pine; WWPA.

2. Species: Douglas fir; NLGA, WCLIB, or WWPA.

3. Grade: C & Btr Finish, C Select, or Choice.

4. Texture: Surfaced (smooth).

5. Lumber for Transparent Finish (Stained or Clear): Solid lumber stock.

6. Lumber for Painted Finish: Glued-up lumber or solid lumber stock.

B. Wood Molding Patterns: Provide stock moldings, made to patterns included in WMMPA WM 7 and graded under WMMPA WM 4 selected by the Owner.

1. Moldings for Transparent Finish: N-Grade.

2. Moldings for Painted Finish: P-Grade.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Discard units of material with defects that impair quality of carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.

B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.

2. Attach to substrates securely with anchor bolts or other attachment devices as shown and as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry as work progresses, cutting to fit masonry unit size involved. Anchor to formwork before concrete placement.

END OF CARPENTRY

G. Wood Preservative Treated Wood

1. Treat lumber and plywood where indicated as "Pressure Treated" or "Treated" tocomply with applicable requirements of the american wood preservers bureau, available from AWPI.

2. Pressure treat the following items with water-borne preservatives for above ground use, complying with AWPB LP-2.

   a. Wood cants, nailers, blocking stripping and similar members in connection with roofing, flashing, vapor barriers and waterproofing.

   b. Wood sills, sleepers, blocking, furring, stripping and similar concealed members in contact with masonry or concrete or below grade.

3. Kiln-dry wood to maximum moisture content of 15% after treatment with waterbone preservatives.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Discared units of material which are unsound, warped, bowed, twisted, improperly treated, not adequately seasoned or too small to fabricate work with minimum of joints or optimum jointing arrangement.

B. Fit carpentry work to other work. Scribe and cope as required for accurate fit.

C. Set carpentry work accurately to required levels and line with members plumb and true.

D. Shim with metal or slate for bearing on concrete and masonry substrates. Where indicated, grout with 1:3 Portland cement-snad grout for full bearing.

E. Securely attach carpentry work to substrates by anchoring and fastening as shown and as required by recognized standards.

1. Provide washers under bolt heads and nuts in contact with wood.

2. Nail plywood to comply with recommendations of the American Plywood Association.

F. Fasteners

1. Use common wire nails, except as otherwise shown or specified herein. Use finishing nails for exposed work. Do not wax or lubricate fasteners that depend on friction for holding power. Select fasteners of size that will not penetrate members where oposite sides will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; pre-drill as required. Do not drive threaded friction type fasteners; turn into place.

G. Wood Grounds, Nailers, Blocking and Sleepers

1. Provide wherever shown and where required for screeding or attachement of other work. Form to shapes as shown and cut as required for true line and level of work to be attached or screeded.

1. Pressure Treatment

For each type specified, include certification by treating plant stating chemicals and process used, net amount of salts retained, and conformance with applicable standards.

2. Water-Borne Preservatives

Include statement that moisture content treated materials was reduced to maximum of 15% prior to shipment to project site.

1.4 PRODUCT HANDLING

A. Keep carpentry materials dry during delivery, storage and handling. Store lumber and plywood in stacks with provision for air circulation within stacks. Protect bottom of stacks against contact with damp sufaces. Protect exposed materials against weather.

B. Do not store dressed or treated lumber or plywood outdoors.

PART 2 - PRODUCTS

2.1 MATERIALS

A.. Concealed Boards

Where boards will be concealed by other work, provide the following unless otherwise indicated:

1. Moisture Content: 19% maximum, mark boards, "MC-19"
2. Species and Grade: Provide Southern Pine (SPIB) No. 2 Boards

B. Miscellaneous Lumber

Provide wood for support or attachement of other work such as cant strips, bucks, nailers, blocking, furring, grounds,stripping, and similar members. Provide lumber of sizes shown or specified, worked to shapes shown, and as follows:

1. Moisture Content: 19% maximum,for lumber items not specified to receive wood preservative treatment.

2. Grade: Construction grade light framing size lumber of any species, or board size lumber, as required. Provide construction grade boards (RIS or WCLB) or No. 2 boards (SPIB or WWPA)

E. Concealed Plywood

1. Exterior Wallsheathing: 1/2" CDX plywood
2. Exterior Roof Sheathing: 3/4" CDX plywood

F. Electrical Panels

For backing panels of electrical and communication equipment, provide interior 3/4" thick type plywood with exterior glue, A grade exposed and C grade concealed, fire retardent treated.

SECTION 06100- CARPENTRY GENERAL

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Condiffons and Division 1 Specification Sections, apply to this Section.

1.1 DESCRIPTION

A. The extent of carpentry is shown on drawings and in schedules. Materials and installation requirements for other work commonly assigned to the carpentry trade are specified in other sections of these specifications.

B. Th types of carpentry work specified in this section include, but are not necessarily limited to, the following:

1. Wood Grounds, nailers, blocking and sleepers
2. Plywood Backing

C. See Section 05500 for Rough Hardware

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in necessary crafts and who are completely familiar with specified requirements and methods needed for proper performance of work of this section.

B. Lumber Standard

Comply with PS 20 for each indicated use, including moisture content and actual sizes related to indicate nominal sizes, except as otherwise indicated.

C. Plywood Standard

Comply with PS 1, except as otherwise indicated for each use.

D. Factory-mark each piece of lumber and plywood with type,grade,mill and grading agency identification, except omit marking from surfaces to receive transparent finish, and submit mill certificate that material has been inspected and grade in accordance with requirements if it can not be marked on a concealed surface.

E. Shop fabricate carpentry work to greatest extent possible, using equipment and workmanship control methods which will result in work of better quality than is feasible for on site fabrication.

1.3 SUBMITTALS

A. Wood Treatment Data, General

For information only, submit 2 copies of chemical treatment manufacturer's instructions for proper use of each type of treated material.

3.3 ADJUSTING AND CLEANING

A. **Touchup Painting:** Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 requirements for touching up shop painted surfaces.
Apply by brush or spray to provide a 2.0-mil (0.05-mm) minimum dry film thickness.

B. For galvanized surfaces, clean welds, bolted connections, and abraded areas, and apply galvanizing repair paint to comply with ASTM A 780.

END OF SECTION 05500

B. Fabricate items to sizes, shapes, and dimensions required. Furnish malleable-iron washers for heads and nuts that bear on wood structural connections, and furnish steel washers elsewhere.

2.8 STEEL AND IRON FINISHES

A. **Galvanizing:** For those items indicated for galvanizing, apply zinc coating by the hotdip process complying with the following requirements:

1. ASTM A 153 for galvanizing iron and steel hardware.
ASTM A 123 for galvanizing both fabricated and unfabricated iron and steel products made of uncoated rolled, pressed, and forged shapes, plates, bars, and strip 0.0299 inch (0.76 mm) thick or thicker.

PART 3 -EXECUTION

3.1 PREPARATION

A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installing anchorages, including concrete inserts, sleeves, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

3.2 INSTALLATION, GENERAL

A. **Fastening to In-Place Construction:** Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction. Include threaded fasteners for concrete and masonry inserts, toggle bolts, throughbolts, lag bolts, wood screws, and other connectors as required.

B. **Cutting, Fitting, and Placement:** Perform cutting, drilling, and fitting required for installing miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.

D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed Joints but cannot be shop-welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of exterior units that have been hot-dip galvanized after fabrication and are intended for bolted or screwed field connections.

E. **Field Welding:** Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.

4. At exposed connections, finish exposed welds and surfaces smooth and blinded so that no roughness shows after finishing, and contour of welded surface matches those adjacent.

B. **Available Products:** Subject to compliance with requirements. products that may be incorporated in the Work include, but are not limited to, the following:

1. Nonshrink, Metallic Grouts:

a. Supreme Plus: Cormix Construction Chemicals.
b. Hi Mod Grout; Euclid Chemical Co.
c. Embeco 885 and 636: Master Builders Technologies, Inc.
d. Ferrolith G Redi-Mix and G-NC; Sonneborn Building

2.5 CONCRETE FILL

A. **Concrete Materials and Properties:** Comply with requirements of Division 3 Section Cast-in-Place Concrete" for normal-weight, air-entrained, ready-mix concrete with a minimum 28-day compressive strength of 3000 psi (20 MPa), unless higher strengths are indicated.

2.6 FABRICATION, GENERAL

A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.

B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.

C. Shear and punch metals cleanly and accurately. Remove burrs.

D. Ease exposed edges to a radius of approximately 1/32 inch (1 mm), unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work. Remove sharp or rough areas on exposed traffic surfaces.

E. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing, and contour of welded surface matches those adjacent. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

F. Fabricate Joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.

2.7 ROUGH HARDWARE

A. Furnish bent, or otherwise custom-fabricated, bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures. Straight bolts and other stock rough hardware items are specified in Division 6 Sections.

2.2 PAINT

A. **Shop Primer for Ferrous Metal:** Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with performance requirements of FS TT-P-664, selected for good resistance to normal atmospheric corrosion, compatibility with finish paint systems indicated, and capability to provide a sound foundation for fieldapplied topcoats despite prolonged exposure.

B. **Galvanizing Repair Paint:** High-zinc-dust-content paint for regalvanizing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight, and complying with DOD-P-21035 or SSPC-Paint 20.

C, **Bituminous Paint:** Cold-applied asphalt mastic complying with SSPC-Paint 12, except containing no asbestos fibers.

2.3 FASTENERS

A. **General:** Provide plated fasteners complying with ASTM B 633, Class Fe/Zn 25 for electrodeposited zinc coating, for exterior use or where built Into exterior walls. Select fasteners for the type, grade, and class required.

B. **Bolts and Nuts:** Regular hexagon-head bolts, ASTM A 307, Grade A (ASTM F 568, Property Class 4.6), with hex nuts, ASTM A 563 (ASTM A 563M), and, where indicated, flat washers.

C. **Lag Bolts:** ANSI B18.2.1 (ANSI B18.2.3.8M).

D. **Wood Screws:** Flat head, carbon steel, ANSI B18.6.1.

E. **Plain Washers:** Round, carbon steel, ANSI B18.22.1 (ANSI B18.22M).

F. **Lock Washers:** Helical, spring type, carbon steel, ANSI B18.21.1.

G. **Expansion Anchors:** Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry and equal to 4 times the load Imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.

2.4 GROUT

A. **Material:** Carbon steel components zinc-plated to comply with ASTM B 633, Class Fe/Zn5.

B. **Nonshrink, Metallic Grout:** Factory-packaged, ferrous-aggregate grout complying with ASTM C 1107, specifically recommended by manufacturer for heavy-duty loading applications.

SECTION 05500 - METAL FABRICATIONS

PART 1 - GENERAL RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following metal fabrications.

1. Rough hardware.

2. Miscellaneous framing and supports for the following:

a. Applications where framing and supports are not specified in other sections.

3. Steel lintels
4. Concrete Pan metal stairs
5. Elevator pit ladder

1.3 QUALITY ASSURANCE

A. **Fabricator Qualifications:** Firm experienced in producing metal fabrications similar to those indicated for this Project with a record of successful in-service performance, and with sufficient production capacity to produce required units without delaying the Work.

B. **Welding Standards:** Comply with applicable provisions of AWS D1.1 "Structural Welding Code--Steel," AWS D1.2 "Structural Welding Code--Aluminum," and AWS D1.3 "Structural Welding Code-Sheet Steel."

1.4 PROJECT CONDITIONS

A. **Field Measurements:** Check actual locations of walls and other construction to which metal fabrications must fit by accurate field measurements before fabrication. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 FERROUS METALS

A. **Metal Surfaces, General:** For metal fabrications exposed to view in the completed Work, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

B. **Steel Plates, Shapes, and Bars:** ASTM A 36/A 36M.

C. **Welding Rods and Bare Electrodes:** Select according to AWS specifications for the metal alloy to be welded.

3.7 INSTALLATION OF REINFORCED UNIT MASONRY

A. General: Install reinforced unit masonry to comply with requirements of referenced unit masonry standard.

B. Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.

C. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.

3.8 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or if units do not match adjoining units. Install new units to match adjoining units and in fresh mortar or grout, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of Joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point-up all joints including corners, openings, and adjacent construction to provide a neat, uniform appearance, prepared for application of sealants.

C. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.

2. Test cleaning methods on sample wall panel; leave 1/2 panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.

3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.

4. Wet wall surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clear water.

5. Clean concrete masonry by means of cleaning method indicated in NCMA TEK 45 applicable to type of stain present on exposed surfaces.

D. Protection: Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure unit masonry is without damage and deterioration at time of Substantial Completion.

END OF SECTION 04200

C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2 inches. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.

D. Stopping and Resuming Work: In each course, rack back 1 /2-unit length for one-half running bond or 1/3-unit length for one-third running bond; do not tooth. Clean exposed surfaces of set masonry, wet clay masonry units lightly (if required), and remove loose masonry units and mortar prior to laying fresh masonry.

E. Built-In Work: As construction progresses, build-in items specified under this and other Sections of the Specifications. Fill in solidly with masonry around built-in items.Fill space between hollow metal frames and masonry solidly with mortar, unless otherwise indicated.

a. At exterior frames insert extruded polystyrene board insulation around perimeter of frame in thickness indicated but not less than 3/4 inch to act as a thermal break between frame and masonry.

F. Fill cores in hollow concrete masonry units with grout to footings (24 inches wide) under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.

3.5 MORTAR BEDDING AND JOINTING

A. Lay hollow concrete masonry units as follows:

1. With full mortar coverage on horizontal and vertical face shells.

2. Bed webs in mortar in starting course on footings and in all courses of piers, columns, and pilasters, and where adjacent to cells or cavities to be filled with grout.

3. For starting course on footings where cells are not grouted, spread out full mortar bed including areas under cells.

B. Cut Joints flush for masonry walls to be concealed or to be covered by other materials, unless otherwise indicated.

3.6 HORIZONTAL JOINT REINFORCEMENT

A. General: Provide continuous horizontal Joint reinforcement as indicated. Install longitudinal side rods in mortar for their entire length with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcing a minimum of one truss panel.

B. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.

C. Provide continually at corners and wall intersections by use of prefabricated "L" and "T' sections. Cut and bend reinforcement units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

2.11 SOURCE QUALITY CONTROL

A. Concrete Masonry Unit Tests: For each type, class, and grade of concrete masonry unit indicated, units will be tested by qualified independent testing laboratory for strength, absorption, and moisture content per ASTM C 140.

PART 3 - EXECUTION

2.12 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other specific conditions, and other conditions affectingperformance of unit masonry.

B. Examine rough-in and built-in construction to verify actual locations of piping connections prior to installation.

C. Do not proceed until unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Comply with referenced unit masonry standard and other requirements indicated applicable to each type of installation included in Project.

B. Thickness: Build single-wythe walls to the actual thickness of the masonry units, using units of nominal thickness indicated.

C. Build chases and recesses as shown or required to accommodate Items specified in this and other Sections of the Specifications. Provide not less than 8 inches of masonry between chase or recess and jamb of openings and between adjacent chases and recesses.

D. Leave openings for equipment to be installed before completion of masonry. After installation of equipment, complete masonry to match construction immediately adjacent to the opening.

E. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide continuous pattern and to fit adjoining construction. Use full-size units without cutting where possible.

3.3 CONSTRUCTION TOLERANCES

A. Comply with construction tolerances of referenced unit masonry standard.

3.4 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint widths and for accurate locating of openings, movement-type joints, returns, and offsets. Avoid the use of less-than-half-size units at corners, jambs, and where possible at other locations.

B. Lay up walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other construction.

2.9 POSTINSTALLED ANCHORS

A. Anchors as described below, with capability to sustain, without failure, load imposed within factors of safety indicated, as determined by testing per ASTM E 488, conducted by a qualified independent testing laboratory.

1. Type: Expansion anchors.
2. Corrosion Protection: Carbon steel components zinc-plated to comply with ASTM B 633, Class Fe/Zn 5 (5 microns) for Class SC 1 service condition (mild).
3. For cast-in-place and postinstalled anchors in concrete: Capability to sustain, without failure, a load equal to 4 times loads imposed by masonry.
4. For postinstalled anchors in grouted concrete masonry units: Capability to sustain, without failure, a load equal to 6 times loads imposed by masonry.
   a. Hilti Kwik Bolt II.

2.10 MORTAR AND GROUT MIXES

A. General: Do not add admixtures including coloring pigments, air-entraining agents, accelerators, retarders, water repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.

B. Mortar for Unit Masonry: Comply with ASTM C 270, Property Specification for job-mixed mortar and ASTM C 1142 for ready-mixed mortar, of types indicated below:

1. Limit cementious materials in mortar to portland cement-lime.

2. For masonry below grade and in contact with earth, and where indicated, use type indicated below:

   a. Type M.

3. For reinforced masonry and where indicated, use type indicated below:

   a. Type M.

4. Grout for Unit Masonry: Comply with ASTM C **476 and referenced** unit masonry standard.

C. Mortar for Face CMU:

1. Type S.

D. Mortar for Face Brick:

1. Type S.

2.6 TIES AND ANCHORS, GENERAL

A. General: Provide ties and anchors specified in subsequent articles that comply with requirements for metal and size of referenced unit masonry standard and of this article.

B. Galvanized Carbon Steel Wire: ASTM A 82, coating class as required by referenced unit masonry standard for application indicated.

1 . Wire Diameter: As indicated.

C. Galvanized Steel Sheet: ASTM A 366 (commercial quality) cold-rolled carbon steel sheet, hot-dip galvanized after fabrication to comply with ASTM A 525, Class B2 (for unit lengths over 15 inches) and Class B3 (for unit lengths under 15 inches), for sheet metal ties and anchors.

D. Steel Plates and Bars: ASTM A 36, hot-dip galvanized to comply with ASTM A 123 or ASTM A 153, Class B3, as applicable to size and form indicated.

E. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following:

1. AA Wire Products Co.
2. DurWal, Inc.
3. Heckman Building Products, Inc.
4. Hohmann & Barnard, Inc.
5. Masonry Reinforcing Corp. of America.
6. National Wire Products Industries.
7. Southern Construction Products, Inc.

2.7 WALL TIES

A. Provide slotted dovetail anchors..

2.8 MISCELLANEOUS ANCHORS

A. Anchor Bolts: Steel bolts complying with A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153, Class C: of diameter and length indicated and in the following configurations:

1. Nonheaded bolts, straight or as indicated.

2.4 REINFORCING STEEL

A. General: Provide reinforcing steel complying with requirements of referenced unit masonry standard and this article.

B. Steel Reinforcing Bars: Material and grade as follows:

1. Billet steel complying with ASTM A 615. 2. Grade 60.

C. Deformed Reinforcing Wire: ASTM A 496.

D. Plain Welded Wire Fabric: ASTM A 185.

2.5 JOINT REINFORCEMENT

A. General: Provide Joint reinforcement complying with requirements of referenced unit masonry standard and this article, formed from the following:

1. Galvanized carbon steel wire, coating class as required by referenced unit masonry standard for application indicated.

B. Description: Welded-wire units prefabricated with deformed continuous side rods and plain cross rods into straight lengths of not less than 10 feet, with prefabricated corner and tee units, and complying with requirements indicated below:

1. Wire Diameter for Side Rods: 0.1483 inch (9 gage).
2. Wire Diameter for Cross Rods: 0.1483 inch (9 gage).
3. For single-wythe masonry provide type as follows with single pair of side rods:

a. Truss design with continuous diagonal cross rods spaced not more than 16 inches o.c.

C. Available Manufacturers: Subject to compliance with requirements, manufacturers offering Joint reinforcement that may be incorporated in the Work include, but are not limited to, the following:

1. AA Wire Products Co.
2. Dur-O-Wal, Inc.
3. Heckman Building Products, Inc.
4. Hohmann & Barnard, Inc.
5. Masonry Reinforcing Corp. of America.
6. National Wire Products Industries.
7. Southern Construction Products, Inc.

2. Weight Classification: Normal weight. Concrete Building Brick: ASTI C 55 and as follows: Unit Compressive Strength: Provide units with minimum average net area compressive strength indicated below:

a. 3500 psi.

1. Not less than the unit compressive strengths required to produce concrete unit masonry construction of compressive strength indicated.

2. Weight Classification: Normal weight.

C. Split–Faced/Smooth Ground Faced Masonry Units:

1. To conform to ASTM C90.
2. 2700 psi minimum.
3. Normal weight, not less than 125 lbs/c.f.
4. Johnson Concrete or equal.
5 Colors as selected, finish as shown on plans.

D. Face Brick:

1. To meet requirements of ASTM C216 grade S1V.
2. Standard size to match existing.
3. Strike to match existing.
4. Provide several different samples for the Architect to select from.

2.3 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for coldweather construction. Provide natural color or white cement as required to produce required mortar color.

B. Masonry Cement: ASTM C 91.

C. Ready-Mixed Mortar: Cementious materials, water, and aggregate complying with requirements specified in this article, combined with set-controlling admixtures to produce a ready-mixed mortar complying with ASTM C 1142.

D. Hydrated Lime: ASTM C 207, Type S.

E. Aggregate for Mortar: ASTM C 144, except for Joints less than 1/4 inch use aggregate graded with 100 percent passing the No. 16 sieve.

F. Aggregate for Grout: ASTM C 404.

G. Water: Clean and potable.

H. Color to match masonry color.

C. Cold-Weather Construction: Comply with referenced unit masonry standard for coldweather construction and the following:

1. Do not lay masonry units that are wet or frozen.

2. Remove masonry damaged by freezing conditions.

D. Hot-Weather Construction: Comply with referenced unit masonry standard.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Comply with referenced unit masonry standard and other requirements specified in this Section applicable to each material indicated.

2.2 CONCRETE MASONRY UNITS

A. General: Comply with requirements indicated below applicable to each form of concrete masonry unit required.

1. Provide special shapes where indicated including header blocks.

a. Square-edged units for outside corners.

2. Size: Provide concrete masonry units complying with requirements indicated below for size that are manufactured to specified face dimensions within tolerances specified in the applicable referenced ASTM specification for concrete masonry units.

a. Concrete Masonry Units: Manufactured to specified dimensions of 3/8 inch less than nominal widths by nominal heights by nominal lengths indicated on drawings.

b. Concrete Building Brick: Specified dimensions as follows: 1) Standard Modular: 3-5/8 inches wide by 2-1/4 inches high by 7-5/8 inches long.

3. Provide Type II, non-moisture-controlled units.

4. Exposed Faces: Manufacturer's standard color and texture, unless otherwise indicated.

B. Solid Load-Bearing Concrete Masonry Units: ASTM C 145, Grade S and as follows:

1. Unit Compressive Strength: Provide units with minimum average net area compressive strength indicated below:

a. 1800 psi.

b. Not less than the unit compressive strengths required to produce concrete unit masonry construction of compressive strength indicated.

D. Provide a 4' high x 6' long field mock-up as a standard for judging coloring and quality of workmanship.

1.5 QUALITY ASSURANCE

A. Unit Masonry Standard: Comply with ACI 530.1/ASCE 6 "Specifications for Masonry Structures'" except as otherwise indicated.

1. Revise ACI 530.1/ASCE 6 to exclude Sections 1.4 and 1.7; Parts 2.1.2, 3.1.2, and 4.1.2: and Articles 1.5.1.2, 1.5.1.3, 2.1.1.1, 2.1.1.2, and 2.3.3.9 and to modify Article 2.1.1.4 by deleting requirement for installing vent pipes and conduits built into masonry.

B. Single-Source Responsibility for Masonry Units: Obtain exposed masonry units of uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from one manufacturer for each different product required for each continuous surface or visually related surfaces.

C. Single-Source Responsibility for Mortar Materials: Obtain mortar ingredients of uniform quality, including color for exposed masonry, from one manufacturer for each cementious component and from one source and producer for each aggregate.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver masonry materials to project in undamaged condition.

B. Store and handle masonry units off the ground, under cover, and in a dry location to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion, and other causes. If units become wet, do not place until units are in an air-dried condition.

C. Store cementious materials off the ground, under cover, and in dry location.

D. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

E. Store masonry accessories including metal items to prevent corrosion and accumulation of dirt and oil.

1.7 PROJECT CONDITIONS

A. Protection of Masonry: During erection, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.

B. Do not apply uniform floor or roof loads for at least 24 hours and concentrated loads for at least 3 days after building masonry walls or columns.

SECTION 04200- UNIT MASONRY

PART 1 - GENERAL

RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Concrete unit masonry.
2. Split faced/smooth ground faced masonry units
3. Face Brick

B. Related Sections: The following sections contain requirements that relate to Section:

1. Division 7 Section "Flashing and Sheet Metal" for exposed sheet metal flashing installed in masonry.

C. Products installed but not furnished under this Section include the following:

1. Steel lintels in unit masonry are specified in Division 5 Section "Metal Fabrications."

2. Wood nailers and blocking built into unit masonry are specified in Division 6 Section "Rough Carpentry."

1.3 SYSTEM PERFORMANCE REQUIREMENTS

A. Provide unit masonry that develops the following installed compressive strengths (f'm):

1. For concrete unit masonry: As follows:

a. f'm = 1800 psi.

1.4 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Material certificates for the following signed by manufacturer and Contractor certifying that each material complies with requirements.

1. Each different cement product required for mortar and grout including name of manufacturer, brand, type, and weight slips at time of delivery.

C. Qualification data for firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, telephone numbers, names of Architects and Owners, and other information specified.

1. Premise 75 – (A/I) Imidacloprid/Chloronicotinyl

2. Talstar Termiticide – (A/I) Bifenthrin in dilution 0.06%

3. Firstline GT Termite Bait Station – (A/I) N-Ethyl Perfluoroctanesulfonide 0.01%

4. Dragnet SFR – (I/A) Permethrin in dilution 0.5%

5. Termidor SC – (A/I) Fipronil in dilution 0.125%

6. Other solutions may be used as recommended by the Applicator if also acceptable to Architect and approved for intended application by local authorities. Use only soil treatment solutions which are not injurious to planting.

PART 3-EXECUTION

3.1 APPLICATION

A. Surface Preparation: remove foreign matter which could decrease effectiveness of treatment on areas to be treated. Loosen, rake and level soil to be treated, except previously compacted areas under slabs and foundations Toxicants may be applied before placement of compacted fill under slabs, if recommended by toxicant manufacture.

B. Formulation, treatment, storage and disposal of termiticide shall be in accordance with label directions. Water for formulating shall be drawn from a hose fitted with a backflow preventer meeting local plumbing codes.

C. Apply treatment solutions with a low pressure coarse spray.

D. Establish a vertical termiticide barrier under slab in critical areas such as inside of foundation walls, both sides or partition walls, and around plumbing and other utility conduits.

E. Under slab-on-grade structures, treat soil before concrete slabs are placed, using the rates of application recommended by the manufacturer of the termiticide.

F. At grade beams, treat all surfaces with individual attention to the perimeters and outside edges of the beam

G. At expansion joints, control joints, and areas where slabs will be penetrated, apply termiticide at double the rate used in the field of the slab.

H. Post signs in areas of application to warn workers that soil termiticide treatment has been applied. Remove signs when areas are covered by other construction.

I. Reapply soil treatment to areas disturbed by subsequent excavation, landscape grading, or other construction activities following applications

END OF SECTION

SECTION 02282-SOIL TREATMENT FOR TERMITE CONTROL
PART 1-GENERAL

1.1 SUMMARY

A. Provide soil treatment for termite control, under all concrete building slabs on grade.

B. LEED Goals: Not used.

1.2 SUBMITTALS

A. Product Data: Submit manufacture's technical data and application instructions.

1.3 QUALITY ASSURANCE

A. In addition to requirements of these specifications, comply with manufacture's instructions and recommendations for work, including preparation of substrate and application

B. Engage a professional pest control operator, licensed in accordance with regulations of the State of North Carolina for application of soil treatment solution.

C. Use only termiticides that are approved by the North Carolina Department of food and Agriculture, which bear a Federal registration number of the U.S. Environmental Protection Agency, and are on the North Carolina approved list.

1.4 JOB CONDITIONS

A. Restrictions: Do not apply soil treatment solution until excavating, filling and grading operations are completed, except as otherwise required in construction operations.

B. To ensure penetration, do not apply soil treatment to excessively wet soils or during inclement weather. Comply with handling and application instructions of the soil toxicant manufacturer.

1.5 SPECIFIC PRODUCT WARRANTY

A. Furnish written warranty certifying that applied soil termiticide treatment will prevent infestation of subterranean termites and, that if subterranean termite activity is discovered during warranty period, Contractor will re-treat soil and repair or replace damage caused by termite infestation. Provide warranty for a period of 2 years from date of treatment, signed by Applicator and Contractor.

PART 2-PRODUCTS

2.1 SOIL TREATMENT SOLUTION

A. Use an emulsible concentrate termiticide for dilution with water, specially formulated to prevent infestation by termites. Fuel oil will not be permitted as a dilutents. Provide a solution consisting of one of the following products (or equal):

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.21 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Owner's property.

END OF SECTION 02200

3. When compacted thickness of drainage fill exceeds 6 inches thick place materials in equal layers, with no layer more than 6 inches thick nor less than 3 inches thick when compacted.

3.19 FIELD QUALITY CONTROL

A. Testing Agency Services: Allow tesffng agency to inspect and test each subgrade and Each fill or backfill layer. Do not proceed until test results for previously completed work verify compliance with requirements.

1. Perform field in-place density tests according to ASTM D 1556 (sand cone method), ASTM D 2167 (rubber balloon method), or ASTM D 2937 (drive cylinder method), as applicable.

a. Field in-place density tests may also be performed by the nuclear method according to ASTM D 2922, provided that calibration curves are periodically checked and adjusted to correlate to tests performed using ASTM D 1556. With each density calibration check, check the calibration curves furnished with the moisture gages according to ASTM D 3017.

b. When field in-place density tests are performed using nuclear methods, make calibration checks of both density and moisture gages at beginning of work, on each different type of material encountered, and at intervals as directed by the Architect.

2. Footing Subgrade: At footing subgrades, perform at least one test of each soil stratum to verify design bearing capacities. Subsequent verification and approval of other fooffng subgrades may be based on a visual comparison of each subgrade with related tested strata when acceptable to the Architect.

3. Building Slab Areas: At subgrade and at each compacted fill and backfill layer, perform at least one field in-place density test for every 2,000 sq. ft. or less ofpaved area or building slab, but in no case fewer than three tests.

4. Foundation Wall Backfill: In each compacted backfill layer, perform at least one field-in-place density test for each 100 feet or less of wall length, but no fewer than two tests along a wall face.

5. Trench Backfill: In each compacted initial and final backfill layer, perform at least one field in-place density test for each 150 feet or less of trench, but no fewer than two tests.

B. When testing agency reports that subgrades, fills, or backfills are below specified density, scarify and moisten or aerate, or remove and replace soil to the depth required, recompact and retest until required density is obtained.

3.20 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from tramc, freezing, and erosion. Keep free of trash and debris.

B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construcffon operaffons or weather conditions.

1. Scarify or remove and replace material to depth directed by the Architect; reshape and recompact at optimum moisture content to the required density.

C. Settling: Where settling occurs during the Project correction period, remove finished surfacing, backfill with additional approved material, compact, and reconstruct surfacing.

A. Percentage of Maximum Dry Density Requirements: Compact soil to not less than the following percentages of maximum dry density according to ASTM D 1557 or as required by independent testing laboratory:

1. Under structures, building slabs, steps, and pavements, compact the top 12 inches below subgrade and each layer of backfill or fill material at 95 percent maximum dry density.

2. Under walkways, compact the top 6 inches below subgrade and each layer of backfill or fill material at 95 percent maximum dry density.

3. Under lawn or unpaved areas, compact the top 6 inches below subgrade and each layer of backfill or fill material at 90 percent maximum dry density.

B. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transiffon between exisffng adjacent grades and new grades.

2. Cut out soft spots, fill low spots, and trim high spots to conform to required surface tolerances.

C. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

1. Lawn or Unpaved Areas: Plus or minus 0.10 foot.

2. Walks: Plus or minus 0.10 foot.

D. Grading Inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.17 SUBBASE AND BASE COURSES

A. Under pavements and walks, place subbase course material on prepared subgrades. Place base course material over subbases to pavements.

1. Compact subbase and base courses at opffmum moisture content to required grades, lines, cross secffons and thickness to not less than 95 percent of ASTM D 4254 relative density.

2. Shape subbase and base to required crown elevations and cross-slope grades.

3. When thickness of compacted subbase or base course is 6 inches or less, place materials in a single layer.

4. When thickness of compacted subbase or base course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.

3.18 DRAINAGE FILL

A. Under slabs-on-grade, place drainage fill course on prepared subgrade.

1. Compact drainage fill to required cross secffons and thickness.

2. When compacted thickness of drainage fill is 6 inches or less, place materials in a single layer.

1. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.

E. Coordinate backfilling with utilities testing.

1. Fill voids with approved backfill materials as shoring and bracing, and sheeting is removed.

G. Place and compact final backfill of satisfactory soil material to final subgrade.

1. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.13 FILL

A. Preparation: Remove vegetation, topsoil, debris, wet, and unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placing fills.

1. Plow strip, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing surface.

B. When subgrade or existing ground surface to receive fill has a density less than that required for fill, break up ground surface to depth required, pulverize, moisturecondition or aerate soil and recompact to required density.

C. Place fill material in layers to required elevations for each location listed below.

1. Under grass, use satisfactory excavated or borrow soil material.
2. Under walks and pavements, use subbase or base material, or satisfactory excavated or borrow soil material.
3. Under building slabs, use drainage fill material.
4. Under footings and foundations, use engineered fill.

3.14 MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air-dry satisfactory soil material that is too wet to compact to specified density.

a. Stockpile or spread and dry removed wet satisfactory soil material.

3.1 5 COMPACTION

A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill materials evenly on all sides of structures to required elevations. Place backfill and fill uniformly along the full length of each structure.

3.1 6 GRADING

1. Unforeseen additional excavation and replacement material will be paid according to the Contract provisions for changes in Work.

C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by the Architect.

3.9 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under foundations or wall footings by extending indicated bottom elevation of concrete foundation or footing to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position when acceptable to the Architect.

1. Fill unauthorized excavations under other construction as directed by the Architect.

B. Where indicated widths of utility trenches are exceeded, provide stronger pipe, or special Installation procedures, as required by the Architect.

3.10 STORAGE OF SOIL MATERIALS

A. Stockpile excavated materials acceptable for backfill and fill soil materials, including acceptable borrow materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent wind-blown dust.

1. Stockplie soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.1 1 BACKFILL

A. Backfill excavations promptly, but not before completing the following:

1. Acceptance of construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
2. Surveying locations of underground utilities for record documents.
3. Testing, inspecting, and approval of underground utilities.
4. Concrete formwork removal.
5. Removal of trash and debris from excavation.
6. Removal of temporary shoring and bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

3.12 UTILITY TRENCH BACKFILL

A. Place and compact bedding course on rock and other unyielding bearing surfaces and to fill unauthorized excavations, Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for Joints, fittings, and bodies of conduits.

B. Concrete backfill trenches that carry below or pass under footings and that are excavated within 18 inches of footings. Place concrete to level of bottom of footings.

C. Provide 4-inch-thick concrete base slab support for piping or conduit less than 2'-6" below surface of roadways. After installation and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway subbase.

D. Place and compact initial backfill of satisfactory soil material or subbase material, free of particles larger than 1 inch, to a height of 12 inches over the utility pipe or conduit.

3.5 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 0.10 foot. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, installing services and other construction, and for inspections.

1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

2. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Appurtenances: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 0.10 foot. Do not disturb bottom of excavations intended for bearing surface.

3.6 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades.

3.7 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated slopes, lines, depths, and invert elevations.

1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.

B. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.

C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove stones and sharp objects to avoid point loading.

1. For pipes or conduit less than 6 inches in nominal diameter and flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.

2. For pipes and conduit 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe circumference. Fill depressions with tamped sand backfill.

3. Where encountering rock or another unyielding bearing surface, carry trench excavation 6 inches below invert elevation to receive bedding course.

3.8 APPROVAL OF SUBGRADE

A. Notify Architect when excavations have reached required subgrade.

B. When Architect determines that unforeseen unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

PART 3 - EXECUTION

3.1 PREPARATION ACCESSORIES

A. Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility.

B. Filter Fabric: Manufacturer's standard nonwoven pervious geotextile fabric of polypropylene, nylon or polyester fibers, or a combination.

1. Provide filter fabrics that meet or exceed the listed minimum physical properties determined according to ASTM D 4759 and the referenced standard test method in parentheses:

a. Grab Tensile Strength (ASTM D 4632): 100 lb.
b. Apparent Opening Size (ASTM D 4751): #100 U.S. Standard sieve.
c. Permeability (ASTM D 4491):150 gallons per minute per sq. ft.

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.

C. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.2 DEWATERING

A. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

3.3 EXCAVATION

A. Explosives: Do not use explosives.

B. Unclassified Excavation: Excavation is unclassified and includes excavation to required subgrade elevations regardless of the character of materials and obstructions encountered.

3.4 STABILITY OF EXCAVATIONS

A. Comply with local codes, ordinances, and requirements of authorities having jurisdiction to maintain stable excavations.

1.4 QUALITY ASSURANCE

A. Codes and Standards: Perform earthwork complying with requirements of authorities having jurisdiction.

B. Testing and Inspection Service: The Owner will employ a qualified independent geotechnical engineering testing agency to classify proposed on-site and borrow soils to verify that soils comply with specified requirements and to perform required field and laboratory testing.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide approved borrow soil materials from off-site when sufficient approved soil materials are not available from excavations.

B. Satisfactory Soil Materials: ASTM D 2487 soil class)fication groups GW, GP, GM, SW, SP, and SM; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation and other deleterious matter.

C. Unsatisfactory Soil Materials: ASTM D 2487 soil class)fication groups GC, SC, ML MH, CL CH, OL OH, and PT.

D. Backfill and Fill Materials: Satisfactory soil materials.

E. Subbase and Base Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand, ASTM D 2940, with at least 95 percent passing a 1 -1 /2-inch sieve and not more than 8 percent passing a No.200 sieve.

F. Engineered Fill: Subbase or base materials.

G. Bedding Material: Subbase or base materials with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.

H. Drainage Fill: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, ASTM D 448, coarse aggregate grading size 57, with 100 percent passing a 1-1/2-inch sieve and not more than 5 percent passing a No. 8 sieve. A clean sand may be used as a capillary cut-off provided material has a maximum 12% flnes using a No. 12 sieve with no clay.

I. Filtering Material: Evenly graded mixture of natural or crushed gravel or crushed stone and natural sand, with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 50 sieve.

J. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

SECTION 02200- EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1 .2 SUMMARY

A. This Section Includes the following:

1. Preparing and grading subgrades for slabs-on-grade, walks, and landscaping.
2. Excavating and backfilling for buildings and structures.
3. Drainage and moisture-control fill course for slabs-on-grade.
4. Subbase course for walks and pavements.
5. Excavating and backfilling trenches within building lines.
6. Excavating and backfiillng for underground mechanical and electrical utilities and appurtenances.

1.3 DEFINITIONS

A. Excavation consists of the removal of material encountered to subgrade elevations and the reuse or disposal of materials removed.

B. Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

C. Borrow: Soil material obtained off-site when suffficient approved soil material is not available from excavations.

D. Subbase Course: The layer placed between the subgrade and base course in a paving system or the layer placed between the subgrade and surface of a pavement or walk.

E. Base Course: The layer placed between the subbase and surface pavement in a paving system.

F. Drainage Fill: Course of washed granular material supporting slab-on-grade placed to cut off upward capillary flow of pore water.

G. Unauthorized excavation consists of removing materials beyond indicated subgrade elevations or dimensions without direction by the Architect. Unauthorized excavation, as well as remedial work directed by the Architect, shall be at the Contractor's expense.

H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below ground surface.

I. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within building lines.

D. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near site.

E. Maintain access to the site at all times.

3.3 CLEARING

Clean out roots 1" in diameter and larger to a depth of at least 12" below the existing ground surface or sub-grade of new grade surface, whichever is lower. Treat roots remaining in soil with weed killer approved by Architect.

3.4 CONSERVATION OF TOPSOIL

A. After area has been cleared of vegetation, strip existing topsoil to depth encountered to prevent intermingling with underlying subsoil or other objectionable material in areas shown on drawings, to be turfed or planted and to fill planters without contamination with subsoil.

B. Stockpile in area clear of new construction.

C. Maintain stockpile in a manner which will not obstruct the natural flow of drainage.

1. Keep topsoil damp to prevent dust and drying out.

3.5 TOPSOIL

Topsoil is defined as friable clay loam surface soil found in a depth of not less than 4". Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones and other objects over 2" in diameter, and without weeds, roots and other objectionable material.

3.6 DISPOSAL

A. General

1. Remove brush, grass, roots, trash, and other material from clearing operations.

2. Dispose of away from the site in a legal manner.

3. Do not store or permit debris to accumulate on the job site.

4. Do not burn debris at site.

3.7 UTILITIES

A. Coordinate with utility companies and agencies, as required.

B. Where utility cutting, capping, or plugging is required, perform such work in accordance with requirements of the utility company or governmental agency having jurisdiction.

END OF SECTION 02100

SECTION 02100- SITE CLEARING

PART 1 - GENERAL RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections apply to work specified in this section.

1.1 DESCRIPTION

A. Clear and grub site as shown on Drawings and as specified herein.

B. Coordinate with the owner on removing equipment.

1 .2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in necessary crafts and who are completely familiar with specified requirements and methods needed for proper performance of work of this section.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Provide materials not specifically described but required for proper completion of work.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine areas and conditions under which work will be performed. Correct conditions detrimental to timely and proper completion of work. Do not proceed until unsatisfactory conditions are corrected.

3.2 PROTECTION

A. Protect existing utilities indicated or made known.

B. Protect trees and shrubs, where indicated to remain, by providing a fence around the tree or shrub of sufficient distance away and of sufficient height so trees and shrubs will not be damaged in any way.

C. Protection of Persons and Property

1. Barricade open depressions and holes occurring as part of this work, and post warning lights on property adjacent to or with public access.

2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.

3. Protect structures, utilities, sidewalks, pavements and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by operations under this section.

1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.

2. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS, the Project title or name, and the name of the Contractor.

3. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2 - PRODUCTS (not applicable).

PART 3 - EXECUTION

3.1 SCHEDULE OF WARRANTIES

A. Schedule: Provide warranties and bonds on products and installations as specified in the following Sections:

Termite Control Treatment:	Section 02280
Water Healers:	Section 15000
Packaged Heating and Cooling Units:	Section 15500

END OF SECTION 01740

D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.

1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

E. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

1.4 SUBMITTALS

A. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.

1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with each prime Contractor during the construction period, submit properly executed warranties to the Architect within fifteen days of completion of that designated portion of the Work.

B. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Architect for approval prior to final execution.

1. Refer to individual Sections of Divisions-2 through -16 for specific content requirements, and particular requirements for submittal of special warranties.

C. Form of Submittal: At Final Completion compile two copies of each required warranty and bond properly executed by the prime Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.

D. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.

SECTION 01740 - WARRANTIES AND BONDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers standard warranties on products and special warranties.

1. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.

2. General closeout requirements are included in Section "project Closeout."

3. Specific requirements for warranties for the Work and products and installations that are specified to be warranted, are included in the individual Sections of Divisions-2 through -16.

4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

B. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.3 DEFINITIONS

A. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of Its anticipated useful service life.

e. Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.

C. Pest Control: Engage an experienced exterminator to make a final inspection, and rid the Project of rodents, insects and other pests.

D. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

E. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

1. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

END OF SECTION 01700

1. Maintenance manuals.
2. Record documents.
3. Spare parts and materials.
4. Tools.
5. Lubricants.
6. Fuels.
7. Identification systems.
8. Control sequences.
9. Hazards.
10. Cleaning.
11. Warranties and bonds.
12. Maintenance agreements and similar continuing commitments.

B. As part of instruction for operating equipment, demonstrate the following procedures:

1. Start-up.
2. Shutdown.
3. Emergency operations.
4. Noise and vibration adjustments.
5. Safety procedures.
6. Economy and efficiency adjustments.
7. Effective energy utilization.

3.2 FINAL CLEANING

A. General: General cleaning during construction is required by the General Conditions and included in Section "Temporary Facilities".

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.

1. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.

a. Remove labels that are not permanent labels.

b. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.

c. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.

d. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.

2. If necessary, reinspection will be repeated.

1.5 RECORD DOCUMENT SUBMITTALS

A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Architect's reference during normal working hours.

B. Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications.

1. Upon completion of mark-up, submit complete set of record Product Data to the Architect for the Owner's records.

C. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Architect for the Owner's records.

D. Maintenance Manuals: Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual heavy-duty 2-inch, 3ring vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information:

1. Emergency instructions.
2. Spare parts list.
3. Copies of warranties.
4. Wiring diagrams.
5. Recommended "turn around" cycles.
6. Inspection procedures.
7. Shop Drawings and Product Data.
8. Fixture ramping schedule.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 CLOSEOUT PROCEDURES

A. Operating and Maintenance Instructions: Arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:

3.2 PREPARATION

A. Surface Cleaning of Joints Clean out joints immediately before installing Joint sealants to comply with recommendations of joint sealant manufacturer and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old Joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.

1. Clean concrete, masonry, unglazed surfaces of ceramic tile, and similar porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealant. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.

3. Remove laitance and form release agents from concrete.

4. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile, and other nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint- substrates where indicated or where recommended by joint sealant manufacturer based on preconstruction Joint sealant-substrate tests or prior experience. Apply primer to comply with Joint sealant manufacturer's recommendations. Confine primers to areas of Joint sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Acoustical Sealant Application Standard: Comply with recommendations of ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials. applications, and conditions indicated.

D. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:

1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

   a. Do not leave gaps between ends of Joint fillers.
   b. Do not stretch. twist, puncture, or tear joint fillers.
   c. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.

E. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.

F. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

1. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

2. Provide flush joint configuration, per Figure 5B in ASTM C 1193, where indicated.

a. Use masking tape to protect adjacent surfaces of recessed tooled joints.

3. Provide recessed joint configuration, per Figure 5C in ASTM C 1193, of recess depth and at locations indicated.

3.4 CLEANING

A. Clean off excess sealants c-,r sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs. cut out and remove damaged or deteriorated joint sealants immediately so that and installations with repaired areas are indistinguishable from original work.

ELASTOMERIC JOINT SEALANT DATA SHEET ONE

Elastomeric Joint Sealant Designation: Indicated as "SEALER" for control joints in masonry and other exterior applications including doors, windows, etc.
Base Polymer: Neutral-curing silicone.
Type: S (single component).
Grade: NS (nonsag).
Class: 25.
Uses Related to Exposure: NT (non-traffic).
Uses Related to Joint Substrates: M, and. as applicable to joint substrates indicated, O.
Use O Joint Substrates: Galvanized steel, brick, and wood.)
(Available [Products: SPECTREM 1 by Tremco "864" by Pecora Cop."79U' by Dow Corning

ELASTOMERIC JOINT SEALANT DATA SHEET TWO
Elastomeric Joint Sealant Designation: SEALANT FOR JOINTS IN CONCRETE SLABS -TRAFFICABLE SURFACES
Base Polymer: Urethane.
Type: S (single component).
Grade: NS (nonsag).
Class: 25.
Usets] Related to Exposure: T (traffic).
Uses Related to Joint Substrates: M, and, as applicable to Joint substrates indicated, O.
Use O Joint Substrates: (Coated glass, color anodized aluminum, aluminum coated with a High performance coating, galvanized steel, brick, tile, and wood.)
"Available [Products:
ISO-FLEX 830 by Peterson. Harry S.
SONOPLASTIC NP 1 by Sonneborn Bldg. Prod. Div.
Vulkem 116 by Mameco

END OF SECTION 07901

SECTION 08100 - METAL DOORS AND FRAMES

PART 1 - GENERAL

See General Provisions Of Section 08000

1.2 DESCRIPTION

A. Work included

1. The following work is included in work of this section.

a. Metal frames and/or doors.
b. Installation into doors or frames of items furnished by others.

B. General

1. Clearances

a. Between doors and frame at head and jambs, 1/8".
b. At door sills, where no threshold is used, 5/8" maximum above finished floor.
c. Where threshold is used, 3/4" maximum above finished floor, unless otherwise noted.
d. Between meeting edges of pairs of doors, 1/8".

2. Site Storage and Protection Of Materials

a. It shall be the responsibility of Contractor to see that any scratches or disfigurement caused in shipping or handling are promptly cleaned and touched up with a rust -inhibitive primer, and that materials are properly stored on planks or dunnage, in dry location, and covered to protect them from damage.

b. Doors shall have their wrappings or coverings removed upon delivery at building site and shall be stored in a vertical position, spaced by blocking to permit air circulation between them.

PART 2 - PRODUCTS

2.1 HOLLOW METAL DOORS

A. Materials

Door shall be made of commercial quality, level, cold rolled steel conforming to ASTM Designation A-366-68 and free of scale, pitting, or other surface defects. Face sheets for interior doors shall not be less than 18 gauge and shall have zinc coating of not less than 0.10 ounces per square foot.

B. Design and Construction

1. All doors shall be custom made of type and sizes shown on approved shop drawings, and shall be fully welded seamless construction with no visible seams or joints on their faces or their vertical edges. Minimum door thickness shall be 1 3/4".

2. All doors shall be strong, rigid, and neat in appearance, free from warpage or buckle. Corner bends shall be true and straight and of minimum radius for gauge of metal use.

3. Face sheets shall be stiffened by continuous vertical formed steel sections spanning full thickness of the interior space between door faces. These stiffeners shall not be less than 22 gauge, spaced not more than 6" apart and securely attached to face sheets by spot welds not more than 5" on center. Spaces between stiffeners shall be sound deadened and insulated full height of door with inorganic non-combustible batt type material.

4. Exterior doors shall be thermally insulated with polyurethane core.

5. Door faces shall be joined at their vertical edges by a continuous weld extending the full height of the door. All such welds shall be ground, filled and dressed smooth to make them invisible and provide a smooth flush surface.

6. Top and bottom edges of all doors shall be closed with a continuous recessed steel channel not less than 18 gauge, extending full width of the door, and spot welded to both faces. Exterior doors shall have an additional flush closing channel at their top and bottom edges, and where required for attachment of weatherstripping. Openings shall be provided in bottom closure of exterior doors to permit escape of entrapped moisture.

7. Edge profiles shall be beveled 1/8" in 2" on both vertical edges of door.

8. All hardware furnished by Hardware Contractor for single acting doors shall be designed for bevel edges.

C. Hardware Reinforcements

A. Materials

1. Frames for exterior openings shall be made of commercial grade cold rolled steel conforming to ASTM designation A366-68, not less than 16 gauge, and shall have a zinc coating of not less than 0.10 ounces per square feet.

2. Frames for interior openings shall be either commercial grade cold rolled steel conforming to ASTM A366-68 or commercial grade hot rolled and pickle steel conforming to ASTM A569-66T. Metal thickness shall not be less than 16 gauge.

B. Design and Construction

1. All finished work shall be strong and rigid, neat in appearance, square, true and free of defects, warp and buckle. Molded members shall be clean cut, straight, and of uniform profile throughout their lengths.

2. Jamb depths, trim , profile and backbends shall be as scheduled by Architect and shown on approved shop drawings.

3. Corner joints shall have all contact edges closed tight.

4. Minimum depth of stops shall be 5/8".

C. Frames for multiple or special openings shall have mullion and /or rail members which are closed tubular shapes having no visible seams or joints.

D. Hardware Reinforcements

1. Frames shall be mortised, reinforced, drilled and tapped at the factory for fully templated mortised hardware only, in accord with approved hardware schedule and templates provided by hardware contractor. Where surface mounted hardware is to be applied, frames shall have reinforcing plates only. All drilling and tapping shall be done by others.

E. Floor Anchors

1. Floor anchors shall be securely welded inside each jamb for floor anchorage.

2. Minimum thickness of floor anchors shall be 14 gauge.

F. Jamb Anchors

1. Frames for installation is stud partition shall be provided with 4 steel anchors of suitable design, not less than 16 gauge thickness, securely welded inside each jamb.

G. Mutes

1. Three (3) Glynn Johnson GJ64 rubber silencers at jamb for single doors, two at head of double doors without mullion.

H. Dust cover boxes (or mortar guards) of not thinner than 26 gauge steel shall be provided at all hardware mortises on frames to be set in wood, masonry, drywall, or plaster partitions.

I. All frames shall be provided with a steel spreader temporarily attached to feet of both jambs to serve as a brace during shipping and handling.

J. Finish

After fabrication, all tool marks and surface imperfections shall be removed, and exposed faces of all welded joints shall be dressed smooth. Frames shall then be chemically treated to insure maximum paint adhesion and shall be coated on all accessible surfaces with a rust-inhibitive primer which is fully cured before shipment.

END OF METAL DOORS AND FRAMES

SECTION 08111 - STEEL FRAMES - INTERIOR WITH WOOD DOORS

PART 1 GENERAL

1.1_ SCOPE

Specifications apply to steel door frames as shown on architects' plans and schedules, as manufactured by Steelcraft, Cincinnati, Ohio, and as conforming to ANSI SDI-100.

1.2 RELATED WORK

A. Work not included: Installation of frames and doors, glass and glazing, field painting of prime painted doors and frames, door and frame hardware, protection at the building site of items furnished under this specification.

B. See following sections for related work:

1. Section 08210 - Wood Doors
2. Section 08710 - Hardware
3. Section 08800 - Glazing
4. Section 09900 - Painting: Field painting of doors and frames

1.3 REFERENCES

A. ASTM E152 - Method of Fire Tests of Door Assemblies
B. DHI - Installation Guide for Doors and Hardware
C. NFPA 80 - Fire Doors and Windows
D. NFPA 252 - Fire Tests for Door Assemblies
E. SDI-100 - Standard Steel Doors and Frames
F. SDI-105 - Recommended Erection Instructions for Steel Frames
G. UL 10B - Fire Tests of Door Assemblies
H. ANSI A151.1 - Endurance Test
I. ANSI 115 - Hardware Preparation

1.4 QUALITY ASSURANCE

A. Conform to requirements of SDI-100, ANSI A151.1, and other specifications herein named. Test reports shall be submitted upon request.

B. Underwriters' Laboratories and Warnock Hersey, labeled fire doors and frames:

1. All labeled fire doors and frames shall be of a type which has been investigated and tested in accordance with UL-10(b), ASTM E-152, NFPA 252, ANSI A2.2.

2. Underwriters' Laboratories labeled doors and frames shall be manufactured under the UL factory inspection program and in strict compliance to UL procedures, and shall provide a degree of fire protection, heat transmission and panic loading capability indicated by the opening class.

3. Warnock Hersey labeled doors and frames shall be manufactured to meet the specific requirements of that labeling agency's current procedure for the tested hourly rating designated and shall be subject to inspection by representatives of the labeling agency.

4. A physical label or approved marking shall be affixed to the fire door or fire door frame at an authorized facility as evidence of compliance with procedures of the labeling agency.

1.5 REGULATORY REQUIREMENTS

Frames shall conform to applicable codes for fire ratings.

1.6 SUBMITTALS

A. Submit shop drawings (and product data) under provisions of Section (01300).

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

C. Submit manufacturer's installation instructions under provisions of Section (01300).

1.7 DELIVERY, STORAGE AND PROTECTION

A. **Storage of Frames:** Frames shall be stored under cover on 4" (101.6 mm) wood sills on floors in a manner that will prevent rust and damage. Do not use non-vented plastic or canvas shelters, which create a humidity chamber and promote rusting. Assembled frames shall be stored in a vertical position, five units maximum in a stack. Provide a 1/4" (6.35 mm) space between frames to promote air circulation.

PART 2 PRODUCTS

2.1 MATERIALS

A. Frames and Frame components shall be manufactured from cold-rolled steel conforming to ASTM specification A366; or hot-dipped galvanized steel having an A60 zinc coating conforming to ASTM specification A924. Galvanized steel shall be treated to insure proper paint adhesion. All component parts used in galvanized doors and/or frames shall meet the galvanize specification.

2.2 FRAMES

A. CONSTRUCTION OF FRAMES

1. **Flush Frames:** Flush frames shall be formed from 18[1.1mm]-gage cold-rolled or galvanized steel.

   Frames shall have 2"[51mm] faces, and 18-gage frames shall be knocked down or set-up and arc-welded. Miter corners shall have reinforcements with four integral tabs for secure and easy interlocking jambs to head.

   18-gage frames shall be supplied with factory installed inserted type rubber bumpers, (3) per strike jamb and (2) per head, for pair of doors. Stick on bumpers shall not be permitted.

   Frames for 1-3/4"[45mm] doors shall have 7[4.4mm]-gage steel hinge reinforcements. Strike reinforcements shall be 16[1.3mm]-gage and prepared for an ANSI-A115.1-2 strike.

   Metal plaster guards shall be provided for all mortised cutouts.

   All hinge and strike reinforcements shall be projection welded to the door frame.

   Reinforcements for surface closer shall be 14[1.7mm]-gage steel. Adequate reinforcements shall be provided for other hardware when required.

   Galvanized frames shall have galvanized hardware reinforcements. Frames shall be furnished with a minimum of six wall anchors and two adjustable base anchors of manufacturer's standard design.

2. **Drywall Frames:** Drywall frames shall be the same as flush frames except: Frames shall be formed with double return backbends to prevent cutting into drywall surface. Frames shall be knocked down, designed to be securely installed in the rough opening after wall board is applied. Mitered corners shall be reinforced with a wedge lock corner clip to provide a firm interlock of jambs to head.

   Each jamb shall have an adjustable anchor located 4"[101mm] from the top of the door opening to hold frame in rigid alignment. Frames shall have a welded-in base anchor attaching plate in each jamb for field installation of loose base anchors or frames shall have two (2) dimpled holes in each jamb for anchoring base of frame with screws.

2.4 FABRICATION

A. Frames shall be supplied:

1. Knocked down for field assembly or

2. Set up with faces arc-welded and ground smooth. Miters of frames shall be back welded. Weld shall penetrate the outside face. Faces shall be dressed smooth. Filler materials are not permitted.

2.7 FINISH

A. All frames and frame components shall be cleaned, phosphatized and finished as standard with one coat of baked-on rust inhibiting prime paint in accordance with the ANSI A224.1 "Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames."

PART 3 EXECUTION

3.1 INSTALLATION

A. Doors and frames shall be installed in accordance with "Door and Hardware Institute" publication, "Installation Guide for Doors and Hardware" and/or Steelcraft installation instructions.

B. Label doors and frames shall be installed per NFPA-80 and/or as noted in item number 3.01A.

END OF SECTION 08111

SECTION 08200 - WOOD DOORS

PART 1 GENERAL

1.1_ RELATED DOCUMENTS

1. Drawings and general provisions of contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to work of this section.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer of wood doors may include, but is not limited to:

1. Algoma Hardwood Inc.

2.2 DOOR SPECIFICATION

A. Meet or exceed the requirements of NWWDA I.S. 1-A Wood Flush Doors.
A. PC-5 particle board core, 5-Ply hot pressed.
B. Stile & Rail AWI Section 1400.
C. Red Oak veneer, factory machined.
D. Life of original installation warranty.

PART 3 INSTALLATION

3.1 Installation: Install doors to fit openings with no catch or bind. Provide adjustments during warranty period.

END OF SECTION 08200

SECTION 08360 - SECTIONAL DOORS - 625 Series Stormtite Insulated Service Door

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All of the Contract Documents, including General and Supplementary Conditions, and Division 1 General Requirements, apply to the work of this Section.

1.02 SUMMARY

A. The work of this Section includes upward-acting rolling door.

B. Related Sections: Other specification sections which directly relate to the work of this Section include, but are not limited to, the following:

1. Section 05500 - Miscellaneous Metal; metal framing and supports.
2. Section 08710 - Finish Hardware; key cylinders for locks.
3. Section 09900 - Painting; field painting.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions for each type of sectional door. Include both published data and any specific data prepared for this project.

B. Shop Drawings: Submit shop drawings for approval prior to fabrication. Include detailed plans, elevations, details of framing members, required clearances, anchors, and accessories. Include relationship with adjacent materials.

1.04 QUALITY ASSURANCE

A. Manufacturer: Rolling doors shall be manufactured by a firm with a minimum of five years experience in the fabrication and installation of sectional doors. Manufacturers proposed for use, which are not named in these specifications, shall submit evience of ability to meet performance and fabrication requirements specified, and include a list of five projects of similar design and complexity completed within the past five years.

B. Installer: Installation of rolling doors shall be performed by the authorized representative of the manufacturer.

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

D. Pre-Installation Conference: Schedule and convene a pre-installation conference just prior to commencement of field operations, to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials and products in labeled protective packages. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from damage from weather, excessive temperatures and construction operations.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

A. Provide rolling doors by Overhead Door Corporation, Dallas, Texas; Telephone 800-887-3667 or 214-233-6611; Fax 214-233-0367, or equal.

2.02 ALUMINUM SECTIONAL DOORS

A. Trade Reference: 625 Stormtite Insulated Service Door by Overhead Door Corporation.

B. Curtain: Interlocking roll-formed slats as specified following. Endlocks shall be attached to each end of alternate slats to prevent lateral movement.
1. Flat profile type F-2651 .040 Aluminum front slat, back slat .024 aluminum
2. Slat cavity filled with CFC-Free foamed-in-place, polyurethane insulation
3. R value = 7.7, U-value 0.13
4. Sound rating = STC-21.

C. Finish and Color:

1. Powder Coating Finish: (Color as selected by Architect from manufacturer's standard colors.)

D. Windload Design: HIGH WINDLOAD OPTION

E. Hardware: Galvanized steel hinges and fixtures. Ball bearing rollers with hardened steel races.

F. Lock: Interior galvanized single unit.

G. Weatherstripping: Flexible PVC on bottom section. (Jamb seals.) (Header seal.)

H. Track: Provide track as recommended by manufacturer to suit loading required and clearances available.

I. Manual Operation: Chain hoist.

PART 3 - EXECUTION

3.01 PREPARATION

A. Take field dimensions and examine conditions of substrates, supports, and other conditons under which this work is to be performed. Do not proceed with work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Strictly comply with manufacturer's installation instructions and recommendations. Coordinate installation with adjacent work to ensure proper clearances and allow for maintenance.

B. Instruct Owner's personnel in proper operating procedures and maintenance schedule.

3.03 ADJUSTING AND CLEANING

A. Test sectional doors for proper operation and adjust as necessary to provide proper operation without binding or distortion.

B. Touch-up damaged coatings and finishes and repair minor damage. Clean exposed surfaces using non-abrasive materials and methods recommended by manufacturer of material or product being cleaned.

END OF SECTION 08360

SECTION 08410-ALUMINUM ENTRANCES AND STOREFRONTS

PART 1-GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. This section includes the following:

1. Exterior entrance systems.
2. Exterior storefront systems.

B. Related sections include the following:

1. Division 7 Section " Joint Sealants" for joint sealants installed as part of aluminum entrance and storefront systems.
2. Division 8, Section "Glazing".
3. Division 8, Section "Hardware".

1.3 SYSTEM DESCRIPTION

A. General: Provide Aluminum entrance and storefront systems capable of withstanding loads and thermal and structural movement requirements indicated without failure, based on testing manufacturer's standard units in assemblies similar to those indicated for this Project. Failure includes the following:

1. Air infiltration and water penetration exceeding specified limits.
2. Framing members transferring stresses, including those caused by thermal and structural movement to glazing units.

B. Glazing: Physically and thermally isolate glazing from framing members.

C. Thermally Broken Construction: Provide systems that isolate aluminum exposed to exterior from aluminum exposed to interior with a material of low thermal conductance.

D. Wind Loads: Provide entrance and storefront systems, including anchorage, capable of withstanding wind-load design pressures calculated according to requirements of authorities having jurisdiction or The American Society Of Civil Engineers' ASCE 7, "minimum design loads for buildings and other structures" 6.4.2. " analytical procedure" whichever are more stringent.

1. Deflection of framing members in a direction normal to wall plane is limited to 1/175 of clear span or 3/4 inch whichever is smaller, unless otherwise indicated.

2. Static-Pressure Test Performance: Provide entrance and storefront systems that do not evidence material failures,structural distress, failure of operating components to function normally, or permanent deformation of main framing members exceeding 0.2 percent of clear span when tested according to ASTM E 330.

   a. Test Pressure: 150 % of inward and outward windload design pressures.
   b. Duration: As required by design wind velocity: fastest 1 mile (1609 km) of wind for relevant exposure category.

E. Hurricane-Resistance Test Performance: Provide entrance and storefront systems that pass large and small missile-impact tests, as required by systems location above grade and cylic pressure tests according to testing requirements of authorities having jurisdiction.

F. Seismic Loads: Provide entrance and storefront systems, including anchorage, capable of withstanding the effects of earthquake motions, calculated according to requirements of authorities having jurisdiction or ASCE 7, " Minimum Design Loads for Buildings and other Structures," Section 9, "Earthquake Loads", whichever are more stringent.

G. Dead Loads: Provide entrance and storefront-system members that do not deflect on amount that will reduce glazing bite below 75 percent of design dimension when carrying full dead load.

1. Provide a minimum 1/8 inch (3.18 mm) clearance between members and top of glazing or other fixed part immediately below.

2. Provide a minimum 1/16 inch (1.59 mm) clearance between members and operable windows and doors.

H. Live Loads: Provide entrance and storefront systems, including anchorage, that accommodate the supporting structures deflection from uniformly distributed and concentrated live loads indicated without failure of materials or permanent deformation.

I. Air Infiltration: Provide entrance and storefront systems with permanent resistance to air leakage through fixed glazing and frame areas of not more than 0.06 cfm/sq. ft. (0.3 L/s/sq. m) of fixed all area when tested according to ASTM 283 at a static air pressure difference of 1.57 lbf/sq. ft. (75.2 Pa.)

J. Water Penetration: Provide entrance and storefront that do not evidence water leakage through fixed glazing and frame areas when tested according to ASTME 331 at minimum differential pressure of 20 percent of inward acting wind load design pressure as defined by ASCE 7 " Minimum Design Loads for Buildings and Other Structures" but not less than 12.24 lbf/sq.ft.. Water leakage is defined as follows:

1. Uncontrolled water infiltrating systems or appearing on systems normally exposed interior systems from sources other than condensation. Water controlled by flashing and gutters that is drained back to the exterior and cannot damage adjacent materials or finishes is not water leakage.

K. Thermal Movements: Provide entrance and storefront systems, including anchorage that accommodate thermal movements of systems and supporting elements resulting from the following maximum change range in ambient and surface, temperatures without buckling, damaging stresses on glazing, failure of joint sealants, damaging stresses on glazing, failure of joint sealants, damaging loads on fasteners, failure of doors or other operating units to function properly, and other detrimental effects.

1. Temperature Change (Range): 120 deg F. (67 deg C), ambient: 180 deg F (100 deg C)material surfaces.

L. Structural Support Movement: Provide entrance and storefront systems that accommodate structural movements including, but not limited to, sway and deflection.

M. Condensation Resistance: Provide storefront systems with condensation resistance factor (CRF) of not less than 45 when tested according to AAMA 1503.1.

N. Average Thermal Conductance: Provide storefront systems with average U-values of not more than 0.63 bfu./sq. ft. x h x deg F (3.57 W/sq m x k) when tested according to AAMA 1503.1.

O. Dimensional Tolerances: Provide entrance and storefront systems that accommodate dimensional tolerances of building frame and other adjacent construction.

1.4 SUBMITTALS

A. Product Data: For each product specified, include details of construction relative to materials, dimensions of individual components, profiles and finishes.

B. Shop Drawings: For entrance and storefront systems. Show details of fabrication and installation, including plans, elevations and sections, details of components, provisions for expansion and contraction, and attachments to other work.

C. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for units with factory applied color finishes.

D. Samples for Verification: Of each type of exposed finish required in manufacturer's standard sizes. Where finishes involve normal color and texture variations, include sample sets showing he full range of variations expected.

E. Cutaway Sample: Of each vertical to horizontal framing intersection of systems, made from minimum 6 inch (150 mm) lengths of full size components and showing details of the following:

1. Anchorage
2. Glazing
3. Flashing and drainage

F. Installer Certificate: Signed by manufacturer certifying that installers comply with specified requirements.

G. Sealant Compatibility and Adhesion Test Reports: From sealant manufacturer; indicating that materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with sealants; include joint sealant manufacturer's written interpretation of test results relative to sealant performance and recommendations for primers and substrate preparation needed to obtain adhesion.

H. Product Test Reports: Based on evaluation of tests performed by manufacturer and witnessed by a qualified independent testing agency, indicate compliance of entrance and storefront systems with requirements based on comprehensive testing of current systems.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage on experienced installer to assume engineering responsibility and perform work of this section who has specialized in installing entrance and storefront systems similar to those required for this project and who is acceptable to manufacturer.

1. Engineering Responsibility: Prepare data for entrance and storefront systems including shop drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this project.

B. Source Limitations: Obtain each type of entrance and storefront system through one source from a single manufacturer.

C. Product Options: Drawings indicate size, profiles and dimensional requirements of entrance and storefront systems and are based on the specific systems indicated. Other manufacturer's systems with equal performance characteristics may be considered.Refer to Division 1, Section " Substitutions".

1. Do not modify intended aesthetic effect, as judged solely by architect, except with architects approval and only to the extent needed to comply with performance requirements. Where modifications are proposed submit comprehensive explanatory data to architect for review.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions by field measurements before fabrication and indicate measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the work.

1.7 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

B. Special Warranty: Submit a written warranty executed by the manufacturer agreeing to repair or replace components of entrance and storefront systems that fall in materials or workmanship within the specified warranty period. Failures include, but are not limited to the following:

1. Deterioration of Metals,metal finishes, and other materials beyond normal weathering.
2. Failure of operating components to function normally.
3. Water leakage through fixed glazing and frame areas.

C. Warranty Period: 2 years from date of substantial completion.

PART 2-PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the work include, but are not limited to the following:

1. International Aluminum Corporation; U.S. Aluminum
2. Kawneer Company, Inc.

2.2 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated, complying with the requirements of standards indicated below.

1. Sheet and Plate: ASTM B 209 (ASTM B 209M)
2. Extruded bars, rods, shapes and tubes: ASTM B 221 (ASTM B 221M)
3. Extruded Structural Pipe and Tubes: ASTM B 429.
4. Bars, Rods and Wire: ASTM B 211 (ASTM B 211M)

B. Steel Reinforcement: Complying with ASTM A 36 (ASTM A 36M) for structural shapes,plates and bars: ASTM A 611 for cold rolled sheet and strip: or ASTM A 570 (ASTM A 570M) for hot rolled sheet and strip.

C. Glazing as specified in Division 8, section " Glazing"

D. Glazing Gaskets: Manufacturer's standard pressure-glazing system of block, resilient glazing gaskets, settling blocks and shims or spacers, fabricated from an elastomer of type and in hardness recommended by system and gasket manufacturer to comply with system performance requirements. Provide gasket assemblies that have corners sealed with sealant recommended by gasket manufacturer.

E. Framing system gaskets, sealants, and joint fillers as recommended by manufacturer for joint type.

F. Sealants and joint fillers for joints at perimeter of entrance and storefront systems as specified in Division 7 Section " Joint Sealants."

G. Bituminous Point: Cold-applied asphalt-mastic paint complying with SSPC-Paint 12 requirements, except containing no asbestos, formulated for 30-mil (0.762-mm) thickness per coat.

2.3 COMPONENTS

A. Doors: Provide manufacturer's standard 1-3/4 inch thick glazed doors with minimum 0.125 inch thick, extended tabular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deep penetration and fillet welded or that incorporate concealed tie-rods.

1. Glazing Stops and Gaskets: Provide manufacturer's standard snap on extruded aluminum glazing stops and preformed gaskets.

2. Stile Design: Wide stile; over 4 inches wide.

B. Brackets and Reinforcements: Provide manufacturer's standard brackets and reinforcements that are compatible with adjacent materials. Provide nonstaining, nonferrous shims for aligning system components.

C. Fasteners and Accessories: Manufacturer's standard corrosion resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Reinforce members as required to retain fastener threads.
2. Do not use exposed fasteners, except for hardware application. For hardware application use countersunk Phillips flat-head machine screws finished to match framing members or hardware being fastened, unless otherwise indicated.

D. Concealed Flashing: Manufacturer's standard corrosion-resistant, non-staining, non-bleeding flashing, compatible with adjacent materials, and of type recommended by manufacturer.

E. Weather Stripping: Manufacturer's standard replaceable weather stripping as follows:

1. Compression Weather Stripping: Molded neoprene complying with ASTM D 2000 requirements or molded PVC complying with ASTM D 2287 requirements.

2. Sliding Weather Stripping: Wool, Polypropylene, or nylon woven pile with nylon fabric or aluminum-strip backing complying with AAMA 701 requirements.

2.4 FABRICATION

A. General: Fabricate components that, when assembled, will have accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion. After fabrication, clearly mark components to identify their locations in project according to shop drawings.

1. Fabricate components for screw spline or shear block frame construction.

B. Forming: Form shapes with sharp profiles, straight and free of defects or deformations, before finishing.

C. Prepare components to receive concealed fasteners and anchor and connection devices.

D. Fabricate components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.

E. Glazing Channels: Provide minimum clearances for thickness and type of glass indicated according to FGMA'S " Glazing Manual "

F. Metal Protection: Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

G. Storefront: Fabricate framing in profiles indicated for flush glazing (without projecting stops) Provide subframes and reinforcing of types indicated or, if not indicated as required for a complete system. Factory assemble components to greatest extent possible. Disassemble components only as necessary for shipment and installation.

H. Entrances: Fabricate door framing in profiles indicated. Reinforce as required to support imposed loadsfact assemble door and frame units and factory install hardware to greatest extent possible. Reinforce door and frame units as required for installing hardware indicated. Cut,drill and tap for factory installed hardware before finishing components.

1. Exterior Doors: Provide compression weather stripping at fixed stops. At other locations provide siding weather stripping retained in adjustable strip mortised into door edge.

2.5 ALUMINUM FINISHES

A. General: Comply with NAAMM's " Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying and designating finishes.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved samples and are assembled or installed to minimize contrast.

C. Finish Designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.

D. High-Performance Organic Cooling Finish: AA-C12C42R1x (Chemical finish, cleaned with inhibited chemicals; chemical finish: acid chormate chloride phosphate conversion coating; organic coating: as specified below) Prepare pre-treat and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's written instructions.

1. Fluoropolymer 3-coat cooling system: Manufacturer's standard 3-coat thermocured system composed of specially formulated inhibitive primer.Fluoropolymer color coat, and clear flourcarbon topcoat, with both color coat and clear top coat, with both color coat and clear topcoat containing not less than 70 percent polyvinyldene fluoride resin by weight, complying with AAMA 605 2.

a. Color and Gloss: As selected by Architect from manufacturer's full range of choices for color and gloss.

2.6 STEEL PRIMING

A. General: Comply with NAAMM's " Metal finishes manual for Architectural and Metal Products" for recommendations relative to applying primer.

B. Surface Preparation: Perform manufacturer's standard cleaning operations to remove dirt, oil, and grease, or other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel.

C. Priming: Apply manufacturer's standard corrosion resistant primer immediately after surface preparation and pre-treatment.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of entrance and storefront systems. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Comply with manufacturer's written instructions for protecting, handling, and installing entrance and storefront systems. Do not install damaged components. Fit frame joints to produce hairline joints free of burns and distortion. Rigidly secure nonmovement joints. Seal joints watertight.

B. Metal Protection: Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Install components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.

D. Set continuous sill members and flashing in a full sealant bed to provide weathertight construction unless otherwise indicated. Comply with requirements of Division 7, Section " Joint Sealants"

E. Install framing components, plumb and true in alignment with established lines and grades without warp or rack of framing members.

F. Install entrances plumb and true in alignment with established lines and grades without warp or rack. Lubricate operating hardware and other moving parts according to hardware manufacturer's written instructions.

G. Install glazing to comply with requirements of division 8 Section " glazing " unless otherwise indicated.

H. Install perimeter sealant to comply with requirements of Division 7 Section " Joint Sealants" unless otherwise indicated.

I. Erection Tolerances: Install entrance and storefront systems to comply with the following maximum tolerances:

1. Variation from plane: Limit variation from plane or location shown to 1/8 inch in 12 feet; 1/4 inch over total length.

2. Alignment: Where surfaces abut in line; limit offset from true alignment to 1/16 inch, where surfaces meet at corners, limit offset from true alignment to 1/32 inch.

3. Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch.

3.4 ADJUSTING AND CLEANING

A. Adjust doors and hardware to provide tight fit at contact points and weather stripping, smooth operation, and weathertight closure.

B. Remove excess sealant and glazing compounds, and dirt from surfaces.

3.5 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and to installer, that insure entrance and storefront systems are without damage or deterioration at the time of substantial completion.

END OF SECTION 08410

SECTION 08520 - ALUMINUM WINDOWS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

A. Extent of each type of aluminum window unit is shown on drawings.

B. Applications of aluminum windows on project include the following:

1. Individual units set in conventional wall construction.

C. Glazing: Refer to "glass and glazing" section for glazing all window units, including those specified to be factory preglazed.

1.3 QUALITY ASSURANCE:

A. Standards: Except as otherwise indicated, requirements for aluminum windows, terminology and standards of performance, and fabrication workmanship are those specified and recommended in ANSI/AAMA 302.9 and applicable general recommendations published by AAMA and AA.

B. Manufacturer:

Drawings are based on aluminum window units by the following:

1. United States Aluminum SERIES IT451

1.4. SUBMITTALS:

A. Product Data: Submit manufacturer's specifications, recommendations, and standard details for aluminum window units, including certified test laboratory reports as necessary to show compliance with requirements.

B. Shop Drawings: Submit shop drawings, including wall elevations at 1/4" scale, typical unit elevations at 3/4" scale, and full size detail sections of every typical composite member. Show anchors, hardware, operators, and other components not included in manufacturer's standard data. Include glazing details.

C. Samples: Submit samples of each required aluminum finish, on 12" long sections of extrusion shapes as required for window units.

1. Architect reserves right to require additional samples which will show fabrication techniques, workmanship of component parts, and design of hardware and other exposed auxiliary items.

1.5 SPECIAL PROJECT WARRANTY:

A Submit written warranty signed by Manufacturer, Installer and Contractor, agreeing to replace aluminum window units which fail in materials or workmanship within 3 years of date of acceptance. Failure of materials or workmanship shall include (but not be limited to) excessive leakage or air infiltration, excessive deflections, faulty operation of sash, deterioration of finish or metal in excess of normal weathering, and defects in hardware, weatherstripping, and other components of work.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Aluminum Extrusions: Center glaze with thermal break.

B. Sealant: Unless otherwise indicated for sealants required within fabricated window units, provide type recommended by window manufacturer for joint size and movement, to remain permanently elastic, non-shrinking and non-migrating. Comply with Division 7 sections for installation of sealants.

2.2 ALUMINUM WINDOW FINISHES:

A. KYNAR 500 - Baked on finish.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. Comply with manufacturer's specifications and recommendations for installation of window units, hardware, operators, and other components of work.

B. Set units plumb, level and true to line, without warp or rack of frames or sash. Anchor securely in place. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action.

C. Set sill members and other members in bed of compound as shown, or with joint fillers or gaskets as shown, to provide weathertight construction. Refer to Division 7 sealant sections for compounds, fillers and gaskets to be installed with window units. Coordinate installation with wall flashings and other components of work.

3.2 CLEAN:

A. Clean aluminum surfaces promptly after installation of windows, exercising care to avoid damage to protective coatings and finishes. Remove excess glazing and sealant compounds, dirt and other substances. Lubricate hardware and moving parts.

B. Clean glass of preglazed units promptly after installation of windows; comply with requirements of "glass and glazing" section for cleaning and maintenance.

C. Initiate and maintain all protective and other precautions required to ensure that window units will be without damage or deterioration (other than normal weathering) at time of acceptance.

End of Section 08520
Aluminum Windows

SECTION 08710- DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1 .2 SUMMARY

A. This Section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.

B. This Section includes the following:
1. Hinges.
2. Lock cylinders and keys.
3. Lock and latch sets.
4. Weatherstripping for exterior doors.
5. Thresholds

C. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 8 Section "Hollow Metal Doors and steel Frames" for silencers integral with hollow metal frames.
2. Division 8 Section " Wood Doors".

1.3 HARDWARE ALLOWANCE

A. Selection and Ordering: Furnish door hardware as selected by Architect and in such quantities as provided for under Division 1 Section "Allowances" and other general provisions of the Contract.

B. Door hardware supplier's responsibilities shall be as follows:

1. Submittals: Submit through Contractor required product data, final hardware schedule, separate keying schedule, and samples as specified in this Section, unless otherwise indicated.

2. Construction Schedule: Inform Contractor promptly of estimated times and dates that will be required to process submittals, to furnish templates, to deliver hardware, and to perform other work associated with furnishing door hardware for purposes of including this data in construction schedule. Comply with this schedule.

3. Coordination and Templates: Assist Contractor as required to coordinate hardware with other work in respect to both fabrication and installation. Furnish Contractor with templates and deliver hardware to proper locations.

4. Product Handling: Package, identify, deliver, and inventory door hardware specified in this Section.

5. Discrepancies: Based on requirements indicated in Contract Documents in effect at time of door hardware selection, furnish types, finishes, and quantities of door hardware, including fasteners, and Owner's maintenance tools required to comply with specified requirements and as needed to install and maintain hardware. Furnish or replace any items of door hardware resulting from shortages and incorrect items at no cost to the Owner or Contractor. Obtain signed receipts from Contractor for all delivered materials.

C. Contractor's responsibilities shall be as follows:

1. Submittals: Coordinate and process submittals for door hardware in same manner as submittals for other work.
2. Construction Schedule: Cooperate with door hardware supplier in establishing scheduled dates for submittals and delivery of templates and door hardware. Incorporate in construction schedule the times and dates related to furnishing hardware by door hardware supplier.
3. Coordination: Coordinate door hardware with other Work. Furnish hardware supplier or manufacturer with shop drawings of other work where required or requested. Verify completeness and suitability of hardware with supplier.
4. Product Handling: Provide secure lock-up for hardware delivered to the site. Inventory hardware jointly with representative of hardware supplier and issue signed receipts for all delivered materials.
5. Installation Information: The general types and approximate quantities of hardware required for this Project are indicated at the end of this Section in order to establish Contractor's costs for installation and other work not included in allowance.

1.4 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification sections.

B. Product data including manufacturers' technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.

C. Final hardware schedule coordinated with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Final Hardware Schedule Content: Based on hardware indicated, organize schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:

a. Type, style, function, size, and finish of each hardware item.
b. Name and manufacturer of each item.
c. Fastenings and other pertinent information.
d. Location of each hardware set cross referenced to indications on Drawings both on floor plans and in door and frame schedule.
e. Explanation of all abbreviations, symbols, and codes contained in schedule.
f. Mounting locations for hardware.
g. Door and frame sizes and materials.
h. Keying information.

2. Submittal Sequence: Submit final schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work that is critical in the Project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by door hardware, and other information essential to the coordinated review of schedule.

D. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.5 QUALITY ASSURANCE

A. Single Source Responsibility: Obtain each type of hardware (latch and lock sets, hinges, Closers, etc.) from a single manufacturer.

B. Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities in the Project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that employs an experienced architectural hardware consultant (AHC) who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.

1. Require supplier to meet with Owner to finalize keying requirements to obtain final instructions in writing.

1.6 PRODUCT HANDLING

A. Tag each item or package separately with identification related to final hardware schedule, and include basic installation instructions with each item or package.

B. Packaging of door hardware is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set numbers of approved hardware schedule. Two or more identical sets may be packed in same container.

C. Inventory door hardware jointly with representatives of hardware supplier and hardware installer until each i s satisfied that count is correct.

D. Deliver individually packaged door hardware items promptly to place of installation (shop or Project site).

E Provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items that are not immediately replaceable so that completion of the Work will not be delayed by hardware losses both before and after installation.

1 .7 MAINTENANCE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

1. Butts and Hinges:
   a. Bommer Industries, Inc.
   b. Cal-Royal Products, Inc.
   c. Hager Hinge Co.
   d. Lawrence Brothers, Inc.
   e. McKinney Products Co.
   f. H. Soss & Company.
   g. Stanley Hardware, Div. Stanley Works.

2. Cylinders and Locks:

   a. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
   b. Schlage Lock, Div. Ingersoll-Rand Door Hardware Group.
   c. Yale Security Inc.

2.2 MATERIALS AND FABRICATION

A. Manufacturer's Name Plate: Do not use manufacturers' products that have manufacturer's name or trade name displayed in a visible location (omit removable nameplates) except in conjunction with required fire-rated labels and as otherwise acceptable to Architect.

1. Manufacturer's identification will be permitted on rim of lock cylinders only.

B. Base Metals: Produce hardware units of basic metal and forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units by applicable ANSI/BHMAA156 series standards for each type of hardware item and with ANSI/BHMA A156. 18 for finish designations indicated. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.

C. Base Metals: Produce hardware units of basic metal and forming method indicated using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units for finish designations indicated.

D. Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated.

E. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including "prepared for paint" surfaces to receive painted finish.

F. Provide concealed fasteners for hardware units that are exposed when door is closed except to the extent no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed In other work unless their use is the only means of reinforcing the work adequately to fasten the hardware securely. Where thru-bolts are used as a means of reinforcing the work, provide sleeves for each thru-bolt or use sex screw fasteners.

2.3 HINGES, BUTTS

A Templates: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.

B. Screws: Provide Phillips flat-head screws complying with the following requirements:

1. For hollow metal and frames install machine screws into drilled and tapped holes.
2. For wood doors and frames install wood screws.
3. Finish screw heads to match surface of hinges or pivots.

C. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:

1. Out-Swing Exterior Doors: Non-removable pins.
2. Out-Swing Corridor Doors with Locks: Non-removable pins.
3. Interior Doors: Nonrising pins.
4. Tips: Flat button and matching plug, finished to match leaves.

D. Number of Hinges: Provide number of hinges indicated but not less than 3 hinges per door leaf for doors 90 inches or less in height and one additional hinge for each 30 inches of additional height.

2.4 LOCK CYLINDERS AND KEYING

A. Standard System: Except as otherwise indicated, provide new masterkey system for Project.

B. Review the keying system with the Owner and provide the type required (master, grandmaster or great-grandmaster).

C. Equip locks with manufacturer's special 6-pin tumbler cylinder with construction masterkey feature that permits voiding of construction keys without cylinder removal.

D. Metals: Construct lock cylinder parts from brass or bronze, stainless steel, or nickel silver.

E. Key Material: Provide keys of nickel silver only.

F. Key Quantity: Furnish 3 change keys for each lock.

1. Deliver keys to Owner.

2.5 LOCKS, LATCHES, AND BOLTS

A. Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set, unless otherwise indicated.

1. Provide recess type top strikes for bolts locking into head frames, unless otherwise indicated.
2. Provide dust-proof strikes for foot bolts, except where special threshold construction provide a non-recessed strike for bolt.

B. Lock Throw: Provide 5/8-inch minimum throw of latch on pairs of doors. Comply with UL requirements for throw of bolts and latch bolts on rated fire openings.

1. Provide 1 /2-inch minimum throw of latch for other bored and preassembled types of locks and 3/4-inch minimum throw of latch for mortise locks. Provide 1 inch minimum throw for all dead bolts.

2.6 WEATHERSTRIPPING AND SEALS

A. General: Provide continuous weatherstripping on exterior doors and smoke, light, or sound seals on interior doors where indicated or scheduled. Provide noncorrosive fasteners for exterior applications and elsewhere as indicated. provide as per door manufacturer's details.

B. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strip is easily replaceable and readily available from stocks maintained by manufacturer.

C. Weatherstripping at Jambs and Heads: Provide bumper-type resilient insert and metal retainer strips, surface applied unless shown as mortised or semimortised, and of following metal, finish, and resilient bumper material:

1. Extruded aluminum with natural anodized finish, 0.062-inch minimum thickness of main walls and flanges.
2. Solid neoprene conforming to MIL R 6855, Class II, Grade 40.

a. Flexible, hollow bulb or loop insert.

D. Weatherstripping at Door Bottoms: . Provide threshold consisting of contact-type resilient insert and metal housing of design and size shown and of following metal, finish, and resilient seal strip:

1. Extruded aluminum with natural anodized finish, 0.062-inch minimum thickness of main walls and flanges.
2. Solid neoprene wiper or sweep seal complying with MIL R 6855, Class II, Grade 40.

2.7 THRESHOLDS

A. General: Except as otherwise Indicated, provide standard metal threshold unit.

2.8 HARDWARE FINISHES

A. Match items to the manufacturer's standard color and texture finish for the latch and lock sets .

B. Provide finishes that match those established by BHMA or, if none established, match the Architect's sample.

C. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.

D. Provide protective lacquer coating on all exposed hardware finishes of brass, bronze, and aluminum, except as otherwise indicated. The suffix "-NL" is used with standard finish designations to indicate "no lacquer."

E. The designations used in schedules and elsewhere to indicate hardware finishes are those listed in ANSI/BHMAA156.18, "Materials and Finishes," including coordination with the traditional U.S. finishes shown by certain manufacturers for their products.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Mount hardware units at heights indicated in following applicable publications, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Architect.

1. Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute.

B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing work specified in the Division 9 Sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.

C. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

D. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

E. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements specified in Division 7 Section "Joint Sealers."

F. Weatherstripping and Seals: Comply with manufacturer's instructions and recommendations to the extent installation requirements are not otherwise indicated.

3.2 ADJUSTING, CLEANING, AND DEMONSTRATING

A. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate freely and smoothly or as intended for the application made.

1. Where door hardware is installed more than one month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

B. Clean adjacent surfaces soiled by hardware installation.

C. Instruct Owner's personnel in the proper adjustment and maintenance of door hardware and hardware finishes.

END OF SECTION 08710

SECTION 08800 - GLASS/GLAZING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

1. Drawings and general provisions, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.2 SUMMARY

A. This section includes the following:

1. Exterior Glass
2. Interior Door Glass

PART 2 PRODUCTS

2.1 A. Available Manufacturer:

1. PPG Industries, Inc. or equal.

B. Exterior Glazing: PPG "Sungate" 1000 Low-E Glass- High Impact

C. Interior Door Glazing: PPG Plate, 1/4" Clear Wire Glass

D. Provide tempered sheets as required by Code.

PART 3 EXECUTION

3.1 Install as per manufacturer=s instructions in aluminum frame.

3.2 Install as per manufacturer=s instructions with adhesive and brackets.

3.3 Provide standard warranty.

END OF SECTION

SECTION 08801 - MIRRORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.2 SUMMARY

A. This section includes the following:

1. Mirrors

PART 2 - PRODUCTS

2.1 AVAILABLE MANUFACTURER

A. PPG Industries, Inc. or equal. 1/4" plate glass with beveled edges. Sized as shown on the drawings.

PART 3 - EXECUTION

3.1 Install as per manufacturer's instructions with adhesive and brackets.

3.2 Provide standard warranty.

END OF SECTION 08801

SECTION 09255 - GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1 .1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1 .2 SUMMARY

A. This Section includes the following:

1. Gypsum board assemblies attached to wood framing and furring members.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 6 Section "Rough Carpentry" for the following:

a. Wood framing and furring.

1.3 DEFINITIONS

A. Gypsum Board Construction Terminology: Refer to ASTM C 11 and GA-505 for definitions of terms related to gypsum board assemblies not defined in this Section or in other referenced standards.

1.4 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Where fire-rated gypsum board assemblies are indicated, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

1. Fire Resistance Ratings: As indicated by reference to GA File Numbers in GA-600 "Fire Resistance Design Manual" or to design designations in UL "Fire Resistance Directory" or in the listing of another testing and inspecting agency acceptable to authorities having jurisdiction.

B. Single-Source Responsibility for Panel Products: Obtain each type of gypsum board and other panel products from a single manufacturer.

C. Single-Source Responsibility for Finishing Materials: Obtain finishing materials from either the same manufacturer that supplies gypsum board and other panel products or from a manufacturer acceptable to gypsum board manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.

B. Store materials inside under cover and keep them dry and protected against EXCAVATION damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Neatly stack gypsum panels flat to prevent sagging.

C. Handle gypsum board to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage metal corner beads and trim.

1.6 PROJECT CONDITIONS

A. Environmental Conditions, General: Establish and maintain environmental conditions for applying and finishing gypsum board to comply with ASTM C 840 and with gypsumboard manufacturer's recommendations.

B. Room Temperatures: For nonadhesive attachment of gypsum board to framing,
maintain not less than 40 deg F (4 deg C). For adhesive attachment and finishing of gypsum board, maintain not less than 50 deg F (10 deg C) for 48 hours prior to application and continuously after until dry. Do not exceed 95 deg F (35 deg C)when using temporary heat sources.

C. Ventilation: Ventilate building spaces, as required, for drying joint treatment materials. Avoid drafts during hot dry weather to prevent finishing materials from drying too rapidly.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following:

1. Gypsum Board and Related Products:
   a. Domiar Gypsum.
   b. Georgia-Pacific Corp.
   c. Gold Bond Building Products Div., National Gypsum Co.
   d. United States Gypsum Co.

2.2 GYPSUM BOARD PRODUCTS

A. General: Provide gypsum board of types indicated in maximum lengths available to minimum end-to-end butt joints.

1. Thickness: Provide gypsum board in thicknesses indicated or, if not otherwise indicated, in 5/8 inch thicknesses to comply with ASTM C 840 for application system and support spacing indicated.

B. Gypsum Wallboard: ASTM C 36 and as follows:

1. Type: Type X where required for fire-resistive-rated assemblies.
2. Type: Sag-resistant type for ceiling surfaces.
3. Type: Proprietary type as required for specific fire-resistive-rated assemblies.
4. Edges: Tapered.
5 Thickness: As indicated.

6 Available Products: Subject to compliance with requirements, products that may be incorporated in the Work where proprietary gypsum wallboard is indicated include, but are not limited to, the following:

a. Gyprock Fireguard C Gypsum Board, Domiar Gypsum.
b. Firestop Type C, Georgia-Pacific Corp.
c. Fire-Shield G, Gold Bond Building Products Div., National Gypsum Co.
d. SHEETROCK Brand Gypsum Panels, FIRECODE C Core, United States Gypsum Co.
e. SHEETROCK Brand Gypsum Panels, ULTRACODE Core, United States Gypsum Co.
7. Edges: Square, tapered.
8. Thickness: As indicated.

C. Water-Resistant Gypsum Backing Board: ASTM C 630 and as follows:

1. Type: Regular, unless otherwise indicated or required for fire rated assemblies.

2. Thickness: As indicated.

D. Exterior Gypsum Soffit Board: ASTM C 931, with manufacturer's standard edges, of type and thickness indicated below:

1. Type: Type X where required for fire-resistance-rated assemblies and where indicated.

2. Thickness: 5/8 inch (15.9 mm), unless otherwise indicated.

2.3 TRIM ACCESSORIES

A. Accessories for Interior Installation: Corner beads, edge trim, and control joints complying with ASTM C 1047 and requirements indicated below:

1. Material: Formed metal, plastic, or metal combined with paper, with metal complying with the following requirement:

a. Sheet steel coated with zinc by hot-dip or electrolytic processes, or with aluminum or rolled zinc.

2. Shapes indicated below by reference to Fig. 1 designations in ASTM C 1047:

a. Cornerbead on outside corners, unless otherwise indicated.
b. LC-bead with both face and back flanges; face flange formed to receive Joint compound. Use LC-beads for edge trim unless otherwise indicated.
c. L-bead with face flange only; face flange formed to receive joint compound. Use L-bead where indicated.
d. U-bead with face and back flanges; face flange formed to be left without application of joint compound. Use U-bead where indicated.

e. One-piece control Joint formed with V-shaped slot, with removable strip covering slot opening.

2.4 JOINT TREATMENT MATERIALS

A. General: Provide joint treatment materials complying with ASTM C 475 and the recommendations of both the manufacturers of sheet products and of joint treatment materials for each application indicated.

B. Joint Tape for Gypsum Board: Paper reinforcing tape, unless otherwise indicated.

C. Setting-Type Joint Compounds for Gypsum Board: Factory-packaged, job-mixed, chemical-hardening powder products formulated for uses indicated.

1. Where setting-type Joint compounds are indicated as a taping compound only or for taping and filling only, use formulation that is compatible with other joint compounds applied over it.

2. For prefilling gypsum board joints, use formulation recommended by gypsum board manufacturer for this purpose.

3. For filling joints and treating fasteners of water-resistant gypsum backing board behind base for ceramic tile, use formulation recommended by the gypsum board manufacturer for this purpose.

4. For topping compound, use sandable formulation.

D. Drying-Type Joint Compounds for Gypsum Board: Factory-packaged vinyl-based products complying with the following requirements for formulation and intended use.

1. Ready-Mixed Formulation: Factory-mixed product.

2. All-purpose compound formulated for both taping and topping compounds.

2.5 ACOUSTICAL SEALANT

A. Latex Acoustical Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following requirements:

1. Product is effective In reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies per ASTM E 90.

2. Product has flame-spread and smoke-developed ratings of less than 25 per ASTM E 84.

B. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.

C. Available Products: Subject to compliance with requirements, acoustical sealants that may be incorporated in the Work include, but are not limited to, the following:

1. Acoustical Sealant:

a. AC-20 FTR Acoustical and Insulation Sealant, Pecora Corp. b. SHEETROCK Acoustical Sealant, United States Gypsum Co.

2. Acoustical Sealant for Concealed Joints:
   a. BA-98, Pecora Corp.

   b. Tremco Acoustical Sealant, Tremco, Inc.

2.6 MISCELLANEOUS MATERIALS

A. General: Provide auxiliary materials for gypsum board construction that comply with referenced standards and recommendations of gypsum board manufacturer.

B. Spot Grout: ASTM C 475, setting-type joint compound recommended for spot grouting hollow metal door frames.

C. Fastening Adhesive for Wood: ASTM C 557.

D. Steel drill screws complying with ASTM C 1002 for the following applications:

   1. Fastening gypsum board to wood members. 2. Fastening gypsum board to gypsum board.

E. Gypsum Board Nails: ASTM C 514.

F. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.

G. Sound Attenuation Blankets: Unfaced mineral-fiber blanket insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing):

   1. Mineral-Fiber Type: Fibers manufactured from glass or slag.

PART 3 EXECUTION

3.1 APPLYING AND FINISHING GYPSUM BOARD, GENERAL

A. Gypsum Board Application and Finishing Standards: Install and finish gypsum panels to comply with ASTM C 840 and GA-216.

B. Install sound attenuation blankets where indicated prior to installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

C. Install ceiling board panels across framing to minimize the number of abutting end joints and avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

D. Install wall/partition board panels to minimize the number of abutting end joints or avoid them entirely. Stagger abutting end joints not less than one framing member in alternate courses of board. At stairwells and other high walls, install panels horizontally with end abutting joints over studs and staggered.

E. Install gypsum panels with face side out. Do not install imperfect, damaged, or damp panels. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

F. Locate both edge or end Joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Position adjoining panels so that tapered edges abut tapered edges,
and field-cut edges abut field-cut edges and ends. Do not
place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions. Avoid joints at corners of framed openings where possible.

G. Attach gypsum panels to framing provided at openings and cutouts.

H. Do not attach gypsum panels across the flat grain of wide-dimension lumber including floor joists and headers. Instead, float gypsum panels over these members using resilient channels or provide control joints to counteract wood shrinkage.

J. Form control joints and expansion joints at locations indicated and as detailed, with space between edges of adjoining gypsum panels, as well as supporting framing behind gypsum panels

K. Isolate perimeter of non-load-bearing gypsum board partitions at structural abutments, except floors, as detailed. Provide 1 /4-inch-to-1 /2-inch-wide spaces at these locations and trim edges with U-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

L. Floating Construction: Where feasible, including where recommended by manufacturer, install gypsum panels over wood framing, with floating internal corner construction.

M. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's recommendations.

3.2 GYPSUM BOARD APPLICATION METHODS

A. Single-Layer Application:- Install gypsum wallboard panels as follows:

1. On ceilings, apply gypsum panels prior to wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.

2. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing), unless parallel application is required for fire-resistive-rated assemblies. Use maximum-length panels to minimize end joints.

B. Single-Layer Fastening Methods: Apply gypsum panels to supports as follows:

1. Fasten with screws.

C. Multi-layer Application on Ceilings: Apply gypsum board indicated for base layers prior to applying base layers on walls/partitions: apply gypsum wallboard face layers in same sequence. Offset face-layer joints one framing member, 16 inches (400 mm) minimum, from parallel base-layer joints. Apply base layers at right angles to framing members, unless otherwise indicated.

3.3 INSTALLING TRIM ACCESSORIES

A. General: For trim accessories with back flanges, fasten to framing with the same fasteners used to fasten gypsum board. Otherwise, fasten trim accessories according to accessory manufacturer's directions for type, length, and spacing of fasteners.

B. Install corner beads at external corners.

C. Install edge trim where edge of gypsum panels would otherwise be exposed or semi-exposed. Provide edge trim type with face flange formed to receive joint compound except where other types are indicated.

1. Install LC-bead where gypsum panels are tightly abutted to other construction and back flange can be attached to framing or supporting substrate.

2. Install L-bead where edge trims can only be installed after gypsum panels are installed.

3. Install U-bead where indicated.

4. Install aluminum edge trim and other accessories where indicated.

D. Install control joints at locations indicated, and where not indicated according to ASTM C 840, and in locations approved by Architect for visual effect.

E. Install H-molding in exterior gypsum board assemblies where control joints are indicated or recommended. Install on cut or ends of gypsum panels. not on tapered edges.

3.4 FINISHING GYPSUM BOARD ASSEMBLIES

A. General: Apply joint treatment at gypsum board Joints (both directions); flanges of corner bead, edge trim, and control joints: penetrations: fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration and levels of gypsum board finish indicated.

B. Prefill open joints, rounded or beveled edges, and damaged areas using setting-type joint compound.

C. Apply joint tape over gypsum board joints except those with trim accessories having concealed face flanges not requiring taping to prevent cracks from developing in joint treatment at flange edges.

D. Apply joint tape over gypsum board joints and to trim accessories with concealed face flanges as recommended by trim accessory manufacturer and as required to prevent cracks from developing in joint compound at flange edges.

E. Levels of Gypsum Board Finish: Provide the following levels of gypsum board finish per GA-2 1 4.

1. Level 4 for gypsum board surfaces indicated to receive light-textured finishes, wall coverings, and flat paints over light textures

2. Level 5 for gypsum board surfaces indicated to receive gloss and semigloss enamels, nontextured flat paints, and where indicated. All double layer gypsum board surfaces are to receive Level 5 finish.

F. For level 4 gypsum board finish, embed tape in finishing compound plus two separate coats applied over joints, angles, fastener heads, and trim accessories using one of the following combinations of Joint compounds (not including prefill), and sand between coats and after last coat.

1. Embedding and First Coat: Ready-mixed, drying-type, all-purpose or taping compound.

2. Fill (Second) Coat: Ready-mixed, drying-type, all-purpose or topping compound.

3. Finish (Third) Coat: Ready-mixed, drying-type, all-purpose or topping compound.

G. Finish water-resistant gypsum backing board forming base for ceramic tile to comply with ASTM C 840 and board manufacturer's directions for treatment of joints behind tile.

3.5 CLEANING AND PROTECTION

A. Promptly remove any residual Joint compound from adjacent surfaces.

B. Provide final protection and maintain conditions, in a manner suitable to aInstaller, that ensures gypsum board assemblies remain without damage or deterioration at time of Substantial Completion.

END OF SECTION 09255

SECTION 09300 - TILE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Glazed wall tile
2. Unglazed ceramic mosaic tile
3. Unglazed Quarry Tile

B. Related Sections: The following sections contain requirements that relate to this Section:

1. Division 7 Section "Joint Sealers" for sealing of expansion, contraction, control, and isolation Joints in tile surfaces

2. Division 3 Section "Gyp-Crete" for finishes specified for tile substrates.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for each type of product specified.

C. Shop drawings indicating tile patterns and locations and widths of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

1. Locate precisely each joint and crack in tile substrates by measuring, record measurements on shop drawings, and coordinate them with tile joint locations, in consultation with Architect.

D. Samples for initial selection purposes in form of manufacturer's color charts consisting of actual tiles or sections of tile showing full range of colors, textures, and patterns available for each type and composition of tile indicated. Include samples of grout and accessories involving color selection.

E. Samples for verification purposes of each item listed below, prepared on samples of size and construction indicated, products involve color and texture variations, in sets showing full range of variations expected.

1. Each type and composition of tile and for each color and texture required, at least 12 inches square, mounted on plywood or hardboard backing and grouted.

2. Full-size units of each type of trim and accessory for each color required.

3. Stone thresholds in 6-inch lengths.

1.4 QUALITY ASSURANCE

A. Single-Source Responsibility for Tile: Obtain each color, grade, finish, type, composition, and variety of tile from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

B. Single-Source Responsibility for Setting and Grouting Materials: Obtain ingredients of a uniform quality from one manufacturer for each cementitious and admixture component and from one source or producer for each aggregate.

C. Installer Qualifications: Engage an experienced Installer who has successfully completed tile installations similar in material, design, and extent to that indicated for Project.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement of ANSI A137.1 for labeling sealed tile packages.

B. Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.

1.6 PROJECT CONDITIONS

A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.

B. Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.

C. Maintain temperatures at 50 deg F (10 deg C) or more in tiled areas during installation and for 7 days after completion, unless higher temperatures are required by referenced installation standard or manufacturer's instructions.

1.7 EXTRA MATERIALS

A. Deliver extra materials to Owner. Furnish extra materials that match products installed as described below, packaged with protective covering for storage and identified with labels clearly describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size.

PART 2 - PRODUCTS

2. 1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Unglazed Ceramic Mosaic Tile:

a. American Olean Tile Co., Inc.
b. Dal-Tile Corp.
c. Mid-State Tile Co.
d. Monarch Tile Manufacturing, Inc.
e. Summitville Tiles, Inc.
f. United States Ceramic Tile Co.
g. Villeroy & Boch (U.S.A.) Inc.
h. Wenczel Tile Co.
i. Winburn Tile Manufacturing Co.

2. Unglazed Quarry Tile:

a. American Olean Tile Co., Inc.
b. Buchtal Corp. USA
c. Dal-Tile Corp.
d. Summitville Tiles, Inc.
e. Texeramics Inc.
f. United States Ceramic Tile Co.
g. Villeroy & Boch (U.S.A.) Inc.

3. Glazed Wall Tiles

a. American Olean Tile Co., Inc.
b. Dal-Tile Corp.
c. Mid-State Tile Co.
d. Monarch Tile Manufacturing, Inc.
e. Summitville Tiles, Inc.
f. United States Ceramic Tile Co.
g. Villeroy & Boch (U.S.A.) Inc.
h. Wenczel Tile Co.
i. Winburn Tile Manufacturing Co.

4. Dry-Set Mortars and Grouts:

a. American Olean Tile Co., Inc.
b. Boiardi Products Corp.
c. Bostik Construction Products Div.
d. Custom Building Products
e. C-Cure Chemical Co.
f. DAP Inc. Div.; USG Corp.
g. L & M Mfg. Inc.
h. Laticrete International Inc.
i. Mapei Corp.
J. Southern Grouts & Mortars, Inc.
k. Summitville Tiles, Inc.

5. Commercial Portland Cement Grouts:

a. American Olean Tile Co., Inc.
b. Bostik Construction Products Div.
c. Custom Building Products
d. C-Cure Chemical Co.
e. L & M Mfg. Inc.
f. Southern Grouts & Mortars, Inc.
g. Syracuse Adhesives Co.

2.2 PRODUCTS, GENERAL

A. ANSI Standard for Ceramic Tile: Comply with ANSI A137.1 "American National Standard Specifications for Ceramic Tile" for types, compositions, and grades of tile indicated.

1. Furnish tile complying with "Standard Grade" requirements unless otherwise indicated.

B. ANSI Standard for Tile Installation Materials: Comply with ANSI standard referenced with products and materials indicated for setting and groutin`3.

C. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures,
patterns, and other appearance characteristics, provide specific products or materials complying with the following 2 requirements:

1. Provide selections made by Architect from manufacturer's full range of

2. Provide tile trim and accessories that match color and finish of adjoining flat tile.

D. Factory Blending: For tile exhibiting color variations within the ranges selected during sample submittals, blend tile in factory and package accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples.

2.3 TILE PRODUCTS

A. Unglazed Ceramic Mosaic Tile: Provide factory-mounted flat tile complying with the following requirements:

1. Composition: Porcelain.

2. Nominal Facial Dimensions: 2 inches by 2 inches.

3. Nominal Thickness: 1/4 inch.

4. Face: Plain with cushion edges.

B. Unglazed Quarry Tile: Provide flat tile complying with the following requirements:

1. Composition: Natural clay.
2. Nominal Facial Dimensions: 6 inches by 6 inches.
3. Nominal Thickness: 1/4 inch.
4. Face: Plain with square or cushion edges.

C. Unglazed Quarry Tile: Provide flat tile complying with the following requirements:

1. Composition: Natural clay.
2. Nominal Facial Dimensions: 6 inches by 6 inches.
3. Nominal Thickness: 1/4 inch.
4. Face: Plain with square or cushion edges.

2.4 STONE THRESHOLDS

A. General: Provide stone that is uniform in color and finish, fabricated to sizes and profiles indicated or required to provide transition between tile surfaces and adjoining finished floor surfaces.

B. Marble Thresholds: Provide marble thresholds complying with ASTM C 503 requirements for exterior use and for abrasion resistance where exposed to foot traffic, a minimum hardness of 10 per ASTM C 241.

1. Provide white, honed marble complying with MIA Group "A" requirements for soundness.

2.5 SETTING MATERIALS

A. Portland Cement Mortar Installation Materials: Provide materials complying with ANSI A108.1 and as specified below.

B. Latex additive (water emulsion) described below, serving as replacement for part or all of gauging water, of type specifically recommended by latex additive manufacturer for use with job-mixed Portland cement and aggregate mortar bed.

a. Latex Additive: Manufacturer's standard.
b. Dry-Set Portland Cement Mortar: ANSI A118.1.

2.6 GROUTING MATERIALS

A. Commercial Portland Cement Grout: ANSI A118.6, color as indicated.

2.7 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with requirements of referenced standards and manufacturers including those for accurate proportioning of materials, water, or additive content; type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortars and grouts of uniform quality with optimum performance characteristics for application indicated.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates and areas where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

1. Verify that substrates for setting tile are firm, dry, clean, and free from oil or waxy films and curing compounds.

2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.

B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Blending: For tile exhibiting color variations within the ranges selected during sample submittals, verify that tile has been blended in factory and packaged accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION, GENERAL

A. ANSI Tile Installation Standard: Comply with parts of ANSI 108 series of tile installation standards included under "American National Standard Specifications for the Installation of Ceramic

B. TCA Installation Guidelines: TCA "Handbook for Ceramic Tile Installation"; comply with TCA installation methods indicated.

C. Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions except as otherwise shown. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or Joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned Joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so that plates, collars, or covers overlap tile.

E. Jointing Pattern: Unless otherwise shown, lay tile in grid pattern. Align Joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform Joint widths unless otherwise shown.

F. Expansion Joints: Locate expansion Joints and other sealant-filled Joints, including control, contraction, and isolation Joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw cut Joints after installation of tiles.

1 . Locate Joints in tile surfaces directly above joints in concrete substrates.

G. Grout tile to comply with the requirements of the following installation standards:

1. For ceramic tile grouts (sand-Portland cement, dry-set, commercial Portland cement, and latex-Portland cement grouts), comply with ANSI A108.10.

H. Provide brass edging strips at junction with carpet.

3.4 FLOOR INSTALLATION METHODS

A. Ceramic Mosaic Tile: Install tile to comply with requirements indicated below for setting bed methods, TCA installation methods related to types of subfloor construction, and grout types:

1. Portland Cement Mortar: ANSI A108.1

B. Bond Coat: Dry-set portland cement mortar on cured bed, ANSI A108.5.

C. Concrete and Gyp-Crete Subfloors, Interior: TCA F113 C. Grout: Commercial portland cement.

3.5 CLEANING AND PROTECTION

A. Cleaning: Upon completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's printed instructions, but no sooner than 14 days after installation. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.

B. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.

C. Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensures that tile is without damage or deterioration at time of Substantial Completion.

1. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.

2. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION 09300

SECTION 09511-ACOUSTICAL PANEL CEILINGS / GRID SYSTEMS

PART 1- GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including general and Supplementary Conditions and Division 1 Specification Sections apply to this section.

1.2 SUMMARY

A. This section includes Acoustical Panel Ceilings installed with exposed suspension systems.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

1. Product data for each type of product specified.
2. Product tests reports from qualified independent testing laboratory that are based on its testing of current products for compliance of acoustical ceiling systems and components with requirements.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer who has successfully completed acoustical ceilings similar in material, design and extent to those indicated for project.

B. Fire performance Characteristics: Provide acoustical ceilings that are identical to those tested for the following fire-performance characteristics, per ASTM test method indicated below, by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction. Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.

1. Surface burning characteristics: As follows, tested per ASTM 84 and complying with ASTM 1264 for class A products.
   a. Flame Spread: 25 or less.
   b. Smoke Development: 50 or less.

C. Single-Source responsibility for ceiling units: Obtain each type of acoustical ceiling unit from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the work.

D. Single-Source responsibility for Suspension System: Obtain each type of suspension system from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the work.

E. Coordination of the Work: Coordinate layout and installation of acoustical ceiling units and suspension system components with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system components(if any), and partition system (if any).

F. Pre-installation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section " Project Meetings ".

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver acoustical ceiling units to project site in original unopened packages and store them in a fully enclosed space where they will be protect against damage from moisture, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.

1.6 PROJECT CONDITIONS

A. Space enclosure: Do not install interior acoustical ceiling until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete and ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

1.7 EXTRA MATERIALS

A. Deliver extra materials to Owner. Furnish extra material described below that match products installed, are packaged with protective covering for storage, and are identified with appropriate labels.

1. Acoustical Ceiling Units: Furnish quantity of full sized units equal to 2.0 percent of amount installed.
2. Exposed Suspension to System Components: Furnish quantity of each exposed component equal to 1.0 percent of amount installed.

PART 2- PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

1. Mineral Based Panels- Water Felted, with painted finish and Perforated and fissured Pattern, non-fire-resistance Rated and ceramic and mineral fiber composite material with vinyl plastic point finish:

a. (AT) " Cirrus" Angled Tegular by ARMSTRONG WORLDINDUSTRIES, INC..
b. 9/16" grid face
c. 24"x24"x3/4"

B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to the following:

1. Non-Fire Resistance-Rated wide-Face Aluminum Capped Double-Web Steel Suspension Systems:

   a. Armstrong World Industries, Inc.
   b. Chicago Metallic Corporation.
   c. National Rolling Mills , Inc.
   d. USG Interiors, Inc.

2. Edge Moldings:

   a. Armstrong World Industries, Inc.
   b. Chicago Metallic Corporation.
   c. National Rolling Mills , Inc.
   d. USG Interiors, Inc.
   e. Fry Reglet Corporation.

2.2 ACOUSTICAL CEILING UNITS, GENERAL

A. Standard for acoustical Ceiling Units: Provide manufacturers' standard units of configuration indicated that comply with ASTME 1264 classifications as designated by reference to types, patterns, acoustical ratings, and light reflectance, unless otherwise indicated.

2.3 CEILINGS OF WATER FELTED-MINERAL-BASE ACOUSTICAL PANELS-AT

A. Panel Characteristics: Type 111.,Form 2 acoustical panels per ASTM E 1264, with painted finish, complying with pattern and other requirements indicated below.

   1. Pattern: Panels matching pattern indicated by reference to manufacturers standard product designations above.

B. Suspension System Type: As described below and specified in Part 2 " Non-Fire-Resistance-Rated, Direct Hung Suspension Systems" Article;

   1. Capped, double-web, steel suspension system.

2.4 METAL SUSPENSION SYSTEMS, GENERAL

A. Standard for Metal Suspension Systems: Provide manufacturer's standard metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable ASTM C 635 requirements.

B. Finishes and Colors: Provide manufacturer's standard factory-applied finish for type of system indicated.

C. Attachment Devices: Size for 5 times design load indicated in ASTM C 635, Table 1, direct hung unless otherwise indicated.

D. Wire for Hangers and Ties: ASTM A 641, Class 1, zinc coating, soft temper.

   1. Gage: Provide wire sized so that at three times hanger design load (ASTM C 635, Table 1, Direct-Hung) will be less than yield stress of wire but provide not less than 0.106 inch diameter.

E. Edge Moldings and Trims: Metal or extruded aluminum of types and profiles indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that fit type of edge detail and suspension systems indicated.

1. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.

2.5 NON-FIRE RESISTANCE RATED DIRECT-HUNG SUSPENSION SYSTEMS

A. Wide Faced, capped, Double Web, Steel Suspension System: Main and cross runners roll framed from pre-painted or electrolytic zinc-coated, cold-rolled steel sheet, with pre-finished wide metal caps on flanges, other characteristics as follows:

1. Structural Classification: Intermediate-Duty System.
2. End Condition of Cross Runners: Override (stepped) type.
3. Cap Material and Finish: Aluminum Sheet with white painted finish.

2.6 MISCELLANEOUS MATERIALS

A. Concealed Acoustical Sealant: Nondrying, nonhardening, nonskinning, nonstaining, nonbleeding, gunnable sealant complying with requirement specified in division 7 section " joint sealers".

PART3-EXECUTION

3.1 EXAMINATION

A. Examine substrates and structural framing to which ceiling system attaches or abuts, with installer present, for compliance with requirements specified in this and other sections that affect installation and anchorage of ceiling system. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders and comply with reflected ceiling fans.

3.3 INSTALLATION

A. General: Install acoustical ceiling systems to comply with installation standard referenced below, per manufacturer's instructions and CISCA " Ceiling Systems Handbook".

1. Standard for Installation of Ceiling Suspension Systems: Comply with ASTM C 636.

B. Arrange acoustical units and orient directionally patterned units in a manner shown by reflected ceiling plans.

C. Suspend ceiling hangers from building structural members and as follows:

1. Install hangers plumb and free from contact with installation or other projects within ceiling plenum that are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, counter splaying, or other equally effective means.

2. Where width of ducts and other construction within ceiling plenum produces hanger spacing that interfere with the location of hangers at spacing required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

3. Secure wire hangers by looping and wire-tying , either directly to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate, and in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.

4. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members by attaching to eye screws, inserts, or other devices that are secure and appropriate for structure to which hangers are attached as well as for type of hanger involved, and in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.

5. Do not attach hangers to steel roof deck. Attach hangers to structural members.

6. Space hangers not more than 4'-0" o.c. along each member supported directly from hangers, unless otherwise shown, and provide hangers not more than 8" from ends of each member.

D. Install Edge moldings of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical units.

1. Sealant Bed: Apply continuous ribbon of acoustical sealant, concealed on back of vertical leg before installing moldings.

2. Screw-attach moldings to substrate at intervals not over 16 inches o.c. and not more than 3 inches from ends. leveling with ceiling suspension system to tolerance of 1/8 inch in 12'-0". Miter corners accurately and connect securely.

E. Install acoustical panels in coordination with suspension system, with edges concealed by support of suspension members. Scribe and cut panels to fit accurately at borders and at penetrations.

3.4 CLEANING

A. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove and replace work that can not be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09511

SECTION 09660-RESILIENT TILE FLOORING

PART 1-GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, Including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. This section includes the following:

1. Vinyl composition floor tile.
2. Vinyl Base.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for each type of product specified.

C. Samples for verification purposes in full size tiles of each different color and pattern of resilient floor tile specified, showing full range of variations expected in these characteristics.

D. Maintenance data for resilient floor tile, to include in operating and maintenance manual specified in Division 1.

1.4 QUALITY ASSURANCE

A. Single-Source Responsibility fo Floor Tile: Obtain each type, color, and pattern of tile from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the work.

B. Fire Performance Characteristics: Provide resilient floor tile with the following fire performance characteristics as determined by testing products per ASTM test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

1. Critical Radiant Flux: 0.45 watts per sq. cm or more per ASTM E 648.
2. Smoke Density: Less than 450 per ASTM E 648.

C. Single-Source for Vinyl Base: Obtain exc./type and color from a single-source with resources to provide products of consistent quality in appearance and physical properties without delaying the work.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver tiles, base and insulation accessories to Project site in original manufacturer's unopened cartons and containers each bearing names of product and manufacturer, Project identification and shipping and handling instructions.

B. Store flooring materials in dry spaces protected from the weather with ambient temperature maintained between 50 degrees and 90 degrees.

C. Store products on flat surfaces. Move tiles, base, and installation accessories into spaces where they will be installed at least 48 hours in advance of installation.

1.6 PROJECT CONDITIONS

A. Maintain a minimum temperature of 70 degrees in spaces to receive tiles for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. After this period maintain a temperature of not less than 55 degrees.

B. Do not install tiles until they are at the same temperature as the space they are to be installed.

C. Close spaces to traffic during the installation.

1.7 SEQUENCING AND SCHEDULING

A. Install tile and accessories after other finishing operations, including painting, have been completed.

B. Do not install tiles over concrete slabs unless the slabs are cured and sufficiently dry to bond with adhesive as determined by tile manufacturer's recommended bond and moisture test.

1.8 EXTRA MATERIALS

A. Deliver extra materials to Owner. Furnish extra materials matching products installed as described below, package with protective covering for storage and identified with labels clearly describing contents.

1. Furnish not less than one box for each 50 boxes or fraction thereof, of each class , wearing surface, color, pattern, and size of resilient floor tile installed.

2. Furnish one box of base for each 50 boxes or fraction thereof.

PART 2-PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, resilient floor tiles that may be incorporated in the Work include, but are not limited to, the products specified in each Product Data Sheet at end of this Section.

2.2 RESILIENT TILE

A. Vinyl Composition Floor Tile: Products complying with ASTM F 1066. Composition 1 (non-asbestos formulated) and with requirements specified in Vinyl Composition Floor Tile Product Data Sheet at end of this Section.

2.3 INSTALLATION ACCESSORIES

A. Concrete Slab Primer: Non staining type as recommended by flooring manufacturer.

B. Trowelable Underlayments and Patching Compounds: Laytex-Modified, Portland-cement based formulation provided or approved by tile manufacturer for applications indicated.

C. Adhesives (Cements): Water-resistant type recommended by tile manufacturer to suit resilient floor tile products and substrate conditions indicated.

D. Metal Edge Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edge of tiles, and in maximum available lengths to minimize running joints.

2.4 VINYL BASE: Products complying with the data sheet at the end of this section.

PART 3-EXECUTION

3.1 EXAMINATION

A. General: Examine areas where installation of tiles will occur, with installer present, to verify that substrates and conditions are satisfactory for tile installation and comply with tile manufacturer's requirements and those specified in this section.

B. Concrete Sub-floors: Verify that concrete slabs comply with ASTM F 710 and the following:

1. Slab substrates are dry and free of curing compounds, sealers, hardeners and other materials whose presence would interfere with bonding of adhesive, determine adhesion and dryness characteristics by performing bond and moisture tests recommended by tile manufacturer.

2. Finishes of sub-floors comply with tolerances and other requirements specified in Division 3 Section " cast in place concrete" for slabs receiving resilient flooring.

3. Sub-floors are free of cracks, ridges, depressions, scale and foreign deposits of any kind.

C. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Comply with manufacturer's installation specifications to prepare substrates indicated to receive tile.

B. Use trowelable leveling and patching compounds per tile manufacturer's directions to fill cracks, holes and depressions in substrates.

C. Remove coatings, including curing compounds, and other substances that are incompatible with flooring adhesives and that contain soap, wax, oil, or silicone, by using a terrazzo or concrete grinder, a drum sander, or a polishing machine equipped with a heavy duty wire brush.

D. Broom or vacuum clean substrates to be covered by tiles immediately before tile installation. Following cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust.

E. Apply concrete slab primer, if recommended by flooring manufacturer, prior to applying adhesive. Apply according to manufacturer's directions.

3.3 INSTALLATION

A. General: Comply with tile manufacturer's installation directions and other requirements indicated that are applicable to each type of tile installation included in project.

B. Lay out tiles from center marks established with principle walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths at perimeter that equal less than one half of a tile. Install tiles square with room axis, unless otherwise indicated.

C. Match tiles for color and pattern by selecting tiles from cartons in same sequence as manufactured and packaged, if so numbered. Cut tiles neatly around all fixtures. Discard broken, cracked, chipped or deformed tiles.
1. Lay tiles with grain running in one direction.

D. Scribe, cut and fit tiles to butt tightly to vertical surfaces, permanent fixtures, built in furniture including cabinets, pipes , outlets, edgings, thresholds, and nosings.

E. Extend tiles into toe spaces, door reveals, closets and similar openings.

F. Maintain reference markers, holes or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on sub-floor. Use chalk or other nonpermanent marking device.

G. Install tiles on covers for telephone and electrical ducts , and similar items occurring within finish floor areas . Maintain overall continuity of color and pattern with pieces of flooring installed on these covers. Tightly adhere edges to perimeter of floor around covers and to covers.

H. Adhere tiles to flooring substrates without producing open cracks, voids, raising, and puckering at the joints, telegraphing of adhesive spreader marks, or other surface imperfections in completed tile installation.

I Use full spread of adhesive applied to substrate in compliance with tile manufacturer's directions including those for trowel notching, adhesive mixing and adhesive open and working times.

j. Hand roll tiles where required by tile manufacturer.

K. Install Base as per instructions of the manufacturer.

3.4 CLEANING AND PROTECTION

A. Perform the following operations immediately after completing tile installation:

1. Remove visible adhesive and other surface blemishes using cleaner recommended by tile manufacturer's.
2. Sweep or vacuum floor thoroughly.
3. Do not wash floor until after time period recommended by resilient floor tile manufacturer.
4. Damp-mop tile to remove black marks and soil.

B. Protect flooring against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods indicated or recommended by tile manufacturer.

1. Cover tiles with undyed , untreated building paper until inspection for substantial completion.
2. Do not move heavy and sharp objects directly over tile. Place plywood or hardboard panels over tiles and other objects while they are being moved. Slide or roll objects over panels without moving panels.

C. Clean tiles more than four days prior to dates scheduled for inspections intended to establish date of Substantial Completion in each area of Project. Clean tiles using method recommended by manufacturer.

VINYL COMPOSITION FLOOR TILE PRODUCT DATA SHEET

Vinyl Composition Floor Tile Designation: VCT

Class: Class 2 (through pattern file.)
RESILIENT TILE FLOORING
Wearing Surface: Smooth

Thickness: 1/8 inch

Size: 12 by 12 inches.

Color and Pattern: As specified by product designated below. Architect shall select color of tile from manufacture's standards for the tile series specified.

Available Products: Thru-Quartz by AZROCK VINYL COMPOSITION TILE, Stonex by ARMSTRONG, possibilities by ARMSTRONG, Duratone by AMTICO.

VINYL BASE PRODUCT DATA SHEET

SURFACE: Smooth

SIZE: 4" with cove base

COLOR: From manufacturer's standard colors.

AVAILABLE PRODUCTS: NAFCO

END OF SECTION 09660

SECTION 09680 - CARPET

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes carpet, carpet cushion, and installation.

B. See sheet A-3 for allowances.

C. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 3 Sections for curing compounds and other concrete treatments compatibility with carpet and carpet cushion adhesives and Gyp-Crete topping requirements.

1.3 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product Data for each type of carpet material, carpet cushion, and installation accessory specified. Submit manufacturer's printed data on physical characteristics, durability, fade resistance, and fire-test-response characteristics. Submit methods of installation for each type of substrate.

C. Shop Drawings showing columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet. Indicate the following:

1. Carpet type, color, and dye lot.
2. Seam locations, types, and methods.
3. Type of subfloor.
4. Type of installation.
5. Pattern type, repeat size, location, direction, and starting point.
6. Pile direction.
7. Type of cushion.
8. Type, color, and location of edge, transition, and other accessory strips.
9. Transition details to other flooring materials.

D. Samples for initial selection in the form of manufacturer's color charts or samples of materials showing the full range of colors, textures, and patterns available for each type of carpet selected by the Owner.

E. Schedule of carpet using same room designations indicated on Drawings.

F. Maintenance data for carpet and cushion to include in the operation and maintenance manual specified in Division 1. Include the following:

1. Methods for maintaining carpet and carpet cushion, including manufacturer's recommended frequency for maintaining carpet.

2. Precautions for cleaning materials and methods that could be detrimental to finishes and performance. Include cleaning and stain-removal products and procedures.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who is certified by the Floor Covering Installation Board (FCIB) or who can demonstrate compliance with FCIB certification program requirements.

B. Single-Source Responsibility: Obtain each type of carpet from one source and by a single manufacturer.

C. Carpet Fire-Test-Response Characteristics: Provide carpet with the following fire test response characteristics 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 carpet with appropriate markings of applicable testing and inspecting agency.

1. Surface Flammability: Passes CPSC 16 CFR, Part 1630. 2. Flame Spread: 25 or less per ASTM E 84. 3. Smoke Developed: 450 or less per ASTM E 84.

D. Carpet Cushion Fire-Test-Response Characteristics: Provide carpet cushion with the following fire-test-response characteristics 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 carpet cushion with appropriate markings of applicable testing and inspecting agency.

1. Surface Flammability: Passes CPSC 16 CFR, Part 1630. 2. Flame Spread: 25 or less per ASTM E 84. 3. Smoke Developed: 450 or less per ASTM E 84.

1.5 DELIVERY, STORAGE, AND HANDLING

A. General: Comply with the Carpet and Rug Institute's CRI 104, Section 5: "Storage and Handling."

B. Deliver materials to Project site in original factory wrappings and containers, labeled with identification of manufacturer, brand name, and lot number.

C. Store materials on-site in original undamaged packages, inside well-ventilated area protected from weather, moisture, soilage, extreme temperatures, and humidity. Lay flat, with continuous blocking off ground.

1.6 PROJECT CONDITIONS

A. General: Comply with CRI 104, Section 6: "Site Conditions."

B. Space Enclosure and Environmental Limitations: Do not install carpet until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete, and ambient temperature and humidity conditions are and will be continuously maintained at values near those indicated for final occupancy.

C. Subfloor Moisture Conditions: Moisture emission rate of not more than 3 lb/1000 sq. ft./24 hours (14.6 kg/1000 sq. m/24 hours) when tested by calcium chloride moisture test in compliance with CRI 104, 6.2.1, with subfloor temperatures not less than 55 deg F (12.7 deg C).

D. Subfloor Alkalinity Conditions: A pH range of 5 to 9 when subfloor is wetted with potable water and pHydrion paper is applied.

PART 2 PRODUCTS

2.1 INSTALLATION ACCESSORIES

A. Concrete-Slab Primer: Nonstaining type as recommended by the following:

1. Carpet manufacturer.
2. Carpet cushion manufacturer.

B. Trowelable Underlayments and Patching Compounds: As recommended by the following:

1. Carpet manufacturer.
2. Carpet cushion manufacturer.

C. Adhesives: Water-resistant, mildew-resistant, nonstaining type to suit products and subfloor conditions indicated and to comply with flammability requirements for installed carpet as recommended by the following:

1. Carpet manufacturer.
2. Carpet cushion manufacturer.

D. Tackless Carpet Stripping: Water-resistant plywood in strips as required to match cushion thickness and in compliance with CRI 104, 11.3.

E. Seaming Cement: Hot-melt adhesive tape or similar product recommended by carpet manufacturer for taping seams and butting cut edges at backing to form secure seams and to prevent pile loss at seams.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine subfloors and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting performance of carpet. Do not proceed with installation until unsatisfactory conditions have been corrected.

B. Verify that subfloors and conditions are satisfactory for carpet installation and comply with requirements specified in this Section and those of the following:

1. Carpet manufacturer.
2. Carpet cushion manufacturer.

3.2 PREPARATION

A. General: Comply with carpet manufacturer's installation recommendations to prepare substrates indicated to receive carpet installation.

B. Level subfloor within 1/4 inch in 10 feet (6 mm in 3 m), noncumulative, in all directions. Sand or grind protrusions, bumps, and ridges. Patch and repair cracks and rough areas. Fill depressions.

1. Use leveling and patching compounds to fill cracks, holes, and depressions in subfloor as recommended by the following:

   a. Carpet manufacturer.
   b. Carpet cushion manufacturer.

C. Remove subfloor coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone.

D. Broom or vacuum clean subfloors to be covered with carpet. Following cleaning examine subfloors for moisture, alkaline salts, carbonation, or dust.

E. Concrete-Subfloor Preparation: Apply concrete-slab primer, according to manufacturer's directions, where recommended by the following:

1. Carpet manufacturer.
2. Carpet cushion manufacturer.

3.3 INSTALLATION

A. Direct Glue-Down Installation: Comply with CRI 104, Section 8: "Direct Glue-Down."

B. Carpet with Attached-Cushion Installation: Comply with CRI104, Section IO: "Attached Cushion."

C. Stretch-in Installation: Comply with CRI 104, Section 11: "Stretch-in Utilizing Tackless Strip."

D. Comply with carpet manufacturer's recommendations for seam locations and direction of carpet: maintain uniformity of carpet direction and lay of pile. At doorways, center seams under door in closed position. Do not bridge building expansion joints with continuous carpet.

E. Cut and fit carpet to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet manufacturer.

F. Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

G. Install pattern parallel to walls and borders.

H. Install carpet cushion seams at 90-degree angle with carpet seams.

3.4 CLEANING

A. Perform the following operations immediately after completing installation.

1. Remove visible adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet manufacturer.

2. Remove protruding yarns from carpet surface. 3. Vacuum carpet using commercial machine with face-beater element.

3.5 PROTECTION

A. General: Comply with CRI 104, Section 15: "Protection of Indoor Installation."

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure carpet is without damage or deterioration at the time of Substantial Completion.

END OF SECTION 09680

SECTION 09900- PAINTING
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1 .2 SUMMARY

A. This Section includes surface preparation, painting, and finishing of exposed interior and exterior items and surfaces.

1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop-priming and surface treatment specified under other Sections.

B. Paint exposed surfaces whether or not colors are designated in schedules, except where a surface or material is specifically indicated not to be painted or is to remain natural. Where an item or surface is not specifically mentioned, paint the same as similar adjacent materials or surfaces. If color or finish is not designated, the Architect will select from standard colors or finishes available.

C. Painting is not required on prefinished items, finished metal surfaces, concealed surfaces, operating parts, and labels.

1. Prefinished items not to be painted include the following factory-finished components:

a. Architectural casework.
b. Finished mechanical and electrical equipment.
c. Light fixtures.
d. Switchgear.
e. Distribution cabinets.

2. Concealed surfaces not to be painted include wall or ceiling surfaces in the following generally inaccessible areas:

a. Furred areas.
b. Duct shafts.

3. Finished metal surfaces not to be painted include:

a. Anodized aluminum.
b. Stainless steel.

4. Labels: Do not paint over Underwriters Laboratories, Factory Mutual or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

1 .3 SUBMITTALS

A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections.

B. Product data for each paint system specified, including block fillers and primers.

1. Provide the manufacturer's technical information including label analysis and instructions for handling, storage, and application of each material proposed for use.

2. List each material and cross-reference the specific coating, finish system, and application. Identify each material by the manufacturer's catalog number and general classification.

C. Samples for initial color selection in the form of manufacturer's color charts.

1. After color selection, the Architect will furnish color chips for surfaces to be coated.

D. Samples for Verification Purposes: Provide samples of each color and material to be applied, with texture to simulate actual conditions, on representative samples of the actual substrate.

1 . Submit samples on the following substrates for the Architect's review of color and texture only:

a. Painted Wood: Provide two 12-inch-square samples of each color and material on hardboard.

b. Stained or Natural Wood: Provide two 4-by-8-inch samples of natural and stained wood finish on actual wood surfaces.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to those indicated for the Project that have resulted in a construction record of successful in-service performance.

B. Single-Source Responsibility: Provide primers and undercoat paint produced by the same manufacturer as the finish coats.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the Job site in the manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:

1 . Product name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.

1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.6 JOB CONDITIONS

A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 deg F (10 deg C) and 90 deg F (32 deg C).

B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 deg F (7 deg C) and 95 deg F (35 deg C).

PART 2 - PRODUCTS

2. 1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

1. Devoe and Reynolds Co. (Devoe).
2. Fuller O'Brien (Fuller).
3. Benjamin Moore and Co. (Moore).
4. PPG Industries, Pittsburgh Paints (PPG).
5. Pratt and Lambert (P & L).
6. The Sherwin-Williams Company (S-W).

2.2 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide block fillers, primers, finish coat materials, and related materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by the manufacturer based on testing and field experience.

B. Material Quality: Provide the manufacturer's best-quality trade sale paint material of the various coating types specified. Paint material containers not displaying manufacturer's product identification will not be acceptable.

1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish the manufacturer's material data and certificates of performance for proposed substitutions.

C. Colors: Provide color selections made by the Architect from the manufacturer's full range of standard colors.

2.3 PRIMERS

A. Primers: Provide the manufacturer's recommended factory-formulated primers that are compatible with the substrate and finish coats indicated.

B. Available Products: Subject to compliance with requirements, prime coat materials that may be incorporated in the Work include, but are not limited to, the following:

1. Gypsum Drywall Primer: White, interior, latex-based primer.

a. Devoe: 50801 Wonder-Tones Latex Primer and Sealer.
b. Fuller: Pro-Tech Interior Latex Wall Primer and Sealer.
c. Moore's Latex Quick-Dry Prime Seal #201.
d. PPG: 6-2 Quick-Dry Latex Primer Sealer.
e. P & L: Latex Wall Primer Z30001.
f. S-W: ProMar 200 Latex Wall Primer B28W200.

2.4 UNDERCOAT MATERIALS

A. Undercoat Materials: Provide the manufacturer's recommended factory-formulated undercoat materials that are compatible with the substrate and finish coats indicated.

B. Available Products: Subject to compliance with requirements, undercoat materials that may be incorporated in the Work include, but are not limited to, the following:

1. Interior Enamel Undercoat: Ready-mixed enamel.

a. Devoe: 8801 Velour Alkyd Enamel Undercoat.
b. Fuller: 220-07 Interior Alkyd Enamel Undercoat.
c. Moore: Moore's Alkyd Enamel Underbody #217.
d. PPG: 6-6 Speedhide Quick-Dry Enamel Undercoater.
e. P & L: Interior Trim Primer.
f. S-W: ProMar 200 Alkyd Enamel Undercoater B49W200.

2.5 INTERIOR FINISH PAINT MATERIAL

A. Finish Paint: Provide the manufacturer's recommended factory-formulated finish-coat materials that are compatible with the substrate and undercoats indicated.

B. Available Products: Subject to compliance with requirements, finish coat materials that may be incorporated in the Work include, but are not limited to, the following:

1. Interior, Flat, Latex-Based Paint: Ready-mixed, latex-based paint for a flat finish.

a. Devoe: 36XX Wonder-Tones Latex Flat Wall Paint.
b. Fuller: 602X)(Liquid Velvet Latex Wall Paint.
c. Moore: Regal Wall Satin #215.
d. PPG: 80 Line Walihide Flat Latex Paint.
e. P & L: Vapex Latex Flat Wall Finish.
f. S-W: Classic 99 Wall and Trim Paint A27W10.

2. Interior, Semigloss, Odorless Alkyd Enamel: Semigloss, low-odor, alkyd enamel.

a. Devoe: 26XX Velour Alkyd Semigloss Enamel.
b. Fuller: 110X)(Fullerglo Alkyd Semigloss Enamel.
c. Moore: Moore's Satin Impervo Enamel #235.
d. PPG: 27 Une Walihide Semigloss Enamel.
e. P & L: Cellu-Tone Alkyd Satin Enamel.
f. S-W: Classic 99 Semigloss Enamel A40 Series.

2.6 MISCELLANEOUS WOOD-FINISHING MATERIALS

A. Wood-Finishing Materials: Provide the manufacturer's recommended factory formulated, wood-finishing materials that are compatible with the substrate and undercoats indicated.

B. Available Products: Subject to compliance with requirements, wood-finishing materials that may be incorporated in the Work include, but are not limited to, the following:

1. Oil-Type Interior Wood Stain: Slow-penetrating, oil-type wood stain.

a. Devoe: 96XX Wonder Woodstain Alkyd Stain.
b. Fuller: 640-X)(Pen-Chrome Interior Oil Base Wood Stain.
c. Moore: 241 Moore's Interior Wood Finishes Penetrating Stain.
d. PPG: 77-302 Rez Medium Tint Base.
e. P & L: S-Series Tonetic Wood Stain.
f. S-W: Oil Stain A-48 Series.

2. Paste Wood Filler: Solvent-based, air-dry in a, paste-type wood filler.

a. Devoe: 4800 Wonder Woodstain Interior Paste Wood Filler.
b. Fuller: 680-00 Pen Chrome Paste Wood Filler.
c. Moore: Benwood Paste Wood Filler#238.
d. PPG: (none required)
e. P & L: No recommendation.
f. S-W: Sher-Wood Fast-Dry Filler.

3. Oil Rubbing Varnish: Clear, oil-type, rubbing varnish for use on interior stained or natural-finished woodwork:

a. Devoe: 4600 Wonder Wood Satin Alkyd Satin Varnish.
b. Fuller: 653-01 EPA Compliant Clear Polyurethane Satin Finish.
c. Moore: Benwood Satin Finish Varnish #404.
d. PPG: 77-7 Rez Satin Varnish.
e. P & L: Clear Finish Gloss.
f. S-W: Oil Base Varnish, Gloss A66V91.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions under which painting will be performed for compliance with paint application requirements. Surfaces receiving paint must be thoroughly dry before paint is applied.

1. Do not begin to apply paint until unsatisfactory conditions have been corrected.
2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.

B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

1. Notify the Architect about anticipated problems using the materials specified over substrates primed by others.

3.2 PREPARATION

A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted, or provide surface-applied protection prior to surface preparation and painting. Remove these items, if necessary, to completely paint the items and adjacent surfaces. Following completion of painting operations in each space or area, have items reinstalled by workers skilled in the trades involved.

B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease prior to cleaning. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

C. Surface Preparation: Clean and prepare surfaces to be painted according to the manufacturer's instructions for each particular substrate condition and as specified.

1. Provide barrier coats over incompatible primers or remove and reprime. Notify Architect in writing about anticipated problems using the specified finish-coat material with substrates primed by others.

2. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.

a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.

b. Prime, stain, or seal wood to be painted immediately upon delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling.

c. When transparent finish is required, backprime with spar varnish.

d. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately upon delivery.

D. Materials Preparation: Carefully mix and prepare paint materials according to manufacturer's directions.

1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.

2. Stir material before application to produce a mixture of uniform density; stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.

3. Use only thinners approved by the paint manufacturer and only within recommended limits.

E. Tinting: Tint each undercoat a lighter shade to facilitate identification of each coat where multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

A. General: Apply paint according to manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.

B. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.

1. Paint colors, surface treatments, and finishes are indicated in the schedules.

2. Provide finish coats that are compatible with primers used.

3. The number of coats and the film thickness required are the same regardless of the application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. Sand between applications where sanding is required to produce a smooth even surface according to the manufacturer's directions.

4. Apply additional coats if undercoats, stains, or other conditions show through final coat of paint until paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners, receive a dry film thickness equivalent to that of Flat surfaces.

5. The term exposed surfaces includes areas visible when permanent or built-in fixtures, convector covers, covers for finned tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.

6. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.

7. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, nonspecular black paint.

8. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.

9. Sand lightly between each succeeding enamel or varnish coat.

10. Omit primer on metal surfaces that have been shop-primed and touch-up painted.

C. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. Allow sufficient time between successive coats to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.

D. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to the manufacturer's directions.

1 . Brushes: Use brushes best suited for the material applied.

2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.

3. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required.

E. Minimum Coating Thickness: Apply materials no thinner than the manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.

F. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime-coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

G. Pigmented (Opaque) Finishes: Completely cover to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

H. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes, or other surface imperfections.

1. Provide satin finish for final coats.

I. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with specified requirements.

3.4 CLEANING

A. Cleanup: At the end of each work day, remove empty cans, rags, rubbish, and other discarded paint materials from the site.

1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.5 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.

B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINT SCHEDULE

A. General: Provide the following paint systems for the various substrates, as indicated. See the Finishes Schedule at the end of the section for specific requirements.

B. Gypsum Drywall Systems:

1. Lusterless (Flat) Emulsion Finish: Three coats.

a. Primer: White, interior, latex-based primer.

1) Devoe: 50801 Wonder-Tones Latex Primer and Sealer.
2) Fuller: Pro-Tech Interior Latex Wall Primer and Sealer.
3) Moore: Moore's Latex Quick-Dry Prime Seal #201.
4) PPG: 6-2 Quick-Dry Latex Primer Sealer.
5) P & L: Latex Wall Primer Z30001.
6) S-W: Pro-Mar 200 Latex Wall Primer B28W200.

b. Finish Coat: Interior, flat, latex-based paint.

1) Devoe: 36X)(Wonder-Tones Latex Flat Wall Paint.
2) Fuller: 602XX Liquid Velvet Latex Wall Paint.
3) Moore: Regal Wall Satin #215.
4) PPG: 80 Line Walihide Flat Latex Paint.
5) P & L: Vapex Latex Flat Wall Finish.
6) S-W: Classic 99 Wall and Trim Paint A27W10.

C. Woodwork and Hardboard:

1. Semigloss Enamel Finish: Three coats.

a. Undercoat: Interior enamel undercoat.

1) Devoe: 8801 Velour Alkyd Enamel Undercoat.
2) Fuller: 220-07 Interior Alkyd Enamel Undercoat.
3) Moore: Moore's Alkyd Enamel Underbody #217.
4) PPG: 6-6 Speedhide Quick-Dry Enamel Undercoater.
5) P & L: Interior Trim Primer.
6) S-W: Pro-Mar 200 Alkyd Enamel Undercoater B49W200.

b. First and Second Coats: Interior, semigloss, odorless, alkyd enamel.

1) Devoe: 26XX Velour Alkyd Semigloss Enamel.
2) Fuller: 110X)(Fullerglo Alkyd Semigloss Enamel.
3) Moore: Moore's Satin Impervo Enamel #235.
4) PPG: 27 Une Walihide Semigloss Enamel.
5) P & L: Cellu-Tone Alkyd Satin Enamel.
6) S-W: Classic 99 Semigloss Enamel A40 Series.

D. Stained Woodwork:

1. Stained-Varnish Rubbed Finish: Three finish coats over stain plus filler on open grain wood. Wipe filler before applying first varnish coat.

a. Stain Coat: Oil-type interior wood stain.

1) Devoe: 96XX Wonder Woodstain Alkyd Stain.
2) Fuller: 640-XX Pen-Chrome Interior Oil Base WoodStain.
3) Moore: 241 Moore's Interior Wood Finishes penetrating Stain.
4) PPG: 77-302 Rez Medium Tint Base.
5) P & L: S-SeriesTonetic Wood Stain.
6) S-W: Oil Stain A-48 Series.

b. First Coat: Cut shellac.

1) Devoe: 4900 Wonder Woodsealer Quick-Dry Sealer.
2) Moore: 413 Moore's Interior Wood Finishes Quick-Dry Sanding Sealer.
3) PPG: 77-30 Quick Drying Sanding Sealer.
4) S-W: Pro-Mar Varnish Sanding Sealer B26V3.

c. Second and Third Coats: Oil rubbing varnish.

1) Devoe: 4600 Wonder Wood Satin Alkyd SatinVarnish.
2) Fuller: 653-01 EPA Compliant Clear Polyurethane Satin Finish.
3) Moore: Benwood Satin Finish Varnish #404.
4) PPG: 77-7 Rez Satin Varnish.
5) P & L: Clear Finish Gloss.
6) S-W: Oil Base Varnish, Gloss A66V91.

E. Ferrous Metal:

1. Semigloss Enamel Finish: Two coats over primer with total dry film thickness not less than 2.5 mils.

a. Primer: Syntheffc, quick-drying, rust-inhibiffng primer.

1) Devoe: 14920 Bar-Ox Quick Dry Metal Primer, Red.
2) Fuller: 621-.04 Blox-Rust Alkyd Metal Primer.
3) Moore: Ironclad Retardo Rust-Inhibitive Paint #163.
4) PPG: 6-208 Red Inhibitive Metal Primer.
5) P & L: EffectoRust-Inhibiting Primer.
6) S-W: Kem Kromik Metal Primer B50N2/B50W1.

b. Undercoat: Interior enamel undercoat.

1) Devoe: 8801 Velour Alkyd Enamel Undercoat.
2) Fuller: 220-07 Interior Alkyd Enamel Undercoat.
3) Moore: Moore's Alkyd Enamel Underbody #217.
4) PPG: 6-6 Speedhide Quick-Dry Enamel Undercoater.
5) P & L: Interior TRm PRmer.
6) S-W: Pro-Mar 200 Alkyd Enamel Undercoater B49W200.

c. Finish Coat: Interior, semigloss, odorless, alkyd enamel.

1) Devoe: 26XX Velour Alkyd Semigloss Enamel.
2) Fuller: 110XX Fullerglo Alkyd Semigloss Enamel.
3) Moore: Moore's Satin Impervo Enamel #235.
4) PPG: 27 Line Walihide Semigloss Enamel.
5) P & L: Cellu-Tone Alkyd Satin Enamel.
6) S-W: Classic 99 Semigloss Enamel A40 Series.

3.7 INTERIOR FINISHES SCHEDULE (SEE SCHEDULES ABOVE FOR MAJOR FINISHES NOT INCLUDED BELOW)

ITEM:	COLOR:	PAINT /FINISH:
Running and standing trim,doors	To be selected	Semigloss enamel
Hardwood trim, column covers	To be selected	Stained woodwork with oil-rubbed finish
Steel door and frames	To be selected	Semigloss enamel

END OF SECTION 09900

SECTION 10161 - TOILET PARTITIONS

PART 1 GENERAL

1.1_ SCOPE

A. Requirements of the general conditions and special conditions apply to the work in this section.

B. Provide all labor, materials, etc. necessary for the completion of the work of this section as specified or shown on the drawings.

C. Work of this section consists of, but is not limited to the following:

1. Toilet compartments
2. Hardware, etc. for stalls
3. Shop drawings

1.2 SUBMITTALS

A. Submit (6) sets of shop drawings, including details and a sample of each item of hardware for architect's approval.

B. Provide drawings showing location for adequate steel reinforcements or wood blocking in walls to be provided by others for proper securement of the finished work.

C. Furnish color samples for use of the architect.

D. Furnish documentation on hardware, headrail, and continuous wall bracket to meet specification as outlined.

PART 2 PRODUCTS

2.1 MATERIALS

A. Toilet compartment shall be floor-mounted, overhead-braced with non-corrosive doors, panels and pilasters similar and equal to Poly-Mar HD® compartments as manufactured by Santana Products Inc., Scranton, PA, or an approved equal by specifier or design professional prior to bid date with hardware as specified herein.

B. Panels, doors and pilasters shall be fabricated from High Density Polyethylene (HDPE) containing minimum of 10% recycled material manufactured under high pressure forming a single component section which is waterproof, non-absorbent and has a self-lubricating surface that resists marking with pens, pencils or other writing utensils. All panels, doors and pilasters to arrive at job-site with special protective plastic covering.

C. Characteristics:

1. Dual component compression molded High Density Polyethylene (HDPE) of solid Poly-Mar HD®, Poly-Marble HD®, or Poly-Granite HD® virgin resin materials in colors that extend throughout the surface; the panels, doors, and pilasters shall have combined recycled and/or virgin material (HDPE) as the core material.

2. Doors, panels and pilasters shall be a minimum of 1" thick and all edges machined to a radius of .250" and all exposed surfaces to be free of saw marks.

D. Fabrication:

1. Dividing panels shall be 55" high and mounted at 14" above finished floor.

2. Doors shall be 55" and mounted at 14" above finished floor.

3. Pilasters shall be 82" high, mounted within a one-piece plastic shoe with star-head security pin, stainless steel barrel bolts.

4. Finish of doors, panels, and pilasters shall be similar and equal to Santana Products, Inc. "Plastic-Glaze 280" Color of doors, panels and pilasters to be selected from the standard Poly-Mar HD®, Poly-Marble HD®, or Poly-Granite HD® color range.

5. Aluminum edging strips to be fastened to the bottom edge of all doors and panels using vandal-proof stainless steel fasteners.

E. Technical Data:

1. Santana Solid Plastic Products to be independently certified in writing by the manufacturer indicating compliance to appropriate building codes governing the project as it applies to the use of "plastic in a commercial building."

F. Manufacturer to supply a written warranty covering all plastic components and plastic hardware against breakage, corrosion and delaminating for a period of 15 years.

2.2 HARDWARE

A. Door Hardware shall be as follows:

1. Hinges shall be integral hinge system. Pilaster to be machined to accept door and hinge mechanism. Hinge mechanism consists of a 2-piece ½" diameter nylon pin with "Cam Action" and a 3/16" stainless steel pin inserted into lower portion of pilaster and door. A one-piece ½" diameter, 4" long nylon pin to be inserted into the top portion of the pilaster and door. Door closures to be factory set to accommodate all conditions and allow for a positive opening and closing action free of impediment.

2. Each handicapped door to include: (1) door pull (1) wall stop.

3. Door strike and keeper shall be fabricated from heavy aluminum extrusion (6463-T5 Alloy) with bright-dipped anodized finish with wrap around flange surface mounted and thru-bolted to pilaster with star-head security pin, stainless steel barrel bolts. Size of strike shall be 6" in length.

4. Door latch housing shall be fabricated from heavy aluminum extrusion (6463-T5 Alloy) with bright-dipped anodized finish, surface mounted and thru-bolted to door with star-head security pin, stainless steel barrel bolts. Slide bolt and button shall be heavy aluminum with "Tuff-Coat Black" anodized finish.

B. Solid plastic pilaster shoes shall be anchored to finished floor with plastic anchors and #14 x 1-1/2" star-head security pin, stainless steel screws.

C. Full length continuous plastic wall brackets weighing not less than .822 lbs. per linear foot. Brackets shall be used for all panels to pilaster, pilasters to wall and panel to wall connections. Wall brackets shall be thru-bolted to panels and pilasters with star-head security pin, stainless steel barrel bolts. Attachment of brackets to adjacent wall construction shall be accomplished #14 x 1-1/2" star-head security pin, stainless steel screws anchored directly behind the vertical edge of panels and pilasters at 13" intervals along the full length of bracket and at each 13" interval alternately spaced between anchor connections.

D. Headrail shall be heavy aluminum extrusion (6463-T5 Alloy) with bright-dipped anodized finish in anti-grip configuration weighing not less than 1.188 lbs. per linear foot as manufactured by Santana Products Inc. Headrail shall be fastened to tops of pilasters and headrail brackets by thru-bolting with star-head security pin, stainless steel barrel bolts (no cadmium plated bolts allowed).

E. Headrail brackets shall be 18 gauge stainless steel.

PART 3 INSTALLATION

3.1 INSTALLATION

Erection of partitions shall be in accordance with the manufacturer's standard recommendations and the following:

A. All parts shall be erected in a substantial manner, straight, level, and plumb.

B. No evidence of drilling, cutting, or patching shall be visible in the finished work.

C. Clearance at vertical edges of doors shall be uniform top to bottom and shall not exceed 1/4".

D. Finished surfaces shall be cleaned after installation and left free of imperfections.

E. Authorized factory installers to be utilized.

END OF SECTION 10161

SECTION 10520-FIRE EXTINGUISHERS AND CABINETS

PART 1-GENERAL

1.1 DESCRIPTION

A. Work Included: Provide Fire Extinguisher and cabinets where shown on Drawings, as specified herein and as needed for complete and proper installation.

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in necessary crafts and who are completely familiar with specified requirements and methods needed for proper performance of work.

1.3 SUBMITTALS

A. Product Data:

1. Manufacturer's specifications and data needed to prove compliance with the specified requirements;

2. Dimensional drawings as needed to depict the space required for these items, and their interface with work of other trades.

3. Manufacturer's recommended installation procedures which, when approved by Architect, will become basis for accepting or rejecting actual installation procedures used on work.

PART 2-PRODUCTS

2.1 CABINETS

A. Provide 6 Larson's Manufacturing Company VISTA SERIES AL-V-2709-SM factory prefinished steel cabinets, or approved equal. To be located in field.

2.2 FIRE EXTINGUISHER

A. At each Fire Extinguisher cabinet, provide one multi-purpose chemical fire extinguisher with UL rating of ZA-10B;C, Larson's Manufacturing Company, MP 10, or approved equal.

B. Service, charge and tag each fire extinguisher not more than five calendar days prior to date of Substantial Completion of Work.

PART3-EXECUTION

3.1 SURFACE CONDITIONS

A. Examine areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Coordinate as required with other trades to assure proper and adequate provision in work of those trades for interface with work.

B. Install work in strict accordance with original design, approved Shop Drawings, pertinent requirements of governmental agencies having jurisdiction, and manufacturer's recommended installation procedures as approved by Owner, anchoring all components firmly into position for long life under hard use.

END OF SECTION 10520

SECTION 10650 - MOVABLE PARTITIONS

PART 1 - GENERAL

1.1 DESCRIPTION

A. **General**

1. Furnish and install operable partitions and suspension system. Provide all labor, materials, tools, equipment, and services for operable walls in accordance with provisions of contract documents.

1.2 RELATED WORK BY OTHERS

A. Preparation of opening will be by General Contractor. Any deviation of site conditions contrary to approved shop drawings must be called to the attention of the architect.

B. All header, blocking, support structures, jambs, track enclosures, surrounding insulation, and sound baffles as required in 1.04 Quality Assurance.

C. Pre-punching of support structure in accordance with approved shop drawings.

D. Paint or otherwise finishing all trim and other materials adjoining head and jamb of operable partitions.

1.3 SUBMITTALS

A. Complete shop drawings are to be provided prior to fabrication indicating construction and installation details. Shop drawings must be submitted within 60 days after receipt of signed contract.

1.4 QUALITY ASSURANCE

A. Preparation of the opening shall conform to the criteria set forth per ASTM E557 Standard Practice for Architectural Application and Installation of Operable Partitions.

B. The partition STC (Sound Transmission Classification) shall be achieved per the standard test method ASTM E90.

C. Noise isolation classifications shall be achieved per the standard test methods ASTM E336 and ASTM E413.

D. Noise Reduction Coefficient (NRC) ratings shall be per ASTM C423.

E. The manufacturer shall have a quality system that is registered to the ISO 9001 standards.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Proper storage of partitions before installation and continued protection during and after installation will be the responsibility of the General Contractor.

1.6 WARRANTY

A. Partition shall be guaranteed for a period of two years.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Upon compliance with all of the criteria specified in this section, Manufacturers wishing to bid products similar to the product specified must submit to the architect 10 days prior to bidding complete data in support of compliance and a list of three past installations of products similar to those listed. The submitting manufacturer guarantees the proposed substituted product complies with the product specified and as detailed on the drawings.

2.2 MATERIALS

A. Product to be top supported Series 7500 paired panels as manufactured by Hufcor Inc.

1. Panels shall be nominally 4" [100] thick, to 48-1/2" [1232] in width, and hinged in groups of two or three.

2. Panel faces shall be of gypsum laminated to appropriate substrates to meet the STC requirements in 2.04 Acoustical Performance. Optional substrates: Steel, Full height tack, Medium Density Fiberboard (Consult your Hufcor Distributor for available STC ratings.)

3. Frames shall be of aluminum alloy 6063-T6 formed to capture and protect edges of the face material.

4. Vertical interlock between panels shall be dual in a tongue and groove configuration. Design provides minimum 3/4" [19] panel-to-panel interlock. The lead panel shall seal against the adjacent wall without the need for wall mounted jambs.

5. Horizontal top seals shall be retractable, provide 1-1/4" [32] nominal operating clearance, and exert upward force when extended. (Optional: Horizontal top seals shall be continuous contact multi-ply vinyl.)

6. Horizontal bottom seals shall be retractable, provide 1-1/2" [40] nominal operating clearance, and exert downward force when extended. (Optional: Horizontal bottom seals shall be continuous contact multi-ply vinyl.)

7. Hinges on basic panels shall be of steel and project no more than 1/4" [6] beyond panel faces. Each pair of panels to have a minimum of three hinges.

B. Weight of the panels shall be 7.8-10.9 lbs./sq. ft. [37.77-53.2 kg/sq. m] based on options selected.

C. Suspension System:

1. Track shall be of clear anodized architectural grade extruded aluminum allow 6063-T6. Track design shall provide integral support for adjoining ceiling, soffit, or plenum sound barrier. Track shall be connected to the structural support by min. 3/8" [10] dia. Threaded steel hanger rods. Guide rails and/or track sweep seals shall not be required.

   a. Each panel shall be supported by one 4-wheeled carrier. Wheels to be of hardened steel ball bearings encased with molded polymer tires.

D. Finishes

1. Face finish shall be:

   a. Factory applied reinforced vinyl fabric with woven backing, weighing not less than 16 oz. Per lineal yard [465 g/m]. Color shall be selected from manufacturer's standard color selector.

2. Frame color shall be bronze anodized (standard).

3. Aluminum track shall be clear anodized.

2.3 OPERATION

A. Panels shall be manually moved from the storage area, positioned in the opening, sand seals set.

B. Retractable Horizontal Seals

1. Retractable horizontal seals shall be activated by a removable quick-set operating handle located approximately 42" [1067] from the floor in the panel edge.

2. All retractable seals in each hinged panel group shall be operated simultaneously.

3. Seal activation requires a 190 degree turn of the removable handle.

C. Final partition closure to be by expanding jamb which compensates for minor wall irregularities and provides a minimum of 250 lbs. [113.4 kg] seal force against the adjacent wall for optimum sound control. The jamb activator shall be located approximately 45" [1143] from the floor in the panel face and be accessed from either side of the panel. The jamb is equipped with a mechanical rack and pinion gear drive mechanism and shall extend 4"-6" [100-152] by turning the removable operating handle.

D. Stack/Store Panels

1. Retract seals with removable operating handle and move to storage area. Panels may be stored at either or both ends of the track or in a pocket.

2.4 ACOUSTICAL PERFORMANCE

A. Acoustical performance shall be tested at a laboratory accredited by the U.S. Dept. Of Commerce, National Institute of Standaards and Technology, under the National Voluntary Laboratory Accreditation Program (NVLAP) and in accordance with ASTM E90 Test Standards. Standard panel construction shall have obtained an STC rating of 55.

1. Complete, unaltered written test report is to be made available upon request.

PART 3 - EXECUTION

A. Installation:

The complete installation of the operable wall system shall be by an authorized factory-trained installer and be in strict accordance with the approved shop drawings and manufacturer's standard printed specifications, instructions, and recommendations.

B. Cleaning:

1. All track and panel surfaces shall be wiped clean and free of handprints, grease, and soil.

2. Cartoning and other installation debris shall be removed from the job site.

C. Training:

1. Installer shall demonstrate proper operation and maintenance procedures to owner's representative.

2. Operating handle and owners manuals shall be provided to owner's representative.

END OF SECTION 10650

SECTION 10800 - TOILET AND BATH ACCESSORIES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes toilet and bath accessory items.

1.3 SUBMITTALS

A. General: Submit the following according to Conditions of Contract and Division 1 Specifications Sections.

B. Product data for each toilet accessory item specified, including construction details relative to materials, dimensions, gages, profiles, mounting method, specified options, and finishes.

1.4 QUALITY ASSURANCE

A. Inserts and Anchorages: Furnish accessory manufacturers' standard inserts and anchoring devices that must be set in concrete or built into masonry. Coordinate delivery with other work to avoid delay.

B. Single-Source Responsibility: Provide products of same manufacturer for each type of accessory unit and for units exposed to view in same areas, unless otherwise acceptable to Architect.

1.5 PROJECT CONDITIONS

A. Coordination: Coordinate accessory locations, installation, and sequencing with other work to avoid interference with and ensure proper installation, operation, adJustment, cleaning,and servicing of toilet accessory items.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering toilet accessories that may be incorporated in the Work include, but are not limited to, the following:

1. Bradley
2. Bobrick

2.2 MATERIALS, GENERAL

A. Brass: Leaded and unleaded, flat products, ASTM B 19; rods, shapes, forgings, and flat products with finished edges, ASTM B 16; Castings, ASTM B 30.

B. Sheet Steel: Cold-rolled, commercial quality ASTM A 366, 0.04-inch (20-gage) minimum. Surface preparation and metal pretreatment as required for applied finish.

C. Chromium Plating: Nickel and chromium electro-deposited on base metal, ASTM B 456, Type SC 2.

D. Mirror Glass: Nominal 6.0-mm (0.23-inch) thick, conforming to ASTM C 1036, Type I, Class 1, Quality q2, and with silvering, electro-plated copper coating, and protective organic coating.

E. Fasteners: Screws, bolts, and other devices of same material as accessory unit, or of galvanized steel where concealed.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install toilet accessory units according to manufacturers' instructions, using fasteners appropriate to substrate as recommended by unit manufacturer. Install units plumb and level, firmly anchored in locations and at heights indicated.

B. Secure mirrors to walls in concealed, tamperproof manner with special hangers, bolts, or screws. Set units plumb, level, and square at locations indicated, according to manufacturer's instructions for type of substrate involved.

3.2 ADJUSTING AND CLEANING

A. Clean and polish all exposed surfaces strictly according to manufacturer's recommendations after removing temporary labels and protective coatings.

END OF SECTION 10800

SECTION 12372 - CASEWORK

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes wood and plastic-laminate-faced cabinets and countertops, solid surface countertops, and wood casework..

1.3 DEFINITIONS

A. **Exposed Surfaces:** Surfaces visible when drawers and opaque doors are closed; behind clear glass doors; bottoms of casework 43 inches or more above finished floor.

B. **Semi-Exposed Surfaces:** Surfaces which become visible when opaque doors are open or drawers are extended; bottoms of casework are more than 30 inches and less than 42 inches above finished floor.

C. **Concealed Surfaces:** Surfaces considered concealed when surfaces not visible after installation; bottoms of casework less than 30 inches above finished floor; tops of casework over 78 inches above finished floor and not visible from an upper level; stretchers, blocking, and components concealed by drawers.

D. **Reveal Overlay:** Door and drawer faces partially cover cabinet frame.

E. **Flush Overlay:** Door and drawer faces cover cabinet frame with space between faces sufficient for operating clearance.

F. **Flush:** Door and drawer faces flush with cabinet face.

1.4 SUBMITTALS

A. **General:** Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product data for each casework type specified.

C. Product data for each hardware type specified.

D. Shop drawings for casework showing location and size, accessories, materials, finishes, and filler panels. Include fully dimensioned plans, elevations, and anchorage details to countertop and walls.

E. Shop drawings for countertops showing sizes, shapes, edge and backsplash profiles, cutouts for plumbing fixtures, and methods of joining.

F. Samples for initial selection purposes of manufacturer's color charts in the form of unit sections showing the full range of colors, textures, and patterns available for each type of material indicated or exposed to view.

G. Samples for verification purposes in full-size units of each type of material indicated; in sets for each color, texture, and pattern specified, showing the full range of variations expected in these characteristics.1 1/ 2-inch-square samples of plastic laminate for countertops. 2 1 2-inch-square samples of plastic laminate for casework finish.

H. Product certificates signed by the manufacturer certifying that materials furnished comply with specified requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver casework as factory-assembled units, packaged individually.

1.6 PROJECT CONDITIONS

A. **Environmental Conditions:** Comply with casework manufacturer's written requirements for temperature and humidity conditions during storage and installation. Do not install casework until these conditions have been attained and stabilized.

B. **Field Measurements:** Verify casework dimensions by field measurements. Verify kitchen casework can be installed in compliance with the original design and referenced standards.

C. **Field Measurements:** Verify countertop size and shape prior to fabrication by field measurements taken after base units are installed.

PART 2 PRODUCTS

2.1 CABINET MATERIALS, GENERAL

A. Sizes, dimensions, and thicknesses given are minimum dimensions.

B. **Particleboard:** ANSI A208.1, mat-formed particleboard, Grade 1-M-2 with minimum density of 40 pcf, internal bond of 60 psi, and minimum screw-holding capacity of 225 lb on faces and 200 lb on edges.

C. **Hardwood Plywood:** ANSI/HPMA HP hardwood and decorative plywood, Good Grade (1) or better.

D. **Particleboard Core Plywood:** ANSI/HPMA HP hardwood and decorative plywood, Good Grade (1) or better.

E. **Solid Wood:** Clear, dry, sound, and free of defects selected from First Grade lumber as defined by NHLA.

F. **Hardboard:** ANSI A135.4, Class 1, tempered.

G. **Plastic Laminate:** NEMA LD 3.

H. Thermoset Decorative Panels: Comply with ALA-1988 and NEMA LD 3 for GP 20; melamine or polyester.

2.2 PLASTIC LAMINATE FACE CASEWORK

A. **Face Style:** Flush overlay.

B. **Face Frame:** 1-by-1-5/8-inch solid wood frame rails and stiles with glued mortise and tenon Joints.

C. **Concealed Surfaces:** Sound and dry solid wood, plywood, or particleboard without defects affecting strength, utility, or stability.

D. **Sides, Dividers, Tops, Bottoms, Shelves, and Stretchers:** Plastic laminate GP 28 on 1 /2inch-thick particleboard. Provide stretchers for top of base cabinet.

E. **Back Panels:** 1 /8-inch-thick hardboard with thermoses decorative panels on interior surfaces fastened to rear edge of end panels and to top and bottom rails.

F. **Exposed Edge Treatment:** Edge doors and drawer fronts with plastic laminate of same material as exposed faces.

G. **Doors, Drawer Fronts, Fixed Panels, Toeboards, and Ends**: Plastic laminate GP 28 on 5/8inch-thick particleboard.

H. **Drawers:** Fabricate with front, bottom, and back rabbeted in sides and secured with glue and mechanical fasteners as follows:

1. **Subfronts, Sides, and Backs:** 3/8-inch-thick particleboard.

2. **Bottoms:** Not less than 1 /4-inch-thick particleboard.

3. **Drawer Suspension:** Provide for a minimum capacity of 50 lb, with twin-track, side-mounted, drawer-glide suspension with nylon rollers. Provide self-closing feature and positive stop.

J. **Joinery:** Rabbet backs flush into end panels and secure with concealed mechanical fasteners. Connect tops and bottoms of wall cabinets and bottoms and stretchers of base cabinets to ends and dividers with mechanical fasteners. Rabbet tops, bottoms, and backs into end panels.

K. **Subbase:** 3/4-inch-/hick particleboard.

L. **Toe Board:** 5/8-inch-thick particleboard attached to subbase with concealed fasteners.

2.4 CASEWORK HARDWARE

A. **General:** Manufacturer's standard units complying with ANSI A156.9, of type, material, size, and finish as selected from manufacturer's standard choices.

2.5 COUNTERTOPS, SOLID SURFACE

A. Equal to products by Wilsonart or Corian.

B. **Configuration:** Provide countertops with the following front style, cove, and backsplash style:

1. **Front Style:** Decorative Edge

2. **Backsplash and Endsplash Style:** Radius Edge

PART 3 EXECUTION

3.1 INSTALLATION

A. Install casework with no variations in flushness of adjoining surfaces using concealed shims. Where casework abuts other finished work, scribe and cut for accurate fit. Provide filler strips, scribe strips, and moldings in finish to match casework face.

B. Install casework without distortion so that doors and drawers fit openings properly and are aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessories as indicated.

C. Install casework and countertop level and plumb to a tolerance of 1/8 inch in 8 feet.

D. Fasten unit of casework to adjacent unit and into structural support members of wall construction with #10 sheet metal or wood screws with washer head or washer.

E. Fasten countertops as per manufacturer's recommendations. Spline and glue joints in countertops and provide concealed mechanical clamping of Joint.

3.2 ADJUSTING AND CLEANING

A. Adjust hardware to center doors and drawers in openings and lubricate to provide unencumbered operation.

B. Clean casework on exposed and semi-exposed surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.

END OF SECTION 12372

SECTION 14240 — HYDRAULIC ELEVATORS

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies hydraulic elevators.

B. Related Sections: The following sections contain requirements that relate to this section and are performed by other trades.

1. **Section 01500 - Construction Facilities and Temporary Controls:** protection of floor openings and personnel barriers; temporary power and lighting.
2. **Section 02200 - Earthwork:** excavation for cylinder well casing.
3. **Section 03300 - Cast-In-Place Concrete:** elevator pit, elevator motor and pump foundation, and grouting thresholds.
4. **Section 04200 - Unit Masonry:** masonry hoistway enclosure, building-in and grouting hoistway door frames, grouting thresholds.
5. **Section 05500 - Metal Fabrications:** pit ladder, divider beams, support for entrances and rails, hoisting beam at top of hoistway.
6. Section 07145 - **Cementitious Waterproofing:** waterproofing of elevator pit.
7. **Section 15500 - Heating, Ventilating, and Air Conditioning:** ventilation and temperature control of elevator equipment room.
8. **Section 16100 - Electrical:** electrical service to main disconnect in elevator machine room; electrical power for elevator installation and testing; electrical-disconnecting device to elevator equipment prior to activation of sprinkler system; electrical service for machine room; machine room and pit receptacles with ground-fault current protection; lighting in machine room and pit; wiring for telephone service to machine room.
9. **Section 16610 - Standby Power Supply Systems:** emergency generator for elevator operation.
10. **Section 16720 - Fire Alarm Systems:** fire and smoke detectors and interconnecting devices; fire alarm signal lines to contacts in the machine room.
11. **Section 16740 - Telephone Systems:** ADAAG-required emergency communications equipment.

1.02 REFERENCES

A. Comply with applicable building codes and elevator codes at the project site, including but not limited to the following:

1. ANSI A117.1, Buildings and Facilities, Providing Accessibility and Usability for Physically Handicapped People.
2. ADAAG, Americans with Disabilities Act Accessibility Guidelines.
3. ANSI/NFPA 70, National Electrical Code.
4. ANSI/NFPA 80, Fire Doors and Windows.
5. ASME/ANSI A17.1, Safety Code for Elevators and Escalators.
6. ANSI/UL 10B, Fire Tests of Door Assemblies.
7. CAN/CSA C22.1, Canadian Electrical Code.
8. CAN/CSA-B44, Safety Code for Elevators and Escalators.
9. Model Building Codes.
10. All other local applicable codes.

1.03 SYSTEM DESCRIPTION: Elevator Arrangement

A. Performance Requirements for Elevators:

1. Quantity & Elevator Numbers:
   1
   1

2. Type: Single direct acting hydraulic cylinder in well hole.

3. Number of Stops: 2

4. Number of Openings: 1 at Front

5. Rise: 11'-0"

6. Rated Capacity/Speed:2500 pounds, 100/125/150 fpm (1134 kg, 0.50/0.64/0.76 m/sec.)

7. Minimum Car Inside:
   [2500#] 6' 8" wide x 4' 3" deep (2032 mm x 1295 mm)

   Front & Rear Opening:
   [2500#] 6' 8" wide x 4' 3-3/4" deep (2032 mm x 1315 mm)

8. Inside Cab Height: 8'0"(2438 mm)

   Height Under Ceiling: 7' 4 1/2"(2223mm)

9. Entrance Width & Type:
   [2500#] Single-Slide Door 3' 6" x 7' 0" or 8' 0"
   (1067 mm x 2134 mm or 2438 mm)

10. Main Power Supply: **208** Volts + or - 5% of normal, 3 Phase, with a separate equipment grounding conductor.

11. Lighting Power Supply: 120 Volts, 1 Phase, 15 Amp, 60 Hz.

12. Stopping Accuracy: ±1/4" (6.4 mm) under any loading condition or direction of travel.

13. Door Opening Time for 7ft. painted hoistway and car doors:
    4.0 seconds – Single Slide 42" door.

B. Simplex Collective Operation: Using a microprocessor-based controller, operation shall be automatic by means of the car and hall buttons. If all calls in the system have been answered, the car shall park at the last landing served.

C. Provide microprocessor-based control system with utilizes on-board diagnostics for servicing, trouble-shooting, and adjusting without requiring the use of an outside service tool. If an on-board diagnostic system is not provided, a handheld service tool (or laptop), owner's license, operation manual, and tool instructions must be provided in addition to the control system.

D. Car Operating Features

1. Full Collective Operation.
2. Single Speed Fan.
3. On/Off Light Switch.
4. Solid State Starting
5. Remote elevator monitoring REM® ready.
6. Car-Stall Protection.
7. Firefighters' Service Phase I and Phase II
8. Top of Car Inspection.
9. Intercom provisions
10. Car Secure Access.
11. Express Priority Service with key switch at First Floor.
12. Second Riser of Hall Buttons.
13. Emergency Hospital Service.
14. Automatic Standby Power Operation with Manual Override. This operation shall return each car automatically to a designated landing when the system is initially switched to standby power. One or more cars are returned at a time. Preference is given to loaded cars over empty cars in order to reduce passenger waiting times. A car must respond by beginning to move toward the designated landing within a pre-determined time. If a car does not respond, it is automatically placed in a "Not Available" mode while other cars are moved. If a car was not returned to the designated landing on the first try, a second attempt is made. If the second attempt is not successful, the car will remain in a "Not Available" mode and can only be moved by manual means. Once each car has returned to the designated landing, the doors will remain open for a predetermined amount of time.

    When all cars have successfully returned to the designated landing or have attempted to move twice, automatic selection of the car(s) to run on normal operation will occur.

    If for any reason a car selected for normal operation under stand by power is delayed for 60 seconds, the car will be placed in a "Not Available" mode and another car will be selected for normal operation based on the priorities listed above.

    Manual Override of Standby Power Operation is achieved by a manual input for each car via a strip switch. A manually selected car may be run either in a return operation to a designated landing or in normal operation under standby power. If a manually selected car has not yet returned to the designated landing, it will perform this operation first then immediately go into normal operation.

    If a manually selected car is delayed, no other car can be selected in the group unless it is manually selected.

If car selection is changed by Manual Override while a car is running in return or normal operation under standby power, the newly selected car will not be permitted to run until the car that is running has stopped, opened its doors, and gone into the Standby Power Wait state.

E. Door Control Features:

1. Closed Loop Door Operator is a closed loop, microprocessor based door operator system. The door operator will facilitate smooth operation under varying environmental influences such as, temperature, wind, friction, and component variation. The processor will monitor the door's actual position and velocity compared to its desired position and velocity. If variations are detected in the profile the command will be automatically corrected. The Closed Loop Door Operator control system shall not require machine room door control equipment.

2. Door noise not to exceed 58dBA.

3. Door control to open doors automatically when car arrives at a landing in response to a normal hall or car call.

4. Door control to open doors automatically when car arrives at a landing in response to a normal hall or car call.

   Elevator doors shall be provided with a reopening device that will stop and reopen the car door(s) and hoistway door(s) automatically should the door(s) become obstructed by an object or person.

   Primary door protection shall consist of a two dimensional, multi-beam array projecting across the car door opening. Under normal operation and for any door position, the system shall detect as a blockage an opaque object that is equal to or greater than 1.3 inches (33 mm) in diameter when inserted between the car doors at vertical positions from within 1 inch (25 mm) above the sill to 71 inches (1800 mm) above the sill. Under degraded conditions (one or more blocked or failed beams), the primary protection shall detect opaque objects that are equal to or greater than 4" (100 mm) in diameter for the same vertical coverage. If the system performance is degraded to the point that the 4" object cannot be detected, the system shall maintain the doors open or permit closing only under nudging force conditions.

   The door reopening device shall also include a secondary, three dimensional, triangular infrared multi-beam array projecting across the door opening and extending into the hoistway door zone. The door opening device will cause the doors to reopen when it detects a person(s) or object(s) entering or exiting the car in the area between the hoistway doors or the entryway area adjacent to the hoistway doors.

   The size of the secondary protection zone shall vary as the door positions vary during opening and closing. The width of the zone shall be approximately one-third the size of the separation between the doors (or door and strike plate for single-slide doors) and shall be approximately centered in the door separation. In order to minimize detection of hallway passers-by who are not entering the elevator, the maximum zone penetration into the entryway shall not exceed 20" for any door separation. Normal penetration depth into the entryway from the car doors shall be ~14" for a door separation of 42". The penetration shall reduce proportionally as the doors close. At door separations of 18" or less the secondary protection system may cease its normal operation since the depth of the zone recedes to where it is inside the hoistway doors. The vertical coverage of the secondary protection shall be ~19" (480 mm) above the sill to ~55" (1400 mm)above the sill (mid-thigh to shoulder of a typical adult).

   The secondary protection shall have an anti-nuisance feature which will ignore detection in the secondary zone after continual detection occurs for a significant time period in the secondary zone without corresponding detection in the primary protection zone; i.e. a person/object is in

the entryway but does not enter. Normal secondary protection shall be re-enabled whenever a detection occurs in the primary zone.

The reaction time of the door detector sub-system shall not exceed 60 milliseconds when both primary and secondary protection capabilities are active; nor 40 milliseconds when the secondary protection is disabled.

5. Door nudging operation to occur if doors are prevented from closing for an adjustable period of time.

F. Provide equipment according to Seismic Design Category C

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's product data for each system proposed for use. Include the following:
1. Signal and operating fixtures, operating panels and indicators.
2. Cab design, dimensions and layout.
3. Hoistway-door and frame details.
4. Electrical characteristics and connection requirements.
5. Expected heat dissipation of elevator equipment in machine room (BTU).

B. Shop Drawings: Submit approval layout drawings. Include the following:

1. Car, guide rails, buffers and other components in hoistway.
2. Maximum rail bracket spacing.
3. Maximum loads imposed on guide rails requiring load transfer to building structure.
4. Loads on hoisting beams.
5. Clearances and travel of car.
6. Clear inside hoistway and pit dimensions.
7. Location and sizes of access doors, hoistway entrances and frames.

C. Operations and Maintenance Manuals: Provide manufacturer's standard operations and maintenance manual.

1.05 QUALITY ASSURANCE

A. Manufacturer: Provide elevators manufactured by a firm with a minimum of 10 years experience in fabrication of elevators equivalent to those specified. Elevator manufacturer shall be ISO9001 certified.

B. Installer: Elevators shall be installed by the manufacturer.

C. Regulatory Requirements: Elevator system design and installation shall comply with the latest versions of <ASME A17.1 >

1. Elevator shall be designed in response to Americans with Disabilities Act Accessibility Guidelines (ADAAG).

D. Permits and Inspections: Provide licenses and permits and perform required inspections and tests.

1.06 DELIVERY, STORAGE AND HANDLING

1.06 DELIVERY, STORAGE AND HANDLING

A. Should the building or the site not be prepared to receive the elevator equipment at the agreed upon date, the General Contractor will be responsible to provide a proper and suitable storage area on or off the premises.

Should the storage area be off-site and the equipment not yet delivered, then the elevator contractor, upon notification from the General Contractor, will divert the elevator equipment to the storage area. If the equipment has already been delivered to the site, then the General Contractor shall transport the elevator equipment to the storage area. The cost of elevator equipment taken to storage by either party, storage, and redeliver to the job site shall not be at the expense of the elevator contractor.

1.07 WARRANTY

A. The elevator contractor's acceptance is conditional on the understanding that their warranty covers defective material and workmanship. The guarantee period shall not extend longer than one (1) year from the date of completion or acceptance thereof by beneficial use, whichever is earlier, of each elevator. The guarantee excludes ordinary wear and tear or improper use, vandalism, abuse, misuse, or neglect or any other causes beyond the control of the elevator contractor and this express warranty is in lieu of all other warranties, express or implied, including any warranty of merchantability or fitness for a particular purpose.

1.08 MAINTENANCE SERVICE

A. Maintenance service consisting of regular examinations, adjustments and lubrication of the elevator equipment shall be provided by the elevator contractor for a period of **12** months after the elevator has been turned over for the customer's use. This service shall not be subcontracted but shall be performed by the elevator contractor. All work shall be performed by competent employees during regular working hours of regular working days and shall include emergency 24-hour callback service. This service shall not cover adjustments, repairs or replacement of parts due to negligence, misuse, abuse or accidents caused by persons other than the elevator contractor. Only genuine parts and supplies as used in the manufacture and installation of the original equipment shall be provided.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

A. Provide hydraulic elevators by Otis Elevator Company or approved equal.

2.02 EQUIPMENT: MACHINE ROOM COMPONENTS

A. The hydraulic system shall be of compact design suitable for operation under the required pressure. The power component shall be mounted in the hydraulic-fluid storage tank. The control valve shall control flow for up and down directions hydraulically and shall include an integral check valve. A control section including control solenoids shall direct the main valve and control: up and down starting, acceleration, transition from full speed to leveling speed, up and down stops, pressure relief and manual lowering. All of these functions shall be fully adjustable for maximum smoothness and to meet contract conditions. System to be provided with a muffler, low-pressure switch and a shut-off valve.

B. A microprocessor-based controller shall be provided, including necessary starting switches together with all relays, switches, solid-state components and hardware required for operation,

including door operation, as described herein. A three (3) phase overload device shall be provided to protect the motor against overloading.

C. A manual lowering feature shall permit lowering the elevator at slow speed in the event of power failure or for adjusting purposes.

D. Tank Heater.

E. Low-oil control

F. Pressure Switch

2.03 EQUIPMENT: HOISTWAY COMPONENTS

A. Plunger(s) and Cylinder(s): Each cylinder shall be constructed of steel pipe of sufficient thickness and suitable for the operating pressure. The top of each cylinder shall be equipped with a cylinder head with a drip ring to collect any oil seepage as well as an internal guide ring and self-adjusting packing. Each plunger shall be constructed of selected steel tubing or pipe of proper diameter machined true and smooth with a fine polished finish. Each plunger shall be provided with a stop ring electrically welded to it to prevent the plunger from leaving the cylinder. Each plunger and cylinder shall be installed plumb and shall operate freely with minimum friction.
A sealed PVC cylinder protection system shall be installed. The system shall provide a means to monitor the space between the PVC sleeve and cylinder wall and evacuate unwanted fluids, so as to prevent such fluids from remaining in contact with the cylinder.

B. Car Guide Rails: Tee-section steel rails with brackets and fasteners.

C. Spring Buffer: Helical coil spring type.

D. Wiring: Wiring for hoistway electrical devices included in scope of the elevator system, hall panels, pit emergency stop switch, and the traveling cable for the elevator car.

E. Hoistway Entrances

1. Frames: Entrance frames shall be of bolted construction for complete one-piece unit assembly. All frames shall be securely fastened to fixing angles mounted in the hoistway and shall be UL fire rated steel. Additional sill angle support will be provided with 4'0" and 4'6" two speed opening door arrangements (4500 & 5000 lb. cars). Sills shall be extruded Aluminum.

2. Doors: Entrance doors shall be of metal construction with vertical channel reinforcements.

3. Fire Rating: Entrance and doors shall have a UL 1-1/2 hour fire protection rating.

4. Entrance Finish: **Color to be selected from the manufacturer's standard color chart.**

5. Entrance Markings: Entrance jambs shall be marked with 4" x 4" (102 mm x 102 mm) plates having raised floor markings with Braille adjacent. Markings shall be provided on both sides of the entrance.

6. Sight Guards: Black sight guards will be furnished.

2.04 EQUIPMENT: CAR COMPONENTS

A. Car Frame: A suitable car frame shall be provided with adequate bracing to support the platform and car enclosure. The buffer striking plate on the underside of the car-frame platform assembly must fully compress the spring buffer mounted in the pit before the plunger reaches its lower limit of travel.

B. Cab walls to have attached vertical non-removable panels, laminated front and back with plastic laminate.

C. Cab walls to be made of 16-gauge sheet steel painted with black powder paint and are to have perforations for hardware to mount removable panels. Laminate to be chosen from the manufacturer's standard selection.

1. [DP40 Cab Panel] - vertical panel in plastic laminate edged in black PVC with 8" mirrored stainless steel frieze.

D. Car Front Finish: Color to be selected from the manufacturer's standard color chart.

D1. Car Door Finish: Color to be selected from the manufacturer's standard color chart.

E. Car top to be of wood material clad on both sides with a natural finish aluminum panel.

F. Ceiling Type:

[DC22E Ceiling] suspended ceiling shall consist of aluminum eggcrate diffusers set in frame of extruded aluminum with fluorescent lighting fixtures.

G. Emergency Car Lighting: An emergency power unit employing a 6 volt, sealed rechargeable battery and totally static circuits shall be provided to illuminate the elevator car and provide current to the emergency siren in the event of building power failure.

H. Emergency Pulsating Siren: Siren mounted on top of the car that is activated when the Alarm button in the car operating panel is engaged. Siren shall have a rated sound pressure level of 80 dba at a distance of 3.0 m from the device. Siren shall respond with a delay of not more than 1 second after the switch or push button has been pressed

I. Exhaust Fan: An exhaust fan shall be mounted on the car top.

J. Utility Outlet: A 125V 15 amperes utility outlet with ground-fault circuit-interrupter protection shall be furnished on top of the cab.

K. **Handrail:**

Flat Solid Metal **DH-51 Handrails** 1/4" (6 mm) x 8" (203 mm) satin finish stainless steel provided on the **sides and rear** of the car enclosure.

L. Threshold: Aluminum

2.05 EQUIPMENT: SIGNAL DEVICES AND FIXTURES

A. Car Operating Panel: A car operating panel shall be provided which contains all push buttons, key switches, and message indicators for elevator operation. The car operating panel shall have a satin stainless steel finish.

1. Flat, applied car operating panel shall be furnished. It shall contain a bank of round metal (plastic when required by some local California codes) mechanical illuminated buttons. Flush mounted to the panel and marked to correspond to the landings served, an emergency call button, door open and door close buttons, and switches for lights, inspection and the exhaust fan. Pan shaped design is not acceptable. The emergency call button shall be connected to a bell that serves as an emergency signal. All buttons to have raised numerals and Braille markings. Red LED in center of button for illumination with **1/8" projecting targets.** Target finishes: **satin stainless steel**

The car operating panel shall be equipped with the following features:

Standard:
1) Raised markings and Braille shall be provided to the left hand side of each push-button.
2) Car Position Indicator at the top of and integral to the car operating panel.
3) Door open and door close buttons.
4) Light key-switch.
5) Fan key-switch.
6) Inspection key-switch.
7) Elevator Data Plate marked with elevator capacity and car number.
8) Illuminated alarm button with raised markings.
9) In car stop switch
10) Firefighter's hat
12) Firefighter's Phase II Key-switch
13) Call Cancel Button

B. Car Position Indicator: A digital, LED car position indicator shall be integral to the car operating panel.

C. Hall Fixtures: Hall fixtures shall be provided with necessary push buttons and key switches for elevator operation. Hall fixtures shall have a:

1. Hall fixtures shall feature round metal (plastic when required by some local California codes) mechanical buttons in flush mount face frame with vandal resistant buttons. Buttons shall be 1/8" projecting in vertically mounted fixture. Hall lanterns and position indicators shall be illuminated by means of LED. Fixture shall be satin stainless steel finish.

D. Car Lantern and Chime: A directional lantern visible from the corridor shall be provided in the car entrance. When the car stops and the doors are opening, the lantern shall indicate the direction in which the car is to travel and a chime will sound.

PART 3 - EXECUTION

3.01 PREPARATION

A. Take field dimensions and examine conditions of substrates, supports, and other conditions under which this work is to be performed. Do not proceed with work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Installation of all elevator components except as specifically provided for elsewhere by others. The cylinder well, including casing if necessary, shall not be provided by the elevator subcontractor.

3.03 DEMONSTRATION

A. The elevator contractor shall make a final check of each elevator operation with the Owner or Owner's representative present prior to turning each elevator over for use. The elevator contractor shall determine that control systems and operating devices are functioning properly.