Maine Medical Center

Richards Wing

R9 Renovation

Maine Medical Center
22 Bramhall Street
Portland, Maine 04102

PROJECT MANUAL

Winton Scott Architects
5 Milk Street
Portland, Maine
04101

March 16, 2009

TABLE OF CONTENTS

END OF TABLE OF CONTENTS

General Conditions of the Contract for Construction

AIA Document A201 - Electronic Format

THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES; CONSULTATION WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS COMPLETION OR MODIFICATION. AUTHENTICATION OF THIS ELECTRONICALLY DRAFTED AIA DOCUMENT MAY BE MADE BY USING AIA DOCUMENT D401.

This document has been approved and endorsed by the Associated General Contractors of America.

TABLE OF ARTICLES

NOTE: THIS DOCUMENT HAS BEEN MODIFIED TO INCORPORATE MMC'S SUPPLEMENTAL GENERAL CONDITIONS. (5-16-01)

EXHIBITS:

A. SCHEDULE OF MEETINGS AND ATTENDEES
B. LIEN WAIVER SUMMARY FORM
C. SMOKE FREE POLICY
D. ASSIGNMENT OF COST CATERGORIES MATRIX

INDEX

ARTICLE 1
GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents consist of the Agreement between Owner and Contractor (hereinafter the Agreement), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include other documents such as bidding requirements (advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or portions of addenda relating to bidding requirements).

1.1.1.1 In the event of conflict or discrepancies among the Contract Documents, the Documents shall be construed according to the following priorities:

Highest Priority: Modifications
Second Priority: Agreement
Third Priority: Addenda - later date to take precedence
Fourth Priority: Modified General Conditions
Fifth Priority: Division 1 - General Requirements
Sixth Priority: Drawings and Specifications

1.1.1.2 In the event of uncertainty as to the type or quality of materials to be supplied, the Specifications shall govern, unless otherwise directed by written Addendum.

1.1.1.3 Except for the special agreements in Paragraph 3.18, nothing contained in the Contract Documents shall be construed to create any contractual relationship of any kind between the Architect and the Contractor.

1.1.1.4 In the event of a discrepancy between the Drawings and the Specifications, the Specifications shall govern.

1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Architect and Contractor, (2) between the Owner and a Subcontractor or Sub-subcontractor or (3) between any persons or entities other than the Owner and Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

1.1.3 THE WORK

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

1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner or by separate contractors.

1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards and workmanship for the Work, and performance of related services.

1.1.7 THE PROJECT MANUAL

The Project Manual is the volume usually assembled for the Work which may include the bidding requirements, sample

forms, Conditions of the Contract and Specifications.

1.1.8 Phrases like "with reasonable promptness" and "so as to cause no delay" and similar phrases are used throughout the Contract to indicate the time frame within which a party to the Contract is required to perform. These terms are to be interpreted within the context of the Contractor's Project CPM Schedule, and all elements of the Contract requiring timely execution are to be separately and distinctly included in the Contractor's Project CPM Schedule. The Project CPM Schedule will then be the determinant of the number of days available to perform these works and the dates on which they are individually required.

1.2 EXECUTION, CORRELATION AND INTENT

1.2.1 The Contract Documents shall be signed by the Owner and Contractor as provided in the Agreement. If either the Owner or Contractor or both do not sign all the Contract Documents, the Architect shall identify such unsigned Documents upon request.

1.2.2 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

1.2.3 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the intended results.

1.2.4 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

1.2.5 Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

1.3 OWNERSHIP AND USE OF ARCHITECT'S DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS

1.3.1 The Drawings, Specifications and other documents prepared by the Architect are instruments of the Architect's service through which the Work to be executed by the Contractor is described. The Contractor may retain one contract record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications and other documents prepared by the Architect~~, and unless otherwise indicated the Architect shall be deemed the author of them and will retain all common law, statutory and other reserved rights, in addition to the copyright~~. All copies of them, except the Contractor's record set, shall be returned or suitably accounted for to the Architect, on request, upon completion of the Work. The Drawings, Specifications and other documents prepared by the Architect, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner and Architect. The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are granted a limited license to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Architect appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this license shall bear the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Architect. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's copyright or other reserved rights.

1.4 CAPITALIZATION

1.4.1 Terms capitalized in these General Conditions include those which are (1) specifically defined, (2) the titles of numbered articles and identified references to Paragraphs, Subparagraphs and Clauses in the document or (3) the titles of other documents published by the American Institute of Architects.

1.5 INTERPRETATION

1.5.1 In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

ARTICLE 2

OWNER

2.1 DEFINITION

2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as provided in Subparagraph 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

2.1.2 Within fifteen days after receipt of a written request, The Owner ~~upon reasonable written request~~ shall furnish to the Contractor in writing information which is necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein at the time of execution of the Agreement and, within five days after any change, information of such change in title, recorded or unrecorded.

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.2.1 ~~The Owner shall, at the request of the Contractor, prior to execution of the Agreement and promptly from time to time thereafter, furnish to the Contractor reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. *[Note: Unless such reasonable evidence were furnished on request prior to the execution of the Agreement, the prospective contractor would not be required to execute the Agreement or to commence the Work.]*~~

2.2.2 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site.

2.2.3 Except for permits and fees, and including those required under Subparagraph 3.7.1, which are the responsibility of the Contractor under the Contract Documents, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

2.2.4 Information or services under the Owner's control and required by the Contract Documents shall be furnished by the Owner with reasonable promptness to avoid delay in orderly progress of the Work. Any other information or services relevant to the Contractor's performance of the Work under the Owner's control shall be furnished by the Owner after receipt from the Contractor of a written request for such information or services.

2.2.5 ~~Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, such copies of Drawings and Project Manuals as are reasonably necessary for execution of the Work.~~ The Contractor will be furnished free of charge with 6 sets of drawings and project manuals. Additional sets will be made available to the Contractor at the cost of reproductions postage and handling.

2.2.6 The foregoing are in addition to other duties and responsibilities of the Owner enumerated herein and especially those in respect to Article 6 (Construction by Owner or by Separate Contractors), Article 9 (Payments and Completion) and Article 11 (Insurance and Bonds).

2.3 OWNER'S RIGHT TO STOP THE WORK

2.3.1 If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Paragraph 12.2 or persistently fails to carry out Work in accordance with the Contract Documents, the Owner, by written order signed personally or by an agent specifically so empowered by the Owner in writing, may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Subparagraph 6.1.3.

2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

2.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may after such seven-day period give the Contractor a second written notice to correct such deficiencies within a second seven-day period. If the Contractor within such second seven-day period after receipt of such second notice fails to commence and continue to correct any deficiencies, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the cost of

correcting such deficiencies, including compensation for the Architect's additional services and expenses made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3
CONTRACTOR

3.1 DEFINITION

3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Contractor" means the Contractor or the Contractor's authorized representative.

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.2.1 Before starting the work, and at frequent intervals during the progress thereof, The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner pursuant to Subparagraph 2.2.2 and shall at once report to the Architect errors, inconsistencies or omissions discovered. The Contractor shall not be liable to the Owner or Architect for damage resulting from errors, inconsistencies or omissions in the Contract Documents unless the Contractor recognized such error, inconsistency or omission and knowingly failed to report it to the Architect. If the Contractor performs any construction activity knowing it involves a recognized error, inconsistency or omission in the Contract Documents without such notice to the Architect, the Contractor shall assume appropriate responsibility for such performance and shall bear an appropriate amount of the attributable costs for correction.

3.2.2 The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Errors, inconsistencies or omissions discovered shall be reported to the Architect at once.

3.2.3 The Contractor shall perform the Work in accordance with the Contract Documents and submittals approved pursuant to Paragraph 3.12.

3.2.4 The Contractor shall give the Architect timely notice of any additional design drawings, specifications, or instructions required to define the Work in greater detail, in order to permit the proper progress of the Work.

3.2.5 Any necessary changes shall be ordered as provided in Article 7, Changes in the Work.

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless Contract Documents give other specific instructions concerning these matters.

3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons performing portions of the Work under a contract with the Contractor.

3.3.3 The Contractor shall not be relieved of obligations to performing the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons other than the Contractor.

3.3.4 The Contractor shall be responsible for inspection of portions of Work already performed under this Contract to determine that such portions are in proper condition to receive subsequent Work.

3.4 LABOR AND MATERIALS

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

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

3.4.3 After the Contract has been executed, the Owner

and the Architect will consider a formal written request by the Contractor for the substitution of products in place of those specified only under the conditions set forth in the Contract Documents, Section 01600 Product Requirements

3.5 WARRANTY

3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

3.6 TAXES

3.6.1 The Contractor shall pay sales, consumer, use and similar taxes for the Work or portions thereof provided by the Contractor which are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

3.7 PERMITS, FEES AND NOTICES

3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses and inspections necessary for proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required when bids are received or negotiations concluded.

3.7.2 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authorities bearing on performance of the Work.

3.7.3 It is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if the Contractor observes that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Architect and Owner in writing, and necessary changes shall be accomplished by appropriate Modification.

3.7.4 If the Contractor performs Work knowing it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Architect and Owner, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs.

3.8 ALLOWANCES

3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities against which the Contractor makes reasonable objection.

3.8.2 Unless otherwise provided in the Contract Documents:

.1 materials and equipment under an allowance shall be selected promptly by the Owner to avoid delay in the Work;

.2 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

.3 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum and not in the allowances;

.4 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Clause 3.8.2.2 and (2) changes in Contractor's costs under Clause 3.8.2.3.

3.9 ~~SUPERINTENDENT~~ CONSTRUCTION PROJECT PERSONNEL

3.9.1 ~~The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.~~ The Contractor shall assign a competent Construction Superintendent and Project

Manager, reasonably acceptable to the Owner, and an adequate workforce during the progress of the Work until the date of Substantial Completion, and for such additional time thereafter as necessary for the expeditious Total Completion of the Work.

3.9.2 The Construction Superintendent and the workforce shall be in attendance at the Project site.

3.9.3 The Contractor shall provide and maintain a telephone pager for use by the Construction Superintendent. The Construction Superintendent shall wear the pager at all times that he is, by contract, required to be present at the Project site. The pager number shall be issued to MMC's Project Manager, MMC's Engineering Services Secretarial Staff, and the Architect.

3.9.4 If the Owner has reasonable objection to the Construction Superintendent and/or the Project Manager, the Contractor shall remove the Construction Superintendent and/or Project Manager if requested to do so in writing by the Owner. The Contractor shall promptly submit a competent person and, upon acceptance by the Owner, replace the removed person with the accepted person.

3.9.5 The Contractor shall not make any changes in Construction Project Personnel without prior written approval from the Owner.

3.9.6 The Contractor shall provide the resumes of the proposed Construction Project Personnel as an attachment to the Contractor's bid proposal.

3.9.7 The Project Manager shall represent the Contractor, and communications given to the Project Manager shall be binding as if given to the Contractor. Communications shall be confirmed in writing.

3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

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

3.10.2 ~~The Contractor shall prepare and keep current, for the Architect's approval, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the Architect reasonable time to review submittals.~~ The Owner and Contractor recognize the importance of scheduling in the planning and execution of the Work. To this end, the Owner has prepared a scheduling specification, Section 01325 - Project CPM Schedule. The Contractor's scheduling shall conform to these specifications.

3.10.3 ~~The Contractor shall conform to the most recent schedules.~~ Notwithstanding the requirements of Section 01325, the Contractor shall:

(a) Use CPM methodology in all scheduling;
(b) Prepare and submit a Project CPM Schedule for acceptance by the Owner;
(c) Prepare and submit monthly progress updates;
(d) Prepare for and participate in monthly progress review and contemporaneous period analysis meetings;
(e) Support all claims for extensions of time with a contemporaneous period analysis; and
(f) Support all change order applications with relevant scheduling showing the impact of the proposed change order on the Work.

3.11 DOCUMENTS AND SAMPLES AT THE SITE

3.11.1 The Contractor shall maintain at the site for the Owner one record copy of the Drawings, Specifications, addenda, Change Orders and other Modifications, in good order and marked currently to record changes and selections made during construction, and in addition approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work.

3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

3.12.3 Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Architect is subject to the limitations of Subparagraph 4.2.7.

3.12.5 The Contractor shall review for compliance with the contract documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence shown by the Project CPM Schedule so as to cause no critical path delay in the Work or in the activities of the Owner or of separate contractors. Submittals made by the Contractor which are not required by the Contract Documents may be returned without action.

3.12.6 The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect. Such Work shall be in accordance with approved submittals.

3.12.7 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

3.12.8 The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals.

3.12.10 Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents.

3.12.11 When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the Architect shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

3.13 USE OF SITE

3.13.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

3.14 CUTTING AND PATCHING

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

3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

3.15 CLEANING UP

3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials.

3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor.

3.16 ACCESS TO WORK

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

3.17 ROYALTIES AND PATENTS

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

3.18 INDEMNIFICATION

3.18.1 To the fullest extent permitted by law, and to the extent claims, damages, losses or expenses are not covered by Project Management Protective Liability insurance purchased by the Contractor in accordance with Paragraph 11.3, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) ~~including loss of use resulting therefrom~~, but only to the extent caused ~~in whole or in part~~ by negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Paragraph 3.18.

3.18.2 In claims against any person or entity indemnified under this Paragraph 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this Paragraph 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

3.18.3 ~~The obligations of the Contractor under this Paragraph 3.18 shall not extend to the liability of the Architect, the Architect's consultants, and agents and employees of any of them arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications, or (2) the giving of or the failure to give directions or instructions by the Architect, the Architect's consultants, and agents and employees of any of them provided such giving or failure to give is the primary cause of the injury or damage.~~

ARTICLE 4
ADMINISTRATION OF THE CONTRACT

4.1 ARCHITECT

4.1.1 The Architect is the person lawfully licensed to practice architecture or an entity lawfully practicing architecture identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Architect" means the Architect or the Architect's authorized representative.

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

4.1.3 In case of termination of employment of the Architect, the Owner shall appoint an architect against whom the Contractor makes no reasonable objection and whose status under the Contract Documents shall be that of the former architect.

4.1.4 ~~Disputes arising under Subparagraphs 4.1.2 and 4.1.3 shall be subject to arbitration.~~

4.2 ARCHITECT'S ADMINISTRATION OF THE CONTRACT

4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents, and will be ~~the~~ an Owner's representative (1) during construction, (2) until final payment is due and (3) with the Owner's concurrence, from time to time during the correction period described in Paragraph 12.2. The Architect will advise and consult with the Owner. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified by written instrument in accordance with other provisions of the Contract.

4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the completed Work

and to determine in general if the Work is being performed in a manner indicating that the Work, when completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check quality or quantity of the Work. On the basis of on-site observations as an architect, the Architect will keep the Owner informed of progress of the Work, and will endeavor to guard the Owner against defects and deficiencies in the Work.

4.2.3 The Architect will not have control over or charge of and will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility as provided in Paragraph 3.3. The Architect will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or of any other persons performing portions of the Work.

4.2.4 Communications Facilitating Contract Administration. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate through the Architect. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

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

4.2.6 The Architect will have authority to reject Work which does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable for implementation of the intent of the Contract Documents, the Architect will have authority to require additional inspection or testing of the Work in accordance with Subparagraphs 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work.

4.2.7 The Architect will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken with such reasonable promptness as to cause no critical path delay in the Work or in the activities of the Owner, Contractor or separate contractors, while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Paragraphs 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Paragraph 7.4.

4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion, will receive and forward to the Owner for the Owner's review and records written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment upon compliance with the requirements of the Contract Documents.

4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

4.2.11 The Architect will interpret and decide matters concerning performance under and requirements of the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made with reasonable promptness and within any time limits agreed upon. If no agreement is made concerning the time within which interpretations required of the Architect shall be furnished in compliance with this Paragraph 4.2, then delay

shall not be recognized on account of failure by the Architect to furnish such interpretations until 15 days after written request is made for them.

4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions so rendered in good faith.

4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

4.3 CLAIMS AND DISPUTES

4.3.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. Claims must be ~~made~~ initiated by written notice. The responsibility to substantiate Claims shall rest with the party making the Claim.

4.3.2 Decision of Architect. Claims, including those alleging an error or omission by the Architect, shall be referred initially to the Architect for action as provided in Paragraph 4.4. A decision by the Architect, as provided in Subparagraph 4.4.4, shall be required as a condition precedent to ~~arbitration or~~ litigation of a Claim between the Contractor and Owner as to all such matters arising prior to the date final payment is due, regardless of (1) whether such matters relate to execution and progress of the Work or (2) the extent to which the Work has been completed. The decision by the Architect in response to a Claim shall not be a condition precedent to ~~arbitration or~~ litigation in the event (1) the position of Architect is vacant, (2) the Architect has not received evidence or has failed to render a decision within agreed time limits, (3) the Architect has failed to take action required under Subparagraph 4.4.4 within 30 days after the Claim is made, (4) 45 days have passed after the Claim has been referred to the Architect or (5) the Claim relates to a mechanic's lien.

4.3.3 Time Limits on Claims. Claims by either party must be made within ~~21~~ 7 calendar days after occurrence of the event giving rise to such Claim or within ~~21~~ 7 calendar days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims must be made by written notice. An additional Claim made after the initial Claim has been implemented by Change Order will not be considered unless submitted in a timely manner.

4.3.4 Continuing Contract Performance. Pending final resolution of a Claim ~~including arbitration~~, unless otherwise agreed in writing the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

4.3.5 Waiver of Claims: Final Payment. The making of final payment shall constitute a waiver of Claims by the Owner except those arising from:

.1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;

.2 failure of the Work to comply with the requirements of the Contract Documents; or

.3 terms of special warranties required by the Contract Documents.

4.3.6 Claims for Concealed or Unknown Conditions. If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing party shall be given to the other party promptly before conditions are disturbed and in no event later than ~~21~~ 7 calendar days after first observance of the conditions. The Architect will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall so notify the Owner and Contractor in writing, stating the reasons. Claims by either party in opposition to such determination must be made within ~~21~~ 7 calendar days after the Architect has given notice of the decision. If the Owner and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, the adjustment shall be referred to the Architect for initial determination, subject to further proceedings pursuant to Paragraph 4.4.

4.3.7 Claims for Additional Cost. If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Paragraph 10.3. If the Contractor believes additional cost is involved for reasons including but not limited to (1) a written interpretation from the Architect, (2) an order by the Owner to stop the Work where the Contractor was not at fault, (3) a written order for a minor change in the Work issued by the Architect, (4) failure of payment by the Owner, (5) termination of the Contract by the Owner, (6) Owner's suspension or (7) other reasonable grounds, Claim shall be filed in accordance with the procedure established herein.

4.3.8 Claims for Additional Time

4.3.8.1 If the Contractor wishes to make Claim for all increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

4.3.8.1.1 The Contractor shall have the burden of demonstrating the effect of the claimed delay on the Contract Time, and shall furnish the Owner with such documentation relating thereto as the Owner may require, including but not limited to a contemporaneous Project CPM Schedule update demonstrating, at the time of the occurrence of the delaying activity, the change to the Substantial Completion date of the Project due solely to the inclusion of the delaying activity.

4.3.8.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time and could not have been reasonably anticipated, and that weather conditions had an adverse effect on the ~~scheduled construction~~ Contractor's ability to perform critical path work. If another contractor works in the Portland greater regional area in similar conditions and performing similar work on that day, as determined by the Architect, no delay will be granted.

4.3.8.2.1 The Contractor must consider weather in the Project CPM Schedule by adding duration to those activities which are weather dependent and which occur during seasons when weather may be an issue.

4.3.9 Injury or Damage to Person or Property. If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, of any of the other party's employees or agents, or of others for whose acts such party is legally liable, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter. If a Claim for additional cost or time related to this Claim is to be asserted, it shall be filed as provided in Subparagraphs 4.3.7 or 4.3.8.

4.4 RESOLUTION OF CLAIMS AND DISPUTES

4.4.1 The Architect will review Claims and take one or more of the following preliminary actions within ten days of receipt of a Claim: (1) request additional supporting data from the claimant, (2) submit a schedule to the parties indicating when the Architect expects to take action, (3) reject the Claim in whole or in part, stating reasons for rejection, (4) recommend approval of the Claim by the other party or (5) suggest a compromise. The Architect may also, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim.

4.4.2 If a Claim has been resolved, the Architect will prepare or obtain appropriate documentation.

4.4.3 If a Claim has not been resolved, the party making the Claim shall, within ten days after the Architect's preliminary response, take one or more of the following actions: (1) submit additional supporting data requested by the Architect, (2) modify the initial Claim or (3) notify the Architect that the initial Claim stands.

4.4.4 If a Claim has not been resolved after consideration of the foregoing and of further evidence presented by the parties or requested by the Architect, the Architect will notify the parties in writing that the Architect's decision will be made within seven days, which decision shall be final and binding on the parties ~~but subject to arbitration~~. Upon expiration of such time period, the Architect will render to the parties the Architect's written decision relative to the Claim, including any change in the Contract Sum or Contract Time or both. If there is a surety and there appears to be a possibility of a Contractor's default, the Architect may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

4.5 ARBITRATION

4.5.1 Controversies and Claims Subject to Arbitration. ~~Any controversy or Claim arising out of or related to the Contract, or the breach thereof, shall be settled by arbitration in accordance with the Construction Industry~~

Arbitration Rules of the American Arbitration Association, and judgment upon the award rendered by the arbitrator or arbitrators may be entered in any court having jurisdiction thereof, except controversies or Claims relating to aesthetic effect and except those waived as provided for in Subparagraph 4.3.5. - Such controversies or Claims upon which the Architect has given notice and rendered a decision as provided in Subparagraph 4.4.4 shall be subject to arbitration upon written demand of either party. Arbitration may be commenced when 45 days have passed after a Claim has been referred to the Architect as provided in Paragraph 4.3 and no decision has been rendered.

4.5.2 Rules and Notices for Arbitration. Claims between the Owner and Contractor not resolved under Paragraph 4.4 shall, if subject to arbitration under Subparagraph 4.5.1, be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association currently in effect, unless the parties mutually agree otherwise. Notice of demand for arbitration shall be filed in writing with the other party to the Agreement between the Owner and Contractor and with the American Arbitration Association, and a copy shall be filed with the Architect.

4.5.3 Contact Performance During Arbitration. During arbitration proceedings, the Owner and Contractor shall comply with Subparagraph 4.3.4.

4.5.4 When Arbitration May Be Demanded. Demand for arbitration of any Claim may not be made until the earlier of (1) the date on which the Architect has rendered a final written decision on the Claim, (2) the tenth day after the parties have presented evidence to the Architect or have been given reasonable opportunity to do so, if the Architect has not rendered a final written decision by that date, or (3) any of the five events described in Subparagraph 4.3.2.

4.5.4.1 When a written decision of the Architect states that (1) the decision is final but subject to arbitration and (2) a demand for arbitration of a Claim covered by such decision must be made within 30 days after the date on which the party making the demand receives the final written decision, then failure to demand arbitration within said 30 days' period shall result in the Architect's decision becoming final and binding upon the Owner and Contractor. If the Architect renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence, but shall not supersede arbitration proceedings unless the decision is acceptable to all parties concerned.

4.5.4.2 A demand for arbitration shall be made within the time limits specified in Subparagraphs 4.5.1 and 4.5.4 and Clause 4.5.4.1 as applicable, and in other cases within a reasonable time after the Claim has arisen, and in no event shall it be made after the date when institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitations as determined pursuant to Paragraph 13.7.

4.5.5 Limitation on Consolidation or Joinder. No arbitration arising out of or relating to the Contract Documents shall include, by consolidation or joinder or in any other manner, the Architect, the Architect's employees or consultants, except by written consent containing specific reference to the Agreement and signed by the Architect, Owner, Contractor and any other person or entity sought to be joined. No arbitration shall include, by consolidation or joinder or in any other manner, parties other than the Owner, Contractor, a separate contractor as described in Article 6 and other persons substantially involved in a common question of fact or law whose presence is required if complete relief is to be accorded in arbitration. No person or entity other than the Owner, Contractor or a separate contractor as described in Article 6 shall be included as an original third party or additional third party to an arbitration whose interest or responsibility is insubstantial. - Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of a dispute not described therein or with a person or entity not named or described therein. The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

4.5.6 Claims and Timely Assertion of Claims. A party who files a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded. When a party fails to include a Claim through oversight, inadvertence or excusable neglect, or when a Claim has matured or been acquired subsequently, the arbitrator or arbitrators may permit amendment.

4.5.7 Judgment on Final Award. The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

ARTICLE 5
SUBCONTRACTORS

5.1 DEFINITIONS

5.1.1 A Subcontractor is a person or entity who has a

direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect will ~~promptly~~ reply within 14 calendar days to the Contractor in writing stating whether or not the Owner or the Architect, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner or Architect to reply ~~promptly~~ within 14 calendar days shall constitute notice of no reasonable objection.

5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. The Contract Sum shall be increased or decreased by the difference in cost occasioned by such change and an appropriate Change Order shall be issued. However, no increase in the Contract Sum shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

5.2.4 The Contractor shall not change a Subcontractor, person or entity previously selected ~~if the Owner or Architect makes reasonable objection to such change~~ without the written consent of the Owner or Architect.

5.3 SUBCONTRACTUAL RELATIONS

5.3.1 By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement which may be at variance with the Contract Documents. Subcontractors shall similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner provided that:

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Paragraph 14.2 and only for those subcontract agreements which the Owner accepts by notifying the Subcontractor in writing; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

5.4.2 Upon such assignment, If the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increase in costs shown to have resulted directly from the suspension.

ARTICLE 6
CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1 OWNERS RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation.

If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided elsewhere in the Contract Documents.

6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule and Contract Sum deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights which apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

6.2 MUTUAL RESPONSIBILITY

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

6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

6.2.3 Costs caused by delays or by improperly timed activities or defective construction shall be borne by the party responsible therefor.

6.2.4 The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the Owner or separate contractors as provided in Subparagraph 10.2.5.

6.2.5 Claims and other disputes and matters in question between the Contractor and a separate contractor shall be subject to the provisions of Paragraph 4.3 provided the separate contractor has reciprocal obligations.

6.2.6 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Paragraph 3.14.

6.3 OWNER'S RIGHT TO CLEAN UP

6.3.1 If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described in Paragraph 3.15, the Owner may clean up and allocate the cost among those responsible as the Architect determines to be just.

ARTICLE 7
CHANGES IN THE WORK

7.1 CHANGES

7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

7.1.1.1 Changes in the Work shall be incorporated by a Change Order, which outlines the modifications to the Work and lists the increase or reduction in the Contract Sum and the Contract Time. Any such increase in the Contract Sum shall be based upon the Contractor's actual cost of completion of any such additional or changed work. Any such increase or decrease in the Contract Time shall be supported by contemporaneous schedules showing the project at the time of the change order both with and without the proposed change order work. The change in Contract Time shall be equal to or less than the change in the project end date between those two schedules. The Contractor shall prepare all Change Orders and present them to the Architect for approval using AIA standard form G701. The Contractor must submit the Change Order in a timely fashion so that it will minimize and mitigate to the extent possible any critical path delay to the Project. The Contractor shall account for the Architect and Owner's approval time when planning its Change Order submissions. Each Change Order will be approved or rejected by the Owner and Architect in a reasonable period of time. The Contractor shall not proceed with commencement of the Change Order Work without the proper written approval to proceed by the Owner and Architect.

7.1.1.2 The Contract Sum and the Contract Times may be amended by agreed-upon Change Orders.

7.1.1.3 The Contractor shall use AIA standard form G709 to obtain price quotations required in the negotiation of change orders.

7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

7.1.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are so changed in a proposed Change Order or Construction Change Directive that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

7.1.5 The allowance for overhead and profit combined, included in the total cost to the Owner, shall be based on the following schedule:

7.1.5.1 For the Contractor, for any Work performed by the Contractor's own forces: 15 (fifteen) percent of the cost.

7.1.5.2 For the Contractor, for Work performed by his Subcontractor: 5 (five) percent of the amount due the Subcontractor.

7.1.5.3 For each Subcontractor or Sub-subcontractor involved, for any Work performed by that Subcontractor's own forces: 10 (ten) percent of the cost.

7.1.5.4 Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 7.3.6.

7.1.5.5 For the Contractor, at no time will the total Contractors mark up exceed 15 (fifteen) percent.

7.1.6 In order to facilitate checking for quotations of extras or credits, all proposals shall be accompanied by a complete itemization of costs including labor, materials and subcontracts. Each labor and materials component shall be itemized to show quantities, unit costs and the resulting mathematical extensions. Subcontract cost items shall be itemized in the same manner, as noted above. In no case will a change involving over $600.00 be approved without such itemization.

7.2 CHANGE ORDERS

7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect, stating their agreement upon all of the following:

.1 a change in the Work;

.2 the amount of the adjustment in the Contract Sum, if any; and

.3 the extent of the adjustment in the Contract Time, if any.

7.2.2 Methods used in determining adjustments to the Contract Sum may include those listed in Subparagraph 7.3.3.

7.3 CONSTRUCTION CHANGE DIRECTIVES

7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum, or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

7.3.2 A Construction Change Directive in the form of AIA standard form G714 shall be used in the absence of total agreement on the terms of a Change Order.

7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

.2 unit prices stated in the Contract Documents or subsequently agreed upon;

.3 cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

.4 as provided in Subparagraph 7.3.6.

7.3.4 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

7.3.5 A Construction Change Directive signed by the Contractor indicates the agreement of the Contractor therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

7.3.6 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the Architect on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, ~~a reasonable allowance for overhead and profit~~ an allowance for overhead and profit in accordance with the schedule set forth in Subparagraph 7.1.5.. In such case, and also under Clause 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Subparagraph 7.3.6 shall be limited to the following:

.1 costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' or workmen's compensation insurance;

.2 costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;

.3 rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and

.5 additional costs of supervision and field office personnel directly attributable to the change.

7.3.7 Pending final determination of cost to the Owner, amounts not in dispute may be included in Applications for Payment. The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with, respect to that change.

7.3.8 If the Owner and Contractor do not agree with the adjustment in Contract Time or the method for determining it, the adjustment or the method shall be referred to the Architect for determination.

7.3.9 When the Owner and Contractor agree with the determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and shall be recorded by preparation and execution of an appropriate Change Order.

7.4 MINOR CHANGES IN THE WORK

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

ARTICLE 8
TIME

8.1 DEFINITIONS

8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work using the Project CPM Schedule as described in Article 3. Commencement of the Work means the date of notice to proceed issued by the Owner or as otherwise stipulated in the agreement.

8.1.1.1 The Contractor agrees to the commencement of construction of the Project, as contemplated by this Agreement, in a timely manner, which is anticipated to be at or prior to that shown in the initial Project CPM Schedule. The Contractor recognizes time is of the essence in this Agreement.

8.1.2 Time limits stated in the Contract Documents are of the essence of this contract. The Work to be performed under this contract shall commence upon receipt of a notice to proceed from the Owner unless otherwise agreed and subject to authorized Modifications. ~~The date of commencement of the Work is the date established in the Agreement.~~ The date shall not be postponed by the failure to act of the Contractor or of persons or entities for whom the Contractor is responsible.

8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Paragraph 9.8.

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

8.2 PROGRESS AND COMPLETION

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

8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor. The date of commencement of the Work shall not be changed by the effective date of such insurance. Unless the date of commencement is established by a notice to proceed given by the Owner, the Contractor shall notify the Owner in writing not less than five days or other agreed period before commencing the Work to permit the timely filing of mortgages, mechanic's liens and other security interests.

8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

8.2.4 If in any Application for Payment, the total value of the completed Work in place, as certified by the Architect, is less than 90 percent of the total value of the Work in place estimated in the Project CPM Schedule and/or the schedule of values and the monthly pay requests, the Owner may, at the Owner's option, require the Contractor to recover the lost time as necessary to complete the Project on its contractual completion date without cost to the Owner, using whatever means are reasonable and effective. The Contractor shall prepare and submit a text and Project CPM Schedule recovery plan to the Architect and Owner prior to executing its plan.

8.2.5 Whenever it becomes apparent that the Project completion date may not be met, the Contractor shall take whatever actions are reasonable and effective, and which will substantially eliminate the backlog of work and which will return the Project CPM Schedule to show on-time completion of the Project.

8.2.5.1 If the Contractor fails to take reasonable, effective action within four calendar days after receiving written notice, the Owner shall take action to put the Project back on schedule. This action may include but not be limited to some or all of:

a. increasing manpower;
b. increasing the working hours per shift, shifts per day, or days per week;
c. increasing the amount of equipment; or
d. re-scheduling activities to achieve maximum practical concurrency of activities.

Costs related to such actions shall be deducted from the

monies due or to become due to the Contractor.

8.2.6 If each of three successive applications, as certified by the Architect, indicate that the actual Work completed is less than 90 percent of the Work estimated in the Project CPM Schedule to be completed by the respective dates, the Owner may at the Owner's option, treat the Contractor's delinquency as a default, justifying the action permitted under Article 14.2.

8.2.7 If the Owner has determined that the Contractor should be permitted to extend the time for completion as provided in Paragraph 8.3, the Project CPM Schedule shall be adjusted accordingly, and the dollar value of Work to be completed as of the first of each month shall be re-calculated.

8.3 DELAYS AND EXTENSIONS OF TIME

8.3.1 If the Contractor is delayed at any time in progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner, or by changes ordered in the Work, not caused by the fault of the contractor or his subcontracors or by labor disputes, fire, unusual delay in ~~deliveries~~ transportation, extreme weather conditions not reasonably anticipated, unavoidable casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending ~~arbitration~~ litigation, or by other causes which the Owner or Architect determines may justify delay, then the Contract Time shall be reasonably extended by Change Order for such reasonable time as the Owner or Architect may determine.

8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Paragraph 4.3.

8.3.3 This Paragraph 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

8.3.4 The existence of and extent of delay shall be determined according to Article 4.3.8.1.1.

ARTICLE 9
PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

9.2 SCHEDULE OF VALUES

9.2.1 Before the first Application for Payment, the Contractor shall submit to the Architect a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. The schedule of values must be consistent with and supportable by the Project CPM Schedule as described in Article 3. It should be submitted using AIA Document G702 and G703. It shall be broken out by CSI format using individual line items by area, then by Subcontractor and then by Sub-subcontractor and or major supplier.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 ~~At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment for operations completed in accordance with the schedule of values. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and reflecting retainage if provided for elsewhere in the Contract Documents.~~ At the time or times established in the Agreement, the Contractor shall submit to the Owner an itemized Application for Payment for operations completed in accordance with the Project CPM Schedule. The Application for Payment will include an updated schedule reflecting all payments including the current Application for Payment. Such application shall be notarized, and supported by such data substantiating the Contractor's right to payment as the Owner may require, such as copies of requisitions, lien waivers (commencing with the first application for payment), from Subcontractors, Sub-subcontractors and material suppliers, and reflecting retainage if provided for elsewhere in the Contract Documents. Applications for Payment will be submitted on AIA form G702 and G703.

A detailed schedule of values will be required as described in Article 9.2.1. All Applications for Payment will include a lien waiver summary as per Exhibit "B".

9.3.1.1 ~~Such applications may include requests for payment on account of changes in the Work which have been properly authorized by Construction Change Directives but not yet included in Change Orders.~~ The Contractor shall submit an

Application for Payment on or about the twenty-fifth day of each month.

9.3.1.2 Such applications may not include requests for payment of amounts the Contractor does not intend to pay to a Subcontractor or material supplier because of a dispute or other reason.

9.3.1.3 Each Application for Payment shall be based upon the schedule of values submitted by the Contractor. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work.

9.3.1.4 Applications for Payment shall show the percentage of completion and remaining duration of each portion of the Work as of the end of the period covered by the Application for Payment. The percentage of completion shall be the lesser of: (1) the percentage of that portion of the Work which has actually been completed; or (2) the percentage obtained by dividing (a) the expense which has actually been incurred by the Contractor on account of that portion of the Work for which the Contractor has made or intends to make actual payment prior to the next Application for Payment by (b) the share of the Contract Sum allocated to that portion of the Work.

9.3.1.5 Typographical and/or arithmetical errors in Applications for Payment or Change Orders shall not be grounds for additional payments.

9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include applicable insurance, storage, and transportation to the site for such materials and equipment stored off the site, as follows:

9.3.2.1 The Contractor, his Subcontractors, and Sub-subcontractors shall obtain prior written approval from the Owner for permission to store materials to be incorporated in the Work, for which Progress Payments will be requested, at off-site locations. Any and all charges for storage, including insurance, shall be borne solely by the Contractor. Before approval, the Owner will require proper proof of insurance naming the Owner as an additionally insured party, and a letter in which is furnished:

a. the name of the Contractor and/or Subcontractor or Subordinate Subcontractor leasing the storage area;
b. the location of such leased space;
c. the leased area: the entire premises of certain areas of a warehouse giving the number of floors or portions thereof;
d. the date on which the material is first stored;
e. the value of the material stored; and
f. Transfer of Title to the Owner, Right of Entry and Removal.

9.3.2.2 The Contractor, its Subcontractors and Subordinate Subcontractors shall notify the Architect and the Owner to inspect, at least once each month, the materials being stored at any location.

9.3.2.3 The Contractor, his Subcontractors and Subordinate Subcontractors shall mark each sealed carton with the name and address of the Project, the Contractor and the Owner.

9.3.2.4 A perpetual inventory shall be maintained for all materials held in storage for which payment has been requested.

9.3.2.5 Payment for materials stored off-site shall be at the sole discretion of the Owner. Any additional costs to the Owner resulting from storage of material off site for which payment is requested, such as, but not limited to, travel expenses and time for inspectors, shall be withheld from subsequent payments made to the Contractor.

9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work. The Application for Payment shall constitute a representation by the Contractor to the Owner that, to the best of the Contractor's knowledge, information and belief, the design and construction have progressed to the point

indicated, the quality of the Work covered by the Application is in accordance with the Contract Documents, and the Contractor is entitled to payment in the amount requested.

9.4 CERTIFICATES FOR PAYMENT

9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Subparagraph 9.5.1.

9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's observations at the site and the data comprising the Application for Payment, that the Work has progressed to the point indicated and that, to the best of the Architect's knowledge, information and belief, quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to minor deviations from the Contract Documents correctable prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

9.4.3 Within twenty-one calendar days of the Owner's receipt from the Architect of a properly submitted, complete and correct Application for Payment, the Owner shall make payment to the Contractor.

9.5 DECISIONS TO WITHHOLD CERTIFICATION

9.5.1 The Architect may decide not to certify payment and may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary as determined by the Architect and Owner, to protect the Owner, if in the Architect's and Owners's opinion the representations to the Owner required by Subparagraph 9.4.2 cannot be made. If the Owner is unable to certify payment in the amount of the Application, the Owner will notify the Contractor. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Subparagraph 9.4.1. If the Contractor, Owner and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also decide not to certify the entire Application for payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole ~~or a part of a~~ Certificate for Payment previously issued~~, to such extent as may be necessary~~ if in the Architect's and Owner's opinion this is necessary to protect the Owner from loss because of:

.1 defective Work not remedied;

.2 third party claims filed or reasonable evidence indicating probable filing of such claims;

.3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;

.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;

.5 damage to the Owner or another contractor;

.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or

.7 persistent failure to carry out the Work in accordance with the Contract Documents.

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

9.6 PROGRESS PAYMENTS

9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and

shall so notify the Architect.

9.6.2 The Contractor shall promptly pay each Subcontractor, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in similar manner.

9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

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

9.6.5 Payment to material suppliers shall be treated in a manner similar to that provided in Subparagraphs 9.6.2, 9.6.3 and 9.6.4.

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

9.6.7 Until Construction Work in an established phase is substantially complete, the Owner will pay 90 percent of the amount due the Contractor on account of progress payments. The Owner may subsequently withhold the full Contract retainage if the manner of completion of the Work and its progress do not remain satisfactory to the Owner, or if the Surety withholds its consent, or for other good and sufficient reasons.

9.7 FAILURE OF PAYMENT

9.7.1 If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect ~~or awarded by arbitration,~~ then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, which shall be accomplished as provided in Article 7.

9.8 SUBSTANTIAL COMPLETION

9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use.

9.8.1.1 The Contractor shall obtain and deliver promptly to the Owner any occupancy permit and any certificates of final inspection of any part of the Contractor's Work and operating permits for any mechanical apparatus, such as elevators, escalators, boilers, air compressors, etc., which may be required by law to permit full use and occupancy of the premises by the Owner. Receipt of such permits or certificates by the Owner shall be a condition precedent to Substantial Completion of the Work.

9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not in accordance with the requirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item, upon notification by the Architect. The Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion. When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion using AIA standard form G704 which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall

commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

9.8.3 Upon Substantial Completion of the Work or designated portion thereof and upon application by the Contractor and certification by the Architect, the Owner shall make payment, reflecting adjustment in retainage, if any, for such Work or portion thereof as provided in the Contract Documents.

9.9 PARTIAL OCCUPANCY OR USE

9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Subparagraph 11.3.11 and authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Subparagraph 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

9.10 FINAL COMPLETION AND FINAL PAYMENT

9.10.1 Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's observations and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in said final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Subparagraph 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be cancelled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and

accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims. The making of final payment shall constitute a waiver of claims by the Owner as provided in Subparagraph 4.3.5.

9.10.4 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment. Such waivers shall be in addition to the waiver described in Subparagraph 4.3.5.

9.10.5 The making of final payment shall constitute a waiver of all claims by the Owner except those arising from:

.1 unsettled liens;
.2 faulty or defective Work appearing after Substantial Completion;
.3 failure of the Work to comply with requirements of the Contract Documents;
.4 terms of special warranties required by the Contract Documents; or
.5 as described in Subparagraph 9.10.3 above

ARTICLE 10
PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

10.1.2 ~~In the event the Contractor encounters on the site material reasonably believed to be asbestos or polychlorinated biphenyl (PCB) which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner and Architect in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner and Contractor if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos or polychlorinated biphenyl (PCB), or when it has been rendered harmless, by written agreement of the Owner and Contractor, or in accordance with final determination by the Architect on which arbitration has not been demanded, or by arbitration under Article 4.~~

10.1.3 ~~The Contractor shall not be required pursuant to Article 7 to perform without consent any Work relating to asbestos or polychlorinated biphenyl (PCB).~~

10.1.4 ~~To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the Owner, anyone directly or indirectly employed by the Owner or anyone for whose acts the Owner may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Subparagraph 10.1.4.~~

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to:

.1 employees on the Work and other persons who may be affected thereby;

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

10.2.2 The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including

posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Clauses 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Clauses 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Paragraph 3.18.

10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

10.2.7 The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.

10.3 EMERGENCIES

10.3.1 In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Paragraph 4.3 and Article 7.

10.4 HAZARDOUS MATERIALS:

10.4.1 The Architect is not responsible for the survey, identification, or removal or any hazardous materials, including asbestos or polychlorinated biphenyl (PCB), on the Project.

10.4.2 With the exception of lead containing materials, the Contractor is not responsible for the survey, identification, or removal of any hazardous materials, including asbestos or polychlorinated biphenyl (PCB), on the Project.

10.4.3 If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.

10.4.4 The Owner shall obtain the service of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to verify that it has been rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications or persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment or such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. The Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up, which adjustments shall be accomplished as provided in Article 7.

10.4.5 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Subparagraph 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or

destruction of tangible property (other than the Work itself) and provided that such damage, loss or expense is not due to the sole negligence of a party seeking indemnity.

10.5 LEAD CONTAINING MATERIALS:

10.5.1 The Contractor is not responsible for the survey or identification of lead containing materials.

10.5.2 Lead containing materials encountered during demolition shall be demolished and removed by the Contractor from the job site to an approved container supplied by the Owner in accordance with all applicable OSHA requirements. Disposal of lead containing materials if deemed hazardous, shall be by the Owner.

10.5.3 The Contractor's base bid shall include demolition and removal of lead containing materials using typical OSHA safety precautions for all materials containing lead.

10.5.4 The Owner shall perform air testing during demolition of materials containing lead and shall make these test reports available to the Contractor. The Owner shall at no time be responsible for determining the levels of protection required for any personnel on the Project.

10.5.5 The Owner shall not be responsible under Paragraph 10.3 for materials and substances brought to the site by the Contractor unless such materials or substances were required by the Contract Documents.

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

ARTICLE 11
INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

11.1.1 The Contractor shall purchase from and maintain in a company or companies ~~lawfully authorized~~ liscenced to do business in the ~~jurisdiction~~ state in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.1 claims under workers' or workmen's compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;

.2 claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

.3 claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;

.4 claims for damages insured by usual personal injury liability coverage which are sustained (1) by a person as a result of an offense directly or indirectly related to employment of such person by the Contractor, or (2) by another person;

.5 claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;

.6 claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle; and

.7 claims involving contractual liability insurance applicable to the Contractor's obligations under Paragraph 3.18.

11.1.2 The insurance required by Subparagraph 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until date of final payment and termination of any coverage required to be maintained after final payment.

11.1.2.1 The insurance required by Subparagraph 11.11.1 shall be written for not less than the following or greater if required by law and all such policies shall include the Owner as an additional named insured:

1. (a) State: Statutory

(b) Applicable Federal: Statutory

2. Employer's Liability: $500,000

3. Comprehensive General Liability (including Premises-Operations; Independent Contractors' Protective; Products and Completed Operations; Broad Form Property Damage and XCU Hazards Liability):

(a) Bodily Injury: $5,000,000 Each Occurrence
$5,000,000 Annual Aggregate
(b) Property Damage: $2,000,000 Each Occurrence
$2,000,000 Annual Aggregate

4. Contractual Liability (including indemnification provisions):

(a) Bodily Injury: $5,000,000 Each Occurrence
$5,000,000 Annual Aggregate
(b) Property Damage: $2,000,000 Each Occurrence
$5,000,000 Annual Aggregate

5. Personal Injury, with Employment Exclusion deleted:

(a) $5,000,000 Annual Aggregate

6. Comprehensive Automobile Liability for both Owned vehicles and non-owned and hired vehicles:

(a) Bodily Injury: $5,000,000 Each Person
$5,000,000 Each Occurrence
(b) Property Damage: $2,000,000 Each Occurrence

7. Aircraft Liability (owned and non-owned) when applicable:
- (Owner to approve limits proposed by Contractor).

8. Watercraft Liability (owned and non-owned) when applicable: (Owner to approved limits proposed by Contractor).

11.1.2.2 All Subcontractors shall carry policies with $1,000,000 insurance coverage for their work on this project.

11.1.3 Certificates of Insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These Certificates and the insurance policies required by this Paragraph 11.1 shall contain a provision that coverages afforded under the policies will not be cancelled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. If any of the foregoing insurance coverages are required to remain in force after final payment and are reasonably available, all additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Subparagraph 9.10.2. Information concerning reduction of coverage shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

11.1.3.1 The Contractor shall furnish 3 copies each of Certificates of Insurance, herein required with one copy for Architect's use, which shall specifically set forth evidence of all coverage required herein. The form of the Certificate shall be AIA G-705. The Contractor shall furnish to the Owner copies of any endorsements that are subsequently issued amending coverage of limits.

11.2 OWNER'S LIABILITY INSURANCE

11.2.1 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance. Optionally, the Owner may purchase and maintain other insurance for self-protection against claims which may arise from operations under the Contract. The Contractor shall not be responsible for purchasing and maintaining this optional Owner's liability insurance unless specifically required by the Contract Documents.

11.3 PROPERTY INSURANCE

11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance in the amount of the initial Contract Sum as well as subsequent modifications thereto for the entire Work at the site on a replacement cost basis without voluntary deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Paragraph 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Paragraph 11.3 to be covered, whichever is earlier. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Work.

11.3.1.1 Property insurance shall be on an all-risk policy form and shall insure against the perils of fire and extended coverage and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief,

collapse, false-work, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's services and expenses required as a result of such insured loss. Coverage for other perils shall not be required unless otherwise provided in the Contract Documents.

11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance which will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor, then the Owner shall bear all reasonable costs properly attributable thereto.

11.3.1.3 If the property insurance requires minimum deductibles and such deductibles are identified in the Contract Documents, the Contractor shall pay costs not covered because of such deductibles. If the Owner or insurer increases the required minimum deductibles above the amounts so identified or if the Owner elects to purchase this insurance with voluntary deductible amounts, the Owner shall be responsible for payment of the additional costs not covered because of such increased or voluntary deductibles. If deductibles are not identified in the Contract Documents, the Owner shall pay costs not covered because of deductibles.

11.3.1.4 Unless otherwise provided in the Contract Documents, this property insurance shall cover portions of the Work stored off the site after written approval of the Owner at the value established in the approval, and also portions of the Work in transit.

11.3.2 Boiler and Machinery Insurance. The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

11.3.3 Loss of Use Insurance. The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or for other special hazards be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost there of shall be charged to the Contractor by appropriate Change Order.

11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, adjoining or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Subparagraph 11.3.7 for damages caused by fire or other perils covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Paragraph 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be cancelled or allowed to expire until at least 30 days' prior written notice has been given to the Contractor.

11.3.7 Waivers of Subrogation. The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other perils to the extent covered by property insurance obtained pursuant to this Paragraph 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a

person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

11.3.8 A loss insured under Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Subparagraph 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, ~~or in accordance with an arbitration award in which case the procedure shall be as provided in Paragraph 4.5~~. If after such loss no other special agreement is made, replacement of damaged property shall be covered by appropriate Change Order.

11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power~~; if such objection be made, arbitrators shall be chosen as provided in Paragraph 4.5. The Owner as fiduciary shall, in that case, make settlement with insurers in accordance with directions of such arbitrators. If distribution of insurance proceeds by arbitration is required, the arbitrators will direct such distribution~~.

11.3.11 Partial occupancy or use in accordance with Paragraph 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

11.3.12 The Contractor may, at its own choosing, purchase and maintain All Builders Risk Insurance as described in all paragraphs under Paragraph 11.3. The Owner does have Builders Risk coverage. The Owner does not require the Contractor to carry additional Builders Risk coverage. Should the Contractor decide to carry Builders Risk Insurance for this project, the cost shall not be passed on to the Owner.

11.4 PERFORMANCE BOND AND PAYMENT BOND

11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

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

ARTICLE 12
UNCOVERING AND CORRECTION OF WORK

12.1 UNCOVERING OF WORK

12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Architect, be uncovered for the Architect's observation and be replaced at the Contractor's expense without change in the Contract Time.

12.1.2 If a portion of the Work has been covered which the Architect has not specifically requested to observe prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be charged to the Owner. If such Work is not in accordance with the Contract Documents, the Contractor shall pay such costs unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

12.2 CORRECTION OF WORK

12.2.1 The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear costs of correcting such rejected Work, including additional testing

and inspections and compensation for the Architect's services and expenses made necessary thereby.

12.2.2 If, within one year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established under Subparagraph 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. This period of one year shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work. This obligation under this Subparagraph 12.2.2 shall survive acceptance of the Work under the Contract and termination of the Contract. The Owner shall give such notice promptly after discovery of the condition.

12.2.3 The Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and arc neither corrected by the Contractor nor accepted by the Owner.

12.2.4 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct it in accordance with Paragraph 2.4. If the Contractor does not proceed with correction of such nonconforming Work within a reasonable time fixed by written notice from the Architect, the Owner may remove it and store the salvable materials or equipment at the Contractor's expense. If the Contractor does not pay costs of such removal and storage within ten days after written notice, the Owner may upon ten additional days' written notice sell such materials and equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the Contractor, including compensation for the Architect's services and expenses made necessary thereby. If such proceeds of sale do not cover costs which the Contractor should have borne, the Contract Sum shall be reduced by the deficiency. If payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

12.2.5 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

12.2.6 Nothing contained in this Paragraph 12.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the time period of one year as described in Subparagraph 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

12.3 ACCEPTANCE OF NONCONFORMING WORK

12.3.1 If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13
MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

13.1.1 The Contract shall be governed by the law of the place where the Project is located.

13.1.2 The table of contents and the headings of articles and paragraphs are for convenience only and shall not modify rights and obligations created by this agreement.

13.1.3 In case a provision of this agreement is held to be invalid, illegal or unenforceable, the remaining provisions of this agreement shall remain in force and shall be considered valid and enforceable.

13.2 SUCCESSORS AND ASSIGNS

13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to the other party hereto and to partners, successors, assigns and legal representatives of such other party in respect to covenants, agreements and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the

Contract.

13.3 WRITTEN NOTICE

13.3.1 Written notice shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving notice.

13.4 RIGHTS AND REMEDIES

13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

13.5 TESTS AND INSPECTIONS

13.5.1 Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so the Architect may observe such procedures. The Owner shall bear costs of tests, inspections or approvals which do not become requirements until after bids are received or negotiations concluded.

13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Subparagraph 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so the Architect may observe such procedures. The Owner shall bear such costs except as provided in Subparagraph 13.5.3.

13.5.3 If such procedures for testing, inspection or approval under Subparagraphs 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, the Contractor shall bear all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses.

13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

13.6 INTEREST

13.6.1 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing ~~or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located~~.

13.7 COMMENCEMENT OF STATUTORY LIMITATION PERIOD

13.7.1 As between the Owner and Contractor:

.1 **Before Substantial Completion.** As to acts or failures to act occurring prior to the relevant date of Substantial Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Substantial Completion;

.2 **Between Substantial Completion and Final Certificate for Payment.** As to acts or failures to act occurring subsequent to the relevant date of Substantial Completion and prior to issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of issuance of the final Certificate for Payment; and

.3 After Final Certificate for Payment. As to acts or failures to act occurring after the relevant date of issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any act or failure to act by the Contractor pursuant to any warranty provided under Paragraph 3.5, the date of any correction of the Work or failure to correct the Work by the Contractor under Paragraph 12.2, or the date of actual commission of any other act or failure to perform any duty or obligation by the Contractor or Owner, whichever occurs last.

13.8 EQUAL OPPORTUNITY:

13.8.1 The Contractor shall maintain policies of employment as follows:

13.8.1.1 The Contractor and the Contractor's Subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex or national origin. The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex or national origin. Such action shall include, but not be limited to, the following employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

13.8.1.2 The Contractor and the Contractor's Subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment, and shall include notices setting forth the policies of non-discrimination.

ARTICLE 14
TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR

14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor, for any of the following reasons:

.1 issuance of an order of a court or other public authority having jurisdiction;

.2 an act of government, such as a declaration of national emergency, making material unavailable;

.3 because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Subparagraph 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents;

.4 if repeated suspensions, delays or interruptions by the Owner as described in Paragraph 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less; or

.5 the Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Subparagraph 2.2.1.

14.1.2 If one of the above reasons exists, the Contractor may, upon seven additional days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery, including reasonable overhead, profit and damages.

14.1.3 If the Work is stopped for a period of 60 days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has persistently failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Subparagraph 14.1.2.

14.2 TERMINATION BY THE OWNER FOR CAUSE

14.2.1 The Owner may terminate the Contract if the Contractor:

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

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

.3 persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or

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

14.2.2 When any of the above reasons exist, the Owner, upon certification by the Architect that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 accept assignment of subcontracts pursuant to Paragraph 5.4; and

.3 finish the Work by whatever reasonable method the Owner may deem expedient.

14.2.3 When the Owner terminates the Contract for one of the reasons stated in Subparagraph 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Architect, upon application, and this obligation for payment shall survive termination of the Contract.

14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

14.3.2 An adjustment shall be made for increases in the cost of performance of the Contract, including profit on the increased cost of performance, caused by suspension, delay or interruption. No adjustment shall be made to the extent:

.1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of this Contract.

14.3.3 Adjustments made in the cost of performance may have a mutually agreed fixed or percentage fee.

14.4 TERMINATION BY THE OWNER FOR CONVENIENCE:

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

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

a. cease operations as directed by the Owner in such notice;
b. take such actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
c. except for the Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing Subcontracts and purchase orders and enter into no further Subcontracts and purchase orders.

14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment from the Owner on the same basis provided in Subparagraph 14.1.2.

ARTICLE 15 OTHER CONDITIONS OF THE CONTRACT

15.1 MISCELLANEOUS PROVISIONS:

15.1.1 The Contractor acknowledges that nothing in the performance of the Services of the Architect in connection with this project implies any undertaking for the benefit of, or which may be enforced by the Contractor, its Subcontractors or suppliers, or the surety of any of them, and that the obligations of the Architect run solely to the benefit of the Owner.

15.1.2 Access to Records. It is also agreed that the following Access to Records provision applies if Section 952 of the Omnibus Reconciliation Act of 1980 is found to apply to this contractual relationship. Until the expiration of 4 years after the furnishing of the services provided under this Contract, the Contractor will make available to the Secretary, U.S. Comptroller General, and their representatives, this Contract and all books, and documents and records necessary to certify the nature and extent of the costs for those services. If the Contractor carries out the duties of the Contract through a subcontract worth $10,000.00 or more over a 12 month period with a related organization, the sub-period will also contain the access clause to permit access by the Secretary, Comptroller General, and their representative to the related organization's books and records.

15.1.3 Assignments of costs related to Fees, General Conditions, etc., shall be as per the Matrix provided in Exhibit "D".

15.2 SEALING OF SMOKE AND FIRE PENETRATIONS:

15.2.1 All penetrations (temporary or permanent), in walls, or floors shall be sealed or patched with a suitable material designed and developed for this purpose. Penetrations shall be sealed or patched so that no gap exists around or through the penetrating object. An approved list of sealing and patching materials is available from MMC Engineering. Reference NFPA 101B 1997; 12/13-3.6.2.

15.2.2 Penalties. Each unsealed penetration discovered during the punch list shall have a value withheld equal to a minimum of $100 per penetration or an estimated corrected cost; whichever is greater.

15.3 SMOKING POLICY:

15.3.1 Maine Medical Center has instituted a Smoke-Free (Tobacco-Free) Policy that covers all hospital owned property and grounds as per Exhibit "C". This shall include all Maine Medical Center projects.

15.3.2 Penalties. For each tobacco product or portion thereof found on the construction site, a minimum value of $100 per item shall be withheld from the Contractor's pay.

15.3.3 The Contractor shall have a written Smoking Policy approved by the Owner, and adopted by all Subcontractors and Sub-Subcontractors. The Smoking Policy shall be complete with penalties that include monetary fines and grounds for dismissal. All employees of the Contractor, Subcontractors and Sub-Subcontractors shall be issued a copy of such policy and shall sign an agreement form to abide by the said policy.

15.4 PROJECT MEETINGS:

15.4.1 Exhibit "A" contains a schedule of meetings and meeting attendees. The Contractor shall ensure that these meetings are properly coordinated and attended by its employees, Subcontractors, Sub-subcontracts, suppliers and others as requested.

15.4.2 The meetings shall be held at the job site unless otherwise arranged.

15.4.3 The Owner will require the attendance of the Architect and other disciplines as required

EXHIBIT "A"
SCHEDULE OF MEETINGS AND ATTENDEES

	Meeting	Attendees
1	Pre-Bid Conference	OR, GCPM, PA plus Bidders
2	Bid Review with Owner	OR, GCPE, GCPM, GCS, PA
3	Pre-Construction Conference	OR, GCPM, GCS, PA, Subs
4	Weekly Job Meetings	OR, GCPM, GCS, PA, Subs
5	Monthly Project Meetings	OR, GCPE(1), GCPM, GCS, PA, SE(4), MPE(6), EE(4), CE(3), LSA(5), Subs(1,2)
6	Pre-Installation Meetings	OR, GCPM, GCS, PA, Subs
7	Substantial Completion	OR, GCPM, GCS, PA, Subs
8	Building System Training for Owner	OR, GCS, MPE, EE, BT, Subs
9	Final Inspection	OR, GCPM, GCS, PA, MPE, EE, CE, LSA, Subs
10	Final Inspection (Tenants)	OR, GCPM, GCS, PA, MPE, EE, BT, Subs
11	Inspection of Punch List	OR, GCS, PA, MPE, EE, Others as appropriate

ATTENDEES:

OR - Owner's Representatives
GCE - General Contractors Project Executive
GCPM - General Contractor's Project Manager
GCS - General Contractor's Superintendant
PA - Project Architect
SE - Structural Engineer
MPE - Mechanical, Plumbing Engineer
EE - Electrical Engineer
CE - Civil Engineer
LSA - Landscape Architect
BT - Building Tenants/Occupants
Subs - Various Subcontractors

FOOTNOTES:

(1) - Present at various times depending upon issues
(2) - Present at various times appropriate to stages of development/construction
(3) - Present at least 4 times appropriate to stages of construction
(4) - Present at least 6 times appropriate to stages of construction
(5) - Present at least 2 times appropriate to stages of construction
(6) - Present at least 9 times appropriate to stages of construction

EXH. "B"
MMC (Project Name)
LIEN WAIVER SUMMARY FORM

Contractor _____

Requisition Number _____

Project Number _____

Page _____ of _____

Date _____

Schedule of Values	General Contractor	Sub-Contractor	Sub-Contractor	Sub-Contractor	Major Supplier	Major Supplier	Major Supplier	Totals - This Req.	Totals - To Date
General Conditions									
Value #2									
Value #3									
Value #4									
Value #5									
Value #6									
Value #7									
Value #8									
Value #9									
Value #10									
Value #11									
Value #12									
Value #13									
Value #14									
Change Order #1									
Change Order #2									
Requisition Amount	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Retainage	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
No Retainage									
Lien Waiver Amount	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Lien Waiver Number									

EXHIBIT "C"
MAINE MEDICAL CENTER
INSTITUTIONAL POLICY

Policy Title: Smoke-Free (Tobacco-Free) Policy

Policy Statement: Effective 1/1/99, smoking and the use of tobacco products will be prohibited on hospital owned property and grounds and within 50 feet of all entrances.

Rationale: Maine Medical Center is committed to the prevention of disease, the promotion of health and healing. Tobacco use, smoking and Environmental Tobacco Smoke (ETS) pose serious health/safety risks and undermine medical treatment.

Scope: This policy applies to patients (exception criteria may be established), employees, volunteers, visitors, contracted workers and medical staff, etc.

Responsibility/Enforcement:

- It is the responsibility of physicians to educate patients about the smoke-free policy before they are admitted to the hospital.

- It is the responsibility of managers to enforce the policy with employees. Employees are subject to disciplinary action if this policy is disregarded.

- It is the responsibility of all employees, including security, to enforce the policy with visitors.

- It is the responsibility of the Admitting Office and Emergency personnel to review this policy with any patients at the time of admission or pre-admission to the hospital.

Prevention: Maine Medical Center supports efforts to reduce youth use of tobacco products.

Withdrawal/Cessation Resources: Patients are to be offered withdrawal, medical and cessation assistance. Employee tobacco cessation efforts will be supported through the Employee Assistance and/or Insurance Programs.

Original Date: January, 1999
Revised Date: N/A

EXHIBIT "D"
ASSIGNMENT OF COST CATEGORIES MATRIX

	Description	Fee	GC	Cost of the Work	Owner Supplied	Comments
1	Officer's salaries & benefits	X				*1
2	Home office rent & utilities	X				
3	Home office automobile & travel	X				
4	Home office overhead (purchasing, accounting and clerical)	X				
5	Project Manager(s) salary & benefits	X				
6	Profit	X				
7	Preparation of conceptual schematic & design development estimates	X				
8	Preparation & updating project schedules		X			
9	Subcontractor bid solicitation & negotiation	X				
10	Computer time	X				
11	Preparation of monthly pay requests		X			
12	Conducting of job progress meetings		X			
13	Contractors' liability insurance	X				
14	Fire insurance/builder's risk insurance				X	
15	Construction drawings and specifications	X			X	*3
16	Record drawings		X			
17	Permit and fees		X			*2
18	Initial site survey				X	
19	Geotechnical investigation				X	
20	Base line & control engineering		X			
21	Building layout & engineering		X			
22	Construction fence		X			
23	Engineering for site work subcontractor		X			
24	General superintendent		X			
25	Project superintendent		X			
26	Site office & sheds		X			
27	Site office supplies & equipment		X			
28	Sanitary facilities		X			
29	Telephone, telegraph, messenger	X				
30	Travel expenses	X				
31	Guardrails & protection at interior openings		X			
32	Temporary protection		X	X		*4
33	Clean building		X			
34	Clean glass		X			
35	Rubbish removal		X	X		*4
36	Temporary heat equipment		X	X		*4
37	Temporary heat fuel		X	X		*4
38	Temporary electrical power		X	X		*4
39	Temporary water		X			
40	Labor/insurance/tax benefits of G.C. labor		X			
41	GL/PD insurance	X				
42	Owner purchased items				X	
43	Equipment rentals		X	X		*4
44	Subcontracts			X		
45	Tools and consumables		X			
46	Sales taxes		X			
47	Winter conditions & temporary enclosures		X			
48	Bonding costs		X			
49	Staging & hoisting		X			
50	HVAC test and balance		X			
51	Construction period materials testing				X	

COMMENTS

*1 Personnel only while performing services directly in conjunction with the project are included in General Conditions
*2 Amounts are subject to an Allowance.
*3 Refer to Article 2.2.5 of the Modified General Conditions.
*4 May be Cost of the Work provided by Subcontractor, Sub-subcontractor or Vendor.

KEY

Fee = General Contractors OH & Profit
GC = General Conditions

SECTION 01100 - SUMMARY

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. Project Identification: Project consists of a phased renovation of the Richards Wing Ninth Floor.

1. Project Location: 22 Bramhall Street, Portland, Maine
2. Owner: Maine Medical Center

B. Architect Identification: The Contract Documents, dated March 16, 2009, were prepared for Project by Winton Scott Architects.

C. N/A.

D. Construction Manager: Langford & Low is Construction Manager for this Project and is Project's Constructor. In Divisions 1 through 16 Specifications, the terms "Construction Manager" and "Contractor" are synonymous.

E. Project Coordinator: Richard Saklad has been appointed by Owner to serve as Project Coordinator.

F. The Work consists of interior renovations.

1. The Work includes demolition, patching, drywall, architectural woodwork, acoustic ceilings, resilient flooring, carpeting, painting, plumbing, mechanical and electrical work.

1.3 CONTRACT[S]

A. Project will be constructed under **a general construction contract**.

B. Multiple contracts are separate contracts, representing significant construction activities, between Owner and separate contractors. See Division 1 Section "Summary of Multiple Contracts" for a description of work included under each separate contract. Each contract is performed concurrently and coordinated closely with construction activities performed on Project under other contracts. Contracts for this Project include the following:

1. Relocation of Pneumatic Tube Station.

1.4 WORK SEQUENCE

A. The Work shall be conducted in ten (10) phases.

1.5 USE OF PREMISES

A. General: Contractor shall have full use of premises for construction operations, including use of Project site, during construction period. Contractor's use of premises is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

1.6 WORK UNDER OTHER CONTRACTS

A. Separate Contract: Owner **will award** a separate contract for performance of certain construction operations at Project site. Those operations are scheduled to be substantially complete before work under this Contract begins. The separate contract [**includes**] [**will include**] the following:

1. Pneumatic Tube Station Relocation

B. Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract.

1.7 FUTURE WORK

A. N/A

1.8 PRODUCTS ORDERED IN ADVANCE

A. General: Owner has negotiated Purchase Orders with suppliers of material and equipment to be incorporated into the Work. Owner has assigned these Purchase Orders to Contractor. Costs for receiving, handling, storage if required, and installation of material and equipment are included in the Contract Sum.

1. Contractor's responsibilities are the same as if Contractor had negotiated Purchase Orders, including responsibility to renegotiate purchase and to execute final Purchase-Order agreements.
2. The Schedule of Products Ordered in Advance is included at the end of this Section.

1.9 OWNER-FURNISHED PRODUCTS

A. Owner will furnish <**Insert a brief description of Owner-furnished products**>. The Work includes providing support systems to receive Owner's equipment [**and plumbing, mechanical, and electrical connections**].

1. Owner will arrange for and deliver Shop Drawings, Product Data, and Samples to Contractor.
2. Owner will arrange and pay for delivery of Owner-furnished items according to Contractor's Construction Schedule.
3. After delivery, Owner will inspect delivered items for damage. Contractor shall be present for and assist in Owner's inspection.
4. If Owner-furnished items are damaged, defective, or missing, Owner will arrange for replacement.
5. Owner will arrange for manufacturer's field services and for delivery of manufacturer's warranties to Contractor.
6. Owner will furnish Contractor the earliest possible delivery date for Owner-furnished products. Using Owner-furnished earliest possible delivery dates, Contractor shall designate delivery dates of Owner-furnished items in Contractor's Construction Schedule.

7. Contractor shall review Shop Drawings, Product Data, and Samples and return them to **[Architect] [Construction Manager]** noting discrepancies or anticipated problems in use of product.
8. Contractor is responsible for receiving, unloading, and handling Owner-furnished items at Project site.
9. Contractor is responsible for protecting Owner-furnished items from damage during storage and handling, including damage from exposure to the elements.
10. If Owner-furnished items are damaged as a result of Contractor's operations, Contractor shall repair or replace them.

1.10 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 16-division format and CSI/CSC's "MasterFormat" numbering system.

1. Section Identification: The Specifications use section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of sections in the Contract Documents.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

1.11 MISCELLANEOUS PROVISIONS

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF PRODUCTS ORDERED IN ADVANCE

END OF SECTION 01100

SECTION 01140 - WORK RESTRICTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 USE OF PREMISES

A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.

1. Limits: Confine constructions operations to the R9 patient floor.
2. Owner Occupancy: Allow for Owner occupancy of site **and use by the public**.
3. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

    a. Schedule deliveries to minimize use of driveways and entrances.
    b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

B. Use of Existing Building: Maintain existing building in a weathertight condition throughout construction period. Repair damage caused by construction operations. Protect building and its occupants during construction period.

C. General: Limitations on site usage as well as specific requirements that impact site utilization are indicated on the drawings and by other contract documents. In addition to these limitations and requirements administer allocation of available space equitably among entities needing both access and space so as to produce the best overall efficiency in performance of the total work of the project. Schedule deliveries so as to minimize space and time requirements for storage of materials and equipment on site.

D. Special Provisions: The Owner shall be consulted in advance in all premises matters regarding use of the site. All deliveries and transport at the premises are to be coordinated through the Project Manager. In the even of an apparent conflict of activities, the Owner's needs shall have priority.

E. Notify Project Manager and get approval prior to commencing any loud or noisy activity. Project Manager shall contact Charge Nurses on adjacent floors to verify acceptability of work.

1.3 OCCUPANCY REQUIREMENTS

A. Full Owner Occupancy: Owner will occupy site and existing building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations.

B. Partial Owner Occupancy: Owner reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere

with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.
2. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.
3. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will provide, operate, and maintain mechanical and electrical systems serving occupied portions of building.
4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01140

SECTION 01230 - ALTERNATES

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 alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: SOLID SURFACING COUNTERS

1. Base bid includes high pressure decorative laminate surfacing for counters in certain locations having sinks. Under this alternate delete HPDL counters and add therefore solid surfacing counters at the following rooms:
   a. Soiled Utility, Room 9126
   b. Med Prep, Room 9116
   c. Kitchen, Room 9114
   d. Training and Nurses Lounge, Room 9135
   e. Kitchen, Room 9146
   f. Clean Utility, Room 9145
2. Stainless steel sinks shall be provided as scheduled under base bid.

END OF SECTION 01230

SECTION 01250 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General 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 include the following:

1. Division 1 Section "Allowances" for procedural requirements for handling and processing allowances.
2. Division 1 Section "Unit Prices" for administrative requirements for using unit prices.
3. Division 1 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.3 MINOR CHANGES IN THE WORK

A. Architect will issue [**through Construction Manager**] supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on [**AIA Document G710, "Architect's Supplemental Instructions."**] [**form included at end of Part 3.**]

1.4 PROPOSAL REQUESTS

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

1. Proposal Requests issued by [**Architect**] [**Construction Manager**] are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
2. Within [**time specified in Proposal Request**] [**7 calendar days**] <**Insert number of days**> after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times,

and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change **[to Construction Manager]**.

1. Include a statement outlining 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 the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
5. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.

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

D. Proposal Request Form: For Change Order proposals, use forms provided by Owner. Sample copies are included at end of this Section.

1.5 ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, base each Change Order proposal on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.
2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

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 Contractor's handling, labor, installation, overhead, and profit. Submit claims within **[14 calendar]** **<Insert number>** days of receipt of the Change Order or Construction Change Directive authorizing work to proceed. Owner will reject claims submitted later than **[14 calendar]** **<Insert number>** days after such authorization.

1. Do not include 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 the Contract Documents.
2. No change to 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 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Proposal Request, **[Architect] [Construction Manager]** will issue a Change Order for signatures of Owner and Contractor on **[AIA Document G701] [form included at end of Part 3]**.

1.7 CONSTRUCTION CHANGE DIRECTIVE

A. **[Construction] [Work]** Change Directive: **[Architect] [Construction Manager]** may issue a **[Construction] [Work]** Change Directive on **[AIA Document G714] [form included at end of Part 3]**. **[Construction] [Work]** Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

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

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

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01250

SECTION 01290 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Sections include the following:

1. Division 1 Section "Allowances" for procedural requirements governing handling and processing of allowances.
2. Division 1 Section "Unit Prices" for administrative requirements governing use of unit prices.
3. Division 1 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
4. Division 1 Section "Construction Progress Documentation" **[OR]** "Project Critical Path Method Schedule" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

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

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

   a. Application for Payment forms with Continuation Sheets.
   b. Submittals Schedule.
   c. Critical Path Schedule

2. Submit the Schedule of Values to Architect **[through Construction Manager]** at earliest possible date but no later than the pre-construction conference.

3. Subschedules: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values correlated with each phase of payment.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items 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 Architect.
   c. Architect's 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 the Work.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator.
   e. Name of supplier.
   f. Change Orders (numbers) that affect value.
   g. Dollar value.

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

3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
4. Round amounts to nearest whole dollar; 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 evidence of insurance or bonded warehousing if required.
6. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
7. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit 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 Contractor's option.

8. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect **[and Construction Manager]** and paid for by Owner.

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

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Times: The date for each progress payment is the last 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 before the date for each progress payment.

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

E. Sample copies are included at end of this Section.

F. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. **[Architect]** **[Construction Manager]** will return incomplete applications without action.

1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

G. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to **[Architect]** **[Construction Manager]** by a method ensuring receipt with-in 72 hours. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

H. Waivers of Mechanic's Lien: For each payment application, submit waivers of lien from every entity (including Contractor) who could lawfully and possibly file a lien in excess of $500 arising out of the Contract, and related to work covered by the payment. The following is a list of entities that the owner will require lien waivers from as a minimum: general contractor, subcontractors, sub-subcontractors, and Major Suppliers, including but not limited to: Steel Manufacturers, Concrete Suppliers, Millwork Companies, Door and Hardware Suppliers, Flooring Suppliers, HVAC Suppliers, Electrical Switchgear and Panel Suppliers for construction period covered by the previous application.

1. Submit partial waivers on each item for amount requested, before deduction for retainage, on each item.

2. When an application shows completion of an item, submit final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Waiver Delays: Submit each Application for Payment with Contractor's waiver of mechanic's lien for construction period covered by the application.

    a. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.

5. Waiver Forms: Submit waivers of lien on form shown at the end of this section, labeled as "Contractor, Sub-Contractor and Major Supplier Affidavit and Lien Waver".

6. Lien Waiver Summary Form: Submit a Lien Waiver Summary Sheet with each payment requisition, displaying the Schedule of Values (or construction activity), the contractor, sub-contractor, and suppliers, and the lien waiver amount for the current requisition. The Lien Waiver Summary should also include the cumulative lien waiver totals for each schedule of value item. A sample of the Lien Waiver Summary form is included in the "Modified General Conditions" as Exhibit "B", labeled "Lien Waiver Summary Form".

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

1. List of subcontractors.
2. Schedule of Values.
3. Contractor's Construction Schedule.
4. Products list.
5. Schedule of unit prices.
6. Submittals Schedule (preliminary if not final).
7. List of Contractor's staff assignments.
8. List of Contractor's principal consultants.
9. Copies of building permits.
10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
11. Initial progress report.
12. Report of preconstruction conference.

J. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
3. Include occupancy permits and similar approvals or certifications by governing authorities and franchised services, assuring Owner's full access and use of completed work.
4. Test/adjust/balance records, maintenance instructions, meter readings, start-up performance reports, and similar change-over information germane to Owner's occupancy, use, operation and maintenance of completed work.
5. Final cleaning of the work.

6. Application for reduction (if any) of retainage, and consent of surety.
7. Advice to Owner on coordination of shifting insurance coverages, including proof of extended coverages as required.
8. Listing of Contractor's incomplete work, recognized as exceptions to Architect's certificate of substantial completion.

K. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."[**review**]
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens." [**review**]
6. AIA Document G707, "Consent of Surety to Final Payment." [**review**]
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work. [**review**]
9. Final, liquidated damages settlement statement. [**review**]

L. Mechanics Liens: If a subcontractor refuses to furnish a release of waiver required by the Owner, the Contractor shall furnish a bond satisfactory to the Owner to indemnify the Owner against such a lien. If such a lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien including all costs and reasonable attorney fees.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

CONTRACTOR, SUB-CONTRACTOR AND MAJOR SUPPLIER AFFIDAVIT AND LIEN WAVER

TO ACCOMPANY EACH PAYMENT REQUISITION

To:_____ ("Owner") and_____ ("Lender")

State of Maine, County of _____

I _____, being duly sworn, deposes and says that he makes this affidavit for and on behalf of_____ who is the Contractor Sub-Contractor, Major Supplier, (circle one), under a contract with the Owner, Contractor, Sub-Contractor, (circle one), for the construction or reconstruction of buildings and other improvements upon real estate of the Owner located on _____ _____, Maine (the "Project"), that all Contractor's subcontractors and materialmen have been paid in full, less proper contract retainages, if any, for labor, services, and material furnished through the cut-off date of the prior requisition.

Further more, the Contractor, Sub-Contractor, Major Supplier (circle one) upon receipt of $_____ does hereby waive and release any and all liens and claims and rights to lien on the Project which it may have for labor, services and materials furnished to the Project* through_____(the cut-off date for the requisition) and states that all of its labor has been paid through that date.

*Except to the extent of retainage due $_____.

_____

By:_____

Its:_____

Sworn to and subscribed before me this _____day of _____, 20_____

_____
Notary Public

SECTION 01310 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General project coordination procedures.
2. Conservation.
3. Coordination Drawings.
4. Administrative and supervisory personnel.
5. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific contractor.

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

1. Division 1 Section "Summary of Multiple Contracts" for a description of the division of Work among separate contracts and responsibility for coordination activities not in this Section.<**Check to see if this exists**>
2. Division 1 Section "**Construction Progress Documentation**" <**OR**> "**Project Critical Path Method Schedule**" for preparing and submitting the Contractor's Construction Schedule.
3. Division 1 Section "Execution Requirements" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
4. Division 1 Section "Closeout Procedures" for coordinating Contract closeout.

1.3 COORDINATION

A. Coordination: Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

B. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

C. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.

E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work.

1.4 SUBMITTALS

A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.

1. Indicate relationship of components shown on separate Shop Drawings.
2. Indicate required installation sequences.
3. Refer to Division 15 Section "Basic Mechanical Materials and Methods" and Division 16 Section "Basic Electrical Materials and Methods" for specific Coordination Drawing requirements for mechanical and electrical installations.

B. Staff Names: At the pre-construction conference, submit a list of principal staff assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone.

1.5 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

1.6 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within **[3]** **<Insert number>** days of the meeting.

B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner**[, Construction Manager, if one is retained by Owner,]** and Architect, but no later than 5 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

1. Attendees: Authorized representatives of Owner, **[Construction Manager, if one is retained by Owner,]** Architect, and their consultants; Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

    a. Tentative construction schedule.
    b. Phasing.
    c. Critical work sequencing.
    d. Designation of responsible personnel.
    e. Procedures for processing field decisions and Change Orders.
    f. Procedures for processing Applications for Payment.
    g. Distribution of the Contract Documents.
    h. Submittal procedures.
    i. Preparation of Record Documents.
    j. Proceedures for communications chain of command.
    k. Use of the premises.
    l. Responsibility for temporary facilities and controls.
    m. Parking availability.
    n. Office, work, and storage areas.

o. Equipment deliveries and priorities.
p. Safety procedures.
q. First aid.
r. Security & fire alarm notes.
s. Housekeeping and infection control.
t. Working hours.
u. Control of noise and dust during construction.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect [**and Construction Manager, if one is retained by Owner,**] of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

a. Contract Documents.
b. Options.
c. Related Change Orders.
d. Purchases.
e. Deliveries.
f. Submittals.
g. Review of mockups.
h. Possible conflicts.
i. Compatibility problems.
j. Time schedules.
k. Weather limitations.
l. Manufacturer's written recommendations.
m. Warranty requirements.
n. Compatibility of materials.
o. Acceptability of substrates.
p. Temporary facilities and controls.
q. Space and access limitations.
r. Regulations of authorities having jurisdiction.
s. Testing and inspecting requirements.
t. Required performance results.
u. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements.
4. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at [**weekly**] [**monthly**] [**regular**] <**Insert appropriate interval**> intervals. Coordinate dates of meetings with preparation of payment requests.

1. Attendees: In addition to representatives of Owner[**, Construction Manager, if one is retained by Owner,**] and Architect, each contractor, subcontractor, supplier, and other

entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
    b. Review present and future needs of each entity present, including the following:

        1) Interface requirements.
        2) Schedules
        3) Sequence of operations.
        4) Status of submittals.
        5) Deliveries.
        6) Off-site fabrication problems.
        7) Access.
        8) Site utilization.
        9) Temporary facilities and controls.
        10) Work hours.
        11) Hazards and risks.
        12) Housekeeping and infection control.
        13) Quality and work standards.
        14) Change Orders.
        15) Documentation of information for payment requests.

3. Reporting: No later than (4) days after each progress meeting date, distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report. No later than three (3) days prior to scheduled progress meetings distribute meeting agenda to all parties expected to attend. Format for record keeping and agendas shall be acceptable to the Architect.

    a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01310

SECTION 01320 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Daily construction reports.
2. Material location reports.
3. Field condition reports.
4. Special reports.
5. Construction photographs.

B. Related Sections include the following:

1. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
2. Division 1 Section "Submittal Procedures" for submitting schedules and reports.
3. Division 1 Section "Photographic Documentation" for submitting construction photographs.
4. Division 1 Section "Quality Requirements" for submitting a schedule of tests and inspections.
5. Division 1 Section "Closeout Procedures" for submitting photographic negatives as Project Record Documents at Project closeout.

1.3 DEFINITIONS (Not used)

1.4 SUBMITTALS

A. Construction Photographs: Submit [**two**] <**Insert number**> prints of each photographic view within [**seven**] <**Insert number**> days of taking photographs.

1. Format: 8-by-10-inch (203-by-254-mm) smooth-surface matte prints on single-weight commercial-grade stock, [**mounted on linen or card stock to allow a 1-inch- (25-mm-) wide margin and**] [**enclosed back to back in clear plastic sleeves that are**] punched for standard 3-ring binder.
2. Identification: On back of each print, provide an applied label or rubber-stamped impression with the following information:

a. Name of Project.
b. Name and address of photographer.
c. Name of Architect **[and Construction Manager]**.
d. Name of Contractor.
e. Date photograph was taken.
f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

3. Negatives: Submit a complete set of photographic negatives in protective envelopes **[with each submittal of prints]** **[as a Project Record Document]**. Identify date photographs were taken.

B. Daily Construction Reports: Submit **[two]** **<Insert number>** copies at **[daily]**[**weekly**] **[monthly]** intervals.
1. A Sample copy of the "Maine Medical Center Construction Report" is included at the end of this section.

C. Field Condition Reports: Submit **[two]** **<Insert number>** copies at time of discovery of differing conditions.

D. Special Reports: Submit **[two]** **<Insert number>** copies at time of unusual event.

1.5 QUALITY ASSURANCE

A. Photographer Qualifications: An individual of established reputation who has been regularly engaged as a professional photographer for not less than three years.

1.6 COORDINATION

A. Auxiliary Services: Cooperate with photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities including temporary lighting.

PART 2 - PRODUCTS

2.1 REPORTS

A. Daily Construction Reports: **[Daily reports to be reviewd and signed by the owner and contractor with-in 24 hours of preparation.**]Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. High and low temperatures and general weather conditions.
5. Accidents.
6. Meetings and significant decisions.
7. Unusual events (refer to special reports).
8. Stoppages, delays, shortages, and losses.

9. Meter readings and similar recordings.
10. Emergency procedures.
11. Orders and requests of authorities having jurisdiction.
12. Change Orders received and implemented.
13. Construction Change Directives received.
14. Services connected and disconnected.
15. Equipment or system tests and startups.
16. Partial Completions and occupancies.
17. Substantial Completions authorized.

B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare a detailed report. Submit with a request for information [**on CSI Form 13.2A**]. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.2 SPECIAL REPORTS

A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

C. Reporting Accidents: Prepare and submit reports of significant accidents, at site and anywhere else work is in progress. Record and document data and actions. For this purpose, a significant accident is defined to include events where personal injury is sustained, or property loss of substance is sustained, or where the event posed a significant threat of loss or personal injury.

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

A. Photographer: Engage a qualified commercial photographer to take construction photographs.

B. Photographic Film: Medium-format, 2-1/4 by 2-3/4 inches (60 by 70 mm).

C. Date Stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.

D. Preconstruction Photographs: Before starting construction, take [**four**] <**Insert number**> [**black-and-white**] [**color**] photographs of Project site and surrounding properties from different vantage points, as directed by [**Architect**] [**Construction Manager**]. Show existing conditions adjacent to property.

E. Periodic Construction Photographs: Take [**four**] <**Insert number**> [**black-and-white**] [**color**] photographs monthly, coinciding with cutoff date associated with each Application for Payment. Photographer shall select vantage points to best show status of construction and progress since last photographs were taken.

1. Field Office Prints: Retain one set of prints of periodic photographs in field office at Project site, available at all times for reference. Identify photographs the same as for those submitted to Architect [**and Construction Manager**].

F. Final Completion Construction Photographs: Take [**eight**] <**Insert number**> color photographs after date of Substantial Completion for submission as Project Record Documents. [**Architect**] [**Construction Manager**] will direct photographer for desired vantage points.

END OF SECTION 01320

SECTION 01325B

PROJECT CRITICAL PATH METHOD SCHEDULE
TYPE B FOR MEDIUM PROJECTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY AND DEFINITIONS

A. This section specifies requirements for the Project CPM Schedule, progress updates and submittal schedule. The purpose of the Project CPM Schedule and reporting is to:

1. Ensure the Contractor has undertaken detailed planning of the work;
2. Ensure the Contractor is accurately monitoring and controlling the time elements of the Project;
3. Assist the Owner in monitoring progress relative to the contract completion time;
4. Assess the impact of any changes to the Contract;
5. Support the basis for progress payments;
6. Ensure the Contractor is using the appropriate tool for mitigating time-related impacts;
7. Establish the baseline against which satisfactory completion of the project shall be judged; and
8. Evaluate claims and requests for extension of contract time.

B. "Total float" is defined as the amount of time between the earliest start date and latest start date or the earliest finish date and the latest finish date of an activity. Total float represents the amount of time the activity can be delayed before it cause delay to the completion date, and/or before it becomes critical.

C. "Critical Path" is defined as that sequence of activities which forms the longest path through the Project CPM Schedule. Activities on the critical path will have total float less than or equal to zero. Any delay to activities on the critical path will cause delay to the overall contract completion date.

D. Float belongs to the Project. It is for the mutual benefit of the Owner and Contractor. It is not for the exclusive use of either the Owner or the Contractor.

E. Extensions of time for contract performance or changes to the Project Milestones will only be granted by Change Order. Any claims for extensions of time shall be substantiated using the Contemporaneous Period Analysis method described in paragraph 1.6 of this section.

F. The Owner and the Architect will review all schedule submittals, including the schedule updates. Such review shall not constitute an approval or acceptance of the Contractor's construction means, methods, or sequencing, or its ability to complete the Work in a timely manner. Review by the Owner and the Architect does not waive any of the Owner's rights granted under other provisions of the Contract Documents.

G. The scheduling conventions noted below shall be followed for all schedules on this Project.

1. Negative values in lead/lag relationships are not to be used.
2. Only one start and one finish activity will be allowed for the entire schedule. All other activities must be linked between the start and the finish activity.
3. Activities with open ends are not allowed. The only exceptions to this are the start activity, the finish activity, the first activity in a sequence of activities representing a change in the work, and recorded natural events such as weather.

4. Activity Descriptions shall, at a minimum, describe the item, the action and the location of the work represented by that activity. In the example "Install Steel Studs 3rd Floor", "Install" is the action, "Steel Studs" is the activity and "3rd Floor" is the location.
5. The Contractor shall not sequester float by engaging in scheduling practices that artificially consume float.
6. The use of constraints will only be allowed to reflect contractually and/or environmentally imposed conditions. Constraints shall not be used where an activity or logical relationship is appropriate.
7. Progress updating shall be based on actual starts, actual finishes and remaining durations. Percent complete progressing will not be accepted.
8. Schedule calculations shall be based on retained logic, not progress override.
9. All schedules and schedule related documentation shall be prepared using the software specified in this section.

H. Timely submissions of the schedules described in this section are of significant and crucial importance to this Project. Lack of or late receipt of these diminishes their value to the Owner and Contractor. At the Owner's discretion, if any of these submissions are late or not submitted, the Owner may withhold up to U.S. $500 per occurrence from the Contractor's payment in recognition of the value and importance of each update to the Owner and the Project. The Owner will estimate the cost of lost days and completion and/or the cost of recovering lost time in arriving at this withheld amount, as these are amounts to which the owner attaches the value of the CPM scheduling on this project.

I. The Contractor shall extract from the updated Project CPM Schedule a Short Interval Schedule (three week look-ahead) based upon the Contractor's work plan. It shall be prepared and submitted semi-monthly unless otherwise requested by the Owner and / or as dictated by the status of the Project. The window represented by the Short Interval Schedule shall be the previous week of progress and the upcoming three weeks of planned activities. The look-ahead schedule submitted to the owner shall indicate the early start and finish dates and the total float of all activities in this period.

J. The Contractor shall employ (either directly or through a consultant) a person who is skilled in and has a demonstrated knowledge of CPM scheduling on projects of this nature. This person shall also be experienced with and able to demonstrate a working knowledge of the Contemporaneous Period Analysis methodology as described in paragraph 1.6. The Contractor shall submit this person's resume immediately following the Notice of Award, the Notice to Proceed or execution of the contract (whichever is the earliest) and prior to the start of scheduling, for the Owner's approval.

1.2 WORK INCLUDED

A. Provide a Project CPM Schedule in accordance with paragraph 1.4 of this section.

B. Participate in schedule update meetings and provide schedule updates in accordance with paragraph 1.5 of this section.

C. Participate in Contemporaneous Period Analysis in accordance with paragraph 1.6 of this section.

D. Provide a submittal schedule in accordance with paragraph 1.7 of this section.

1.3 ORIGINAL PROJECT CPM SCHEDULE

A. Within fourteen calendar days of the Notice of Award, the Notice to Proceed or the execution of the contract (whichever is the earliest), the Contractor shall prepare and submit a detailed Project CPM Schedule. This schedule shall be the Contractor's working schedule and shall be used to plan, organize, and execute the work, record and report actual performance and progress through updates, and indicate the Contractor's plan to complete all remaining work. The Project CPM Schedule and subsequent progress updates shall be the basis for consideration and analysis of requests for time extensions, to evaluate Applications for Payment and to evaluate changes to the work. The schedule shall be in the form of an activity-oriented precedence network diagram.

B. The Contractor shall submit the Project CPM Schedule to the Owner for review and comment. The Owner will review the schedule for conformance with the Contract Documents and provide comment within fifteen calendar days of receipt from the Contractor of all submittals required under this paragraph 1.4. The Contractor shall respond to the Owner's comments within seven calendar days of its receipt of the Owner's comments.

C. The Project CPM Schedule shall be constructed to show the order in which the Contractor proposes to carry out the work and to indicate the restrictions of access and availability of work area, and availability and use of manpower, materials and equipment.

D. The Contractor shall prepare the schedule in a level of detail commensurate with the size and complexity of the Project. At a minimum, work activities shall be broken down by trade and location. Where a trade performs more than one discrete task in completing their work, each discrete task shall be shown separately (i.e. install steel studs; install wallboard; tape and finish wallboard).

E. In preparing the schedule, the Contractor shall consider the following.

1. The breakdown of the project schedule by sub-networks.
2. The type of work to be performed and labor trades involved.
3. Procurement, manufacture, and delivery activities for all major materials and equipment.
4. Procurement, delivery, and installation activities of Owner-furnished equipment and materials.
5. Preparation and submission of shop drawings and material samples.
6. Approval by the Owner and Architect of shop drawings and material samples.
7. Assignment and coding of all activities by the performing entity such as subcontractors, vendors, governing authorities, the Architect, and the Owner.
8. Access and availability to the work area.
9. Identification of interfaces and dependencies with preceding, concurrent, and succeeding contractors.
10. Testing and / or submission and approval of test results.
11. Planning for phased occupancy by the Owner.
12. Approvals required by regulatory agencies or other third parties.
13. Contract-stipulated limitations and restrictions, construction milestones and substantial and total completion dates.
14. Engineering and design activities.
15. Commissioning, systems start-up, and testing.
16. Punchlist activities and project closeout.
17. Input from the Owner, Architect, Designers, Subcontractors and Vendors.
18. The Project CPM Schedule shall be specific in showing what activities must be completed prior to Substantial Completion and what activities occur between the time of Substantial Completion and Total Completion.

F. The project activities shall be coded in a manner that optimizes the readability of reports generated from the electronic schedule files. In doing so the contractor is to use at a minimum the code fields itemized in this Section D. Additional code fields may be utilized and may be required by the Owner.

1. PHAS, for the project phases. Groupings within the PHAS code may include Design, Submittals and Procurement, and Construction.
2. LOC, for the project locations. Groupings within the LOC code may include Sitework, Building Foundations, Building First Floor, Roof, Exterior Closure, and other such locations.
3. RESP, for the party responsible for the specific activity. Groupings within the RESP code may include Owner, Architect, Contractor, and specific subcontractors.

G. The planned durations of activities defined in the Project CPM Schedule shall consider the specific manpower and equipment requirements of the Project. Normal inclement weather shall be considered in calculating activity durations. All durations shall be in units of working days.

H. Scheduled activities shall contain the following data.

1. Activity ID. Numeric only.
2. Activity Description.
3. Activity Codes, format to be agreed to by Owner and Contractor.
4. Activity Costs. The value of each work activity including its share of overhead and profit shall be assigned to each activity included in the network. The sum of the costs assigned to all activities shall equal the total contract value. No activity costs shall be assigned to manufacture or deliver activities unless approved by the Owner.
5. Activity Labor. Direct labor only shall be assigned to the appropriate resource code (i.e. laborer, electrician, operator, et cetera) for each activity.

I. The critical path shall be clearly identified on all submissions.

J. The Contractor shall prepare and submit a written narrative report with the original schedule submittal and with each schedule update describing the following.

1. The planned work flow on the Project.
2. Unusual manpower needs such as multiple shifts or overtime.
3. Unusual equipment needs.
4. The planned achievement of milestones and completion dates.
5. The critical path and factors that might jeopardize it.
6. An explanation of relationships based on preferential logic (logic of convenience) and all constraints.
7. Any other factors or events having an impact on the timely completion of the Project.

K. With the exception of submit, fabricate and approve activities, no activity shall exceed fifteen days planned (original) duration.

L. The Contractor shall submit with the Project CPM Schedule, certification from the available major subcontractors and vendors indicating they have participated in, reviewed, and concur with the Project CPM Schedule and cost and manpower loading as it relates to their work.

M. Tabular reports are to contain a listing of the activities required for the type of report being prepared. Each activity shall include information agreed to by the Owner and Contractor and may include.

1. Activity number.
2. Activity description.
3. Original and remaining durations in work days.
4. Early start and finish dates.
5. Actual start and finish dates.
6. Total float in workdays.
7. Value of activity as cost loaded.

N. The Contractor shall prepare computer-generated tabular reports as part of the Project CPM Schedule submission and for each progress update thereafter. They shall include the following:

1. All activities sorted by activity number including predecessor and successor relationships (initial Project CPM Schedule only).
2. All activities not 100% complete, grouped by phase and location and sorted first by early start and second by early finish.
3. All activities not 100% complete, grouped by total float and sorted by early start and then by early finish.

O. The Contractor shall prepare computer-generated reports and diagrams in the following quantities, as part of the Project CPM Schedule submission and for each progress update thereafter.

1. Three copies of a detailed logic network diagram displaying all activities less than 100% complete in a time-scaled format. The network need not be confined to a single sheet but shall be printed on D

size paper. The bars are to indicate, for each activity and in addition to the activity identifier and description, total float and remaining duration.

2. Three copies of all tabular reports as specified in paragraph 1.4 (L).
3. Three copies of all cash flow projections as specified in paragraph 1.4 (L).
4. One copy of each of the electronic schedule files specified in paragraphs 1.5 (B) and (C).
5. Three copies of the narrative report.

1.4 PROGRESS UPDATES

A. The Contractor is required to submit progress updates of the Project CPM Schedule and to participate in progress schedule update meetings with the Owner. Submission of progress updates and participation in progress schedule update meetings will occur monthly or more frequently if requested by the Owner and / or as dictated by the status of the Project.

B. The Contractor shall submit its final updated schedule for the monthly submittal, having incorporated the progress achieved and all logic and duration changes that represent its revised planning.

C. The Contractor must maintain a constrained (finish no later than) end date (the contract completion date) when generating the required reports and diagrams for the Owner as specified by this section. The fixed end date will be adjusted in subsequent updates only to reflect approved time extensions incorporated by Change Order.

D. The Contractor shall account for all excusable non-compensable delays, during which little or no work is progressed and which are acknowledged by the Owner in the period within which the events occur. The Contractor may choose to account for such delays within the Project CPM Schedule by treating these events as it would a typical holiday at the calendar function of the software. Whatever method is chosen by the Contractor and agreed to by the Owner, a description of the accounting shall be made in the narrative report.

E. At least two working days prior to the monthly schedule update meeting the Contractor shall provide:

1. Three copies of: (a) a total float report clearly indicating the current critical path through project completion, and (b) a report of activities sorted by early start dates commencing with the previous update data date and including all activities in progress since the previous update.

2. Three copies of its draft narrative report. The report shall contain the items described in paragraph 1.4 (G) as well as: (a) a description of the work progressed; (b) a discussion of work scheduled for, but not performed in, the previous period, explaining why it was deferred; and (c) a discussion of work scheduled for the upcoming period noting any issues or events that could impact this work. If the Contractor intends to make logic or original duration changes, the report will present such intentions.

F. The monthly schedule update meeting shall be held at the construction site one week prior to the due date of the Contractor's monthly Application for Payment. The Contractor and Owner will review and discuss the draft reports prepared in paragraph 1.5 (F).

Decisions made at these meetings and agreed to by all parties are binding. Progressing of work, logic and/or original duration changes agreed to at this meeting shall be incorporated into an "approved progress update" and submitted to the Owner as in paragraph 1.4 (J), (K) and (L).

1.5 SCHEDULE FILE NAMING PROTOCOL

A. File names shall have four characters, consistent with the requirements of Primavera Project Planner. The four characters, ordered 1,2,3, and 4 for this description are to be used as follows:

1. The first (leftmost) character is reserved for MMC to identify the project. MMC will likely assign an alpha character to this character of the file name.

2. The second and third characters are reserved for the sequential numeric numbering of the monthly updating cycle. The approved project baseline schedule will be 00; the first month's update will use 01, and so forth.

3. The fourth character is reserved for all updates that are performed between the monthly schedule submittals, and are to be named in the chronological order they were created. These are to be numbered 0 through 9, and if needed, the alpha characters A through Z will be used.

B. The first baseline file for MMC project K will be named K000. The first monthly update will be named K010. The second update following K010, but prior to the next monthly update submittal, is to be named K012.

1.6 THE CONTEMPORANEOUS PERIOD ANALYSIS ("CPA")

A. Owner desires and intends to resolve all issues affecting the contract completion date in a timely, efficient, nd effective manner. To achieve this goal, the Owner and Contractor shall participate in periodic contemporaneous analyses of all delays by application of the CPA method. The CPA shall coincide with the monthly schedule update meetings.

B. The logic and planning elements of the Project CPM Schedule are the Contractor's responsibility. Assessment of impacts due to changes or other events, in accordance with the CPA method described herein, must be performed on the most recent approved update of the schedule, further progressed to the date the impact occurs.

C. While the Owner might not agree in all instances as to the proper assessment of liability for delay, it is essential that both parties determine and accept the monthly update. Agreement is essential, as the update becomes the baseline schedule for the upcoming period and the schedule to be updated for the next monthly schedule meeting.

D. Submission of valid monthly updates and the completion of the CPA are conditions precedent to the review and approval of any request for an extension in the contract completion date or Project Milestone. Failure to complete monthly updates and to participate in CPA will defer consideration of any time extensions by the Owner until the work is completed and the Owner analyzes all as-built progress. Further, the Owner may assess liquidated damages, if any, regardless of the status of any requests for time extensions pending, until any such requests are resolved.

E. Change Orders requesting time extensions shall be accompanied by two versions of the most recently approved progress update, further progressed to the date the Contractor was directed to proceed with the work contemplated by the Change Order. The first schedule version shall reflect the status of the Project prior to the imposition of the Change Order work. The sequence of reasonably known activities representing the Change Order work shall be inserted in the second version and the schedule shall be recalculated as of the same date. The net change in the project's end date between the second copy and the first copy will reflect and substantiate the request for extension of time related to the Change Order.

1.7 SUBMITTAL SCHEDULE

A. The Contractor shall prepare and submit to the Architect a complete schedule of submittals based on the Project CPM Schedule and as required by the Specifications. The submittal schedule shall be an extract (using appropriate activity coding) from the Project CPM Schedule.

B. The schedule shall (through activity coding) show the category of submittal, name of subcontractor, description of work covered, related specification section numbers, activity ID number and scheduled date for first submission.

C. The Architect will be required to review the submittal schedule and provide written comments regarding its ability to meet the timeframes established by the submittal schedule.

D. Information from the submittal schedule shall be coordinated with the submittal log, which will show the information noted in paragraph 1.7 (B) as well as blank columns for actual date of submittal, re-submittal, and final release or approval by the Architect.

E. Actual start/finish data related to submittals shall be kept current in the Project CPM Schedule.

PART 2 – PRODUCTS

2.1 SCHEDULING SOFTWARE

A. The Contractor shall use an authorized copy of the latest version of *Primavera Project Planner* or P3 for Windows or SureTrak, also produced by Primavera, or another computerized scheduling software product deemed equal to SureTrak or Primavera, whose electronic files are fully readable by, and whose data is fully and without error readable by P3 for Windows.

B. All scheduling, updating and reporting functions shall be performed using this software.

PART 3 – EXECUTION (Not Applicable)

END OF SECTION 01320

SECTION 01330 - SUBMITTAL 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 includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

B. Related Sections include the following:

1. Division 1 Section "Payment Procedures" for submitting Applications for Payment.
2. Division 1 Section "Project Management and Coordination" for submitting Coordination Drawings.
3. Division 1 Section "Project Critical Path Method Schedule" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals.
4. Division 1 Section "Quality Requirements" for submitting test and inspection reports and Delegated-Design Submittals [**and for erecting mockups**].
5. Division 1 Section "Closeout Procedures" for submitting warranties Project Record Documents.
6. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
7. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's [**and Construction Manager's**] responsive action.

B. Informational Submittals: Written information that does not require Architect's [**and Construction Manager's**] approval. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

A. General: Electronic copies of CAD Drawings of the Contract Drawings will [**not**] be provided by Architect for Contractor's use in preparing submittals.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

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 parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

    a. [**Architect reserves**] [**Architect and Construction Manager reserve**] the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Submittals Schedule: Comply with requirements in Division 1 Project Critical Path Method Schedule " for list of submittals and time requirements for scheduled performance of related construction activities.

D. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on [**Architect's**] [**Construction Manager's**] receipt of submittal.

1. Initial Review: Allow [**14**] <**Insert number**> days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. [**Architect**] [**Construction Manager**] will advise Contractor when a submittal being processed must be delayed for coordination.
2. Concurrent Review: Where concurrent review of submittals by Architect's consultants, Owner, or other parties is required, allow [**21**] <**Insert number**> days for initial review of each submittal.

    a. <**Insert list of Specification Sections requiring concurrent review.**>

3. Direct Transmittal to Consultant: Where the Contract Documents indicate that submittals may be transmitted directly to Architect's consultants, provide duplicate copy of transmittal to Architect [**and Construction Manager**]. Submittal will be returned to [**Architect**] [**Construction Manager, through Architect,**] before being returned to Contractor.

    a. <**Insert list of Specification Sections requiring direct transmittal to consultant.**>

4. If intermediate submittal is necessary, process it in same manner as initial submittal.
5. Allow [**14**] <**Insert number**> days for processing each resubmittal.
6. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.

E. Identification: Place a permanent label or title block on each submittal for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately [**4 by 5 inches (100 by 125 mm)**] <**Insert size**> on label or beside title block to record Contractor's review and approval markings and action taken by Architect [**and Construction Manager**].
3. Include the following information on label for processing and recording action taken:

    a. Project name.

b. Date.
c. Name and address of Architect [**and Construction Manager**].
d. Name and address of Contractor.
e. Name and address of subcontractor.
f. Name and address of supplier.
g. Name of manufacturer.
h. Unique identifier, including revision number.
i. Number and title of appropriate Specification Section.
j. Drawing number and detail references, as appropriate.
k. Other necessary identification.

F. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.

G. Additional Copies: Unless additional copies are required for final submittal, and unless Architect [**or Construction Manager**] observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.

1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect [**and Construction Manager**].
2. Additional copies submitted for maintenance manuals will [**not**] be marked with action taken and will be returned.

H. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect [**and Construction Manager**] will discard submittals received from sources other than Contractor.

1. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect [**and Construction Manager**] on previous submittals, and deviations from requirements of the Contract Documents, including minor variations and limitations. Include the same label information as the related submittal.
2. Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.
3. Transmittal Form: Use [**CSI Form 12.1A**] [**sample form at end of Section**].
4. Transmittal Form: Provide locations on form for the following information:

a. Project name.
b. Date.
c. Destination (To:).
d. Source (From:).
e. Names of subcontractor, manufacturer, and supplier.
f. Category and type of submittal.
g. Submittal purpose and description.
h. Submittal and transmittal distribution record.
i. Remarks.
j. Signature of transmitter.

I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

J. Use for Construction: Use only final submittals with mark indicating action taken by Architect [**and Construction Manager**] in connection with construction.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

1. Number of Copies: Submit copies of each submittal, as follows, unless otherwise indicated:

a. Initial Submittal: Submit a preliminary single copy of each submittal where selection of options, color, pattern, texture, or similar characteristics is required. Architect[**, through Construction Manager,**] will return submittal with options selected.
b. Final Submittal: Submit [**four**] <**Insert number**> copies, unless copies are required for operation and maintenance manuals. Submit [**six**] <**Insert number**> copies where copies are required for operation and maintenance manuals. Architect [**and Construction Manager**] [**and Owner**]will retain [**one**] <**Insert number**> copies each; remainder will be returned. Mark up and retain one returned copy as a Project Record Document.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

a. Manufacturer's written recommendations.
b. Manufacturer's product specifications.
c. Manufacturer's installation instructions.
d. Standard color charts.
e. Manufacturer's catalog cuts.
f. Wiring diagrams showing factory-installed wiring.
g. Printed performance curves.
h. Operational range diagrams.
i. Mill reports.
j. Standard product operating and maintenance manuals.
k. Compliance with recognized trade association standards.
l. Compliance with recognized testing agency standards.
m. Application of testing agency labels and seals.
n. Notation of coordination requirements.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Include the following information, as applicable:

    a. Dimensions.
    b. Identification of products.
    c. Fabrication and installation drawings.
    d. Roughing-in and setting diagrams.
    e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
    f. Shopwork manufacturing instructions.
    g. Templates and patterns.
    h. Schedules.
    i. Design calculations.
    j. Compliance with specified standards.
    k. Notation of coordination requirements.
    l. Notation of dimensions established by field measurement.

2. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 42 inches (750 by 1000 mm).

D. Coordination Drawings: Comply with requirements in Division 1 Section "Project Critical Path Method Schedule."

E. Samples: Prepare physical units of materials or products, including the following:

1. Comply with requirements in Division 1 Section "Quality Requirements" for mockups.
2. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
3. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
4. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Architect's sample where so indicated. Attach label on unexposed side that includes the following:

    a. Generic description of Sample.
    b. Product name or name of manufacturer.
    c. Sample source.

5. Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, provide the following:

    a. Size limitations.
    b. Compliance with recognized standards.

c. Availability.
d. Delivery time.

6. 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 final submittal and actual component as delivered and installed.

   a. If variation in color, pattern, texture, or other characteristic is inherent in the product represented by a Sample, submit at least [**three**] <**Insert number**> sets of paired units that show approximate limits of the variations.
   b. Refer to individual Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.

7. Number of Samples for Initial Selection: Submit [**one**] <**Insert number**> full set[**s**] of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect[**, through Construction Manager,**] will return submittal with options selected.
8. Number of Samples for Verification: Submit [**three**] <**Insert number**> sets of Samples. Architect [**and Construction Manager**] will retain [**two**] <**Insert number**> Sample sets; remainder will be returned. [**Mark up and retain one returned Sample set as a Project Record Sample.**]

   a. Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.

9. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

   a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
   b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

F. Product Schedule or List: Prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product.
2. Number and name of room or space.
3. Location within room or space.

G. Delegated-Design Submittal: Comply with requirements in Division 1 Section "Quality Requirements."

H. Contractor's Construction Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for Construction Manager's action.

I. Submittals Schedule: Comply with requirements in Division 1 Section " Project Critical Path Method Schedule."

J. Application for Payment: Comply with requirements in Division 1 Section "Payment Procedures."

K. Schedule of Values: Comply with requirements in Division 1 Section "Payment Procedures."

L. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. [**Use CSI Form 1.5A.**] Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit [**two**] <**Insert number**> copies of each submittal, unless otherwise indicated. Architect [**and Construction Manager**] will not return copies.
2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
3. Test and Inspection Reports: Comply with requirements in Division 1 Section "Quality Requirements."

B. Contractor's Construction Schedule: Comply with requirements in Division 1 Section " Project Critical Path Method Schedule."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.

E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.

G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.

I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.

J. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements.

K. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

L. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements.

M. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

N. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

O. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Division 1 Section "Closeout Procedures."

P. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

Q. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

R. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

S. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

T. Construction Photographs [**and Videotapes**]: Comply with requirements in Division 1 Section "Construction Progress Documentation."

U. Material Safety Data Sheets: Submit information directly to Owner.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect [**and Construction Manager**].

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S [AND CONSTRUCTION MANAGER'S] ACTION

A. General: Architect [**and Construction Manager**] will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect [**and Construction Manager**] will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect [**and Construction Manager**] will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

1. Final Unrestricted Release: Where the submittals are marked as follows, the work covered by the submittal may proceed provided it complies with the requirements of the contract documents; acceptance of the work will depend upon that compliance.

   a. Marking: "Reviewed"

2. Final-But-Restricted Release: When the submittals are marked as follows, the work covered by the submittal may proceed provided it complies with both the Architect's/Engineer's notations or corrections on the submittal and with the requirements of the contract documents; acceptance of the work will depend on that compliance.

   a. Marking: "Make corrections noted".

3. Returned for Resubmittal: When the submittal is marked as follows, do not proceed with the work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise the submittal or prepare a new submittal in accordance with the Architect's/Engineer's notations stating the reasons for returning the submittal; resubmit the submittal without delay. Repeat if necessary to obtain a different action marking. Do not permit submittals with the following marking to be used at the project site, or elsewhere where work is in progress.

   a. Marking: "Revise and Resubmit".
   b. Marking: "Rejected".

C. Informational Submittals: Architect [**and Construction Manager**] will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. Architect [**and Construction Manager**] will forward each submittal to appropriate party.

D. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

END OF SECTION 01330

Advancement of Construction Technology

SUBMITTAL TRANSMITTAL

Project: _____ Date: _____

_____ A/E Project Number: _____

TRANSMITTAL A

To (Contractor): _____ Date: _____ Submittal No. _____

From (Subcontractor): _____ By: _____ ☐ Resubmission

Qty.	Reference / Number	Title / Description / Manufacturer	Spec. Section Title and Paragraph / Drawing Detail Reference

☐ Submitted for review and approval
☐ Resubmitted for review and approval
☐ Complies with contract requirements
☐ Will be available to meet construction schedule
☐ A/E review time included in construction schedule

☐ Substitution involved - Substitution request attached
☐ If substitution involved, submission includes point-by-point comparative data or preliminary details
☐ Items included in submission will be ordered immediately upon receipt of approval

Other remarks on above submission:

☐ One copy retained by sender

TRANSMITTAL B

To (A/E): _____ Attn: _____ Date Rec'd by Contractor: _____

From (Contractor): _____ By: _____ Date Trnsmt'd by Contractor: _____

☐ Approved
☐ Approved as noted

☐ Revise / Resubmit
☐ Rejected / Resubmit

Other remarks on above submission:

☐ One copy retained by sender

TRANSMITTAL C

To (Contractor): _____ Attn: _____ Date Rec'd by A/E: _____

From (A/E): _____ ☐ Other By: _____ Date Trnsmt'd by A/E: _____

☐ Approved
☐ Approved as noted
☐ Not subject to review
☐ No action required
☐ Revise / Resubmit
☐ Rejected / Resubmit
☐ Approved as noted / Resubmit

☐ Provide file copy with corrections identified
☐ Sepia copies only returned

☐ Point-by-point comparative data required to complete approval process

☐ Submission Incomplete / Resubmit

Other remarks on above submission:

☐ One copy retained by sender

TRANSMITTAL D

To (Subcontractor): _____ Attn: _____ Date Rec'd by Contractor: _____

From (Contractor): _____ By: _____ Date Trnsmt'd by Contractor: _____

Copies: ☐ Owner ☐ Consultants ☐ _____ ☐ _____ ☐ _____ ☐ One copy retained by sender

SECTION 01400 - QUALITY REQUIREMENTS

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 quality assurance and quality control.

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

1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-control services required by Architect, Owner, [**Construction Manager,**] or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections include the following:

1. Division 1 Section "Allowances" for testing and inspecting allowances.
2. Division 1 Section "Critical Path Method Schedule" for developing a schedule of required tests and inspections.
3. Division 1 Section "Cutting and Patching" for repair and restoration of construction disturbed by testing and inspecting activities.
4. Divisions 2 through 16 Sections for specific test and inspection requirements.

D. The General Contractor's site conditions will be monitored and assessed by MMC as to their safety conditions using the following criteria:

PLANT, TECHNOLOGY, & SAFETY MANAGEMENT (PTSM)
INTERIM LIFE SAFETY MEASURE (ILSM)
ASSESSMENT/MONITORING
JCAHO/PTSM 1993

- R = Repeat Problem
- F = Followup Required

- D = Dangerous
- I = Improvable
- G = Good Condition

- Y = Activity Requires Monitoring
- NA= Not Applicable

a1 Exits Clear and Unobstructed (Daily Documentation)
a2 Alternate Training Conducted
b1 Emergency Department Access Free
b2 Fire Department Access Free
c1 Fire Alarm, Detection and Suppression in Service
c2 Temporary Systems Inspected/Tested Monthly
d1 Temporary Construction Partitions Noncombustible
d2 Temporary Construction Partitions Smoke Tight
d3 Construction Areas Secured with Keys Available
e1 Additional Firefighting Equipment Available
e2 Training Conducted for Additional Equipment
f1 Smoking Policy (Prohibition and Enforcement)
g1 Flammable/Combustible Storage Meets Standards
g2 Housekeeping/Debris Removal Appropriate
h1 Two Fire Drills per Shift per Quarter
i1 Hazard Surveillance (Frequency) Conducted
j1 Special Training for Compromised Fire Features
k1 Organization wide Education for Life Safety

Criteria: Dangerous Conditions Require Correction Within Same Day
Improvable Conditions Require Correction Within Two Days
(Any Dangerous and/or Two or More Improvable Conditions Will Generate A Followup Inspection The Next Day)

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by Architect **[or Construction Manager]**.

C. Mockups: Full-size, physical example assemblies to illustrate finishes and materials. Mockups are used to verify selections made under Sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. **[Mockups establish the standard by which the Work will be judged.]**

D. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.4 DELEGATED DESIGN

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

1.5 REGULATORY REQUIREMENTS

A. Copies of Regulations: Obtain copies of the following regulations and retain at Project site to be available for reference by parties who have a reasonable need:

1. **<Insert list of regulations.>**

1.6 SUBMITTALS

A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

C. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Description of test and inspection.
3. Identification of applicable standards.
4. Identification of test and inspection methods.
5. Number of tests and inspections required.
6. Time schedule or time span for tests and inspections.
7. Entity responsible for performing tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

D. Reports: Prepare and submit certified written reports that include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.

4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Ambient conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

E. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.7 QUALITY ASSURANCE

A. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

B. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

C. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

D. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirement for specialists shall not supersede building codes and similar regulations governing the Work, nor interfere with local trade-union jurisdictional settlements and similar conventions.

G. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.

H. Preconstruction Testing: Testing agency shall perform preconstruction testing for compliance with specified requirements for performance and test methods.

1. Contractor responsibilities include the following:

a. Provide test specimens and assemblies representative of proposed materials and construction. Provide sizes and configurations of assemblies to adequately demonstrate capability of product to comply with performance requirements.
b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
c. Fabricate and install test assemblies using installers who will perform the same tasks for Project.
d. When testing is complete, remove assemblies; do not reuse materials on Project.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect **[, through Construction Manager]**, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

I. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect **[or Construction Manager]**.
2. Notify Architect **[and Construction Manager]** **[seven]** **<Insert number>** days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Architect's **[and Construction Manager's]** approval of mockups before starting work, fabrication, or construction.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed, unless otherwise indicated.

1.8 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of the types of testing and inspecting they are engaged to perform.
2. Payment for these services will be made from testing and inspecting allowances, as authorized by Change Orders.

3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractorand the Contract Sum will be adjusted by Change Order.

B. Contractor Responsibilities: Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.

1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

a. Contractor shall not employ the same entity engaged by Owner, unless agreed to in writing by Owner.

2. Notify testing agencies at least [**24**] <**Insert number**> hours in advance of time when Work that requires testing or inspecting will be performed.
3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Special Tests and Inspections: Owner will engage a testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner.

1. Testing agency will notify Architect[, **Construction Manager,**] and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
2. Testing agency will submit a certified written report of each test, inspection, and similar quality-control service to Architect[, **through Construction Manager,**] with copy to Contractor and to authorities having jurisdiction.
3. Testing agency will submit a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
4. Testing agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
5. Testing agency will retest and reinspect corrected work.

D. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.

E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.

F. Testing Agency Responsibilities: Cooperate with Architect[, **Construction Manager,**] and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect[, **Construction Manager,**] and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
5. Do not perform any duties of Contractor.

G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field-curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within **[30] <Insert number>** days of date established for **[commencement of the Work] [the Notice to Proceed]**.

1. Distribution: Distribute schedule to Owner, Architect, **[Construction Manager,]** testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 ACCEPTABLE TESTING AGENCIES

A. **<Insert list of firms acceptable to perform designated tests and inspections.>**

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.
2. Comply with the Contract Document requirements for Division 1 Section "Cutting and Patching."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01400

SECTION 01420 - REFERENCES

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 DEFINITIONS

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

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

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

D. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on Drawings; or to other paragraphs or schedules in Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference.

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 to supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": The term "install" describes operations at Project site including unloading, temporary storage, unpacking, assembling, 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 Contractor or another entity engaged by Contractor, as an employee, subcontractor, or contractor of lower tier, to perform a particular construction operation, including installation, erection, application, and similar operations.

J. The term "experienced," when used with the term "installer," means having successfully completed a minimum of **[five]** <**Insert number**> previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1. Using a term 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 tradespeople of the corresponding generic name.

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

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless 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 standards in effect as of the date of the Contract Documents, unless otherwise indicated.

C. Conflicting Requirements: Where compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to 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 Architect for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on Project must 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, obtain copies directly from the publication source and make them available on request.

E. Abbreviations and Names: Abbreviations and acronyms are frequently used in the Specifications and other Contract Documents to represent the name of a trade association, standards-developing organization, authorities having jurisdiction, or other entity in the context of referencing a standard or publication. Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they mean the recognized name of these entities. Refer to Gale Research's "Encyclopedia of Associations" or Columbia Books' "National Trade & Professional Associations of the U.S.," which are available in most libraries.

F. Abbreviations and Names: Abbreviations and acronyms are frequently used in the Specifications and other Contract Documents to represent the name of a trade association,

standards-developing organization, authorities having jurisdiction, or other entity in the context of referencing a standard or publication. The following abbreviations and acronyms, as referenced in the Contract Documents, mean the associated names. Names and addresses are subject to change and are believed, but are not assured, to be accurate and up-to-date as of the date of the Contract Documents.

AA	Aluminum Association 900 19th St., NW, Suite 300 Washington, DC 20006 www.aluminum.org	(202) 862-5100
AABC	Associated Air Balance Council 1518 K St., NW, Suite 503 Washington, DC 20005 www.aabchq.com	(202) 737-0202
AAMA	American Architectural Manufacturers Association 1827 Walden Office Sq., Suite 104 Schaumburg, IL 60173-4268 www.aamanet.org	(847) 303-5664
AAN	American Association of Nurserymen (See ANLA)	
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol St., NW, Suite 249 Washington, DC 20001 www.aashto.org	(202) 624-5800
AATCC	American Association of Textile Chemists and Colorists P.O. Box 12215 One Davis Dr. Research Triangle Park, NC 27709-2215 www.aatcc.org	(919) 549-8141
ABMA	American Bearing Manufacturers Association (Formerly: Anti-Friction Bearing Manufacturers Association) 1200 19th St., NW, Suite 300 Washington, DC 20036-2401 www.abma-dc.org	(202) 429-5155
ABMA	American Boiler Manufacturers Association 950 North Glebe Rd., Suite 160 Arlington, VA 22203-1824 www.abma.com	(703) 522-7350

ACI	American Concrete Institute P.O. Box 9094 Farmington Hills, MI 48333-9094 www.aci-int.org	(248) 848-3700
ACIL	ACIL: The Association of Independent Scientific, Engineering, and Testing Firms 1629 K St., NW, Suite 400 Washington, DC 20006 www.acil.org	(202) 887-5872
ACPA	American Concrete Pipe Association 222 West Las Colinas Blvd., Suite 641 Irving, TX 75039-5423 www.concrete-pipe.org	(972) 506-7216
ADC	Air Diffusion Council 104 South Michigan Ave., Suite 1500 Chicago, IL 60603	(312) 201-0101
AEIC	Association of Edison Illuminating Companies 600 N. 18th St. P.O. Box 2641 Birmingham, AL 35291-0992 www.aeic.org	(205) 250-2530
AFBMA	Anti-Friction Bearing Manufacturers Association (See ABMA)	
AFPA	American Forest and Paper Association (Formerly: National Forest Products Association) 1111 19th St., NW, Suite 800 Washington, DC 20036 www.afandpa.org	(800) 878-8878 (202) 463-2700
AGA	American Gas Association 1515 Wilson Blvd. Arlington, VA 22209 www.aga.com	(703) 841-8400
AHA	American Hardboard Association 1210 W. Northwest Hwy Palatine, IL 60067-1897	(847) 934-8800
AHAM	Association of Home Appliance Manufacturers 20 N. Wacker Dr., Suite 1231 Chicago, IL 60606 www.aham.org	(312) 984-5800

AI	Asphalt Institute P.O. Box 14052 Lexington, KY 40512-4052 www.asphaltinstitute.org	(606) 288-4960
AIA	The American Institute of Architects 1735 New York Ave., NW Washington, DC 20006-5292 www.aia.org	(202) 626-7300
AIA	American Insurance Association 1130 Connecticut Ave., NW, Suite 1000 Washington, DC 20036	(202) 828-7100
AIHA	American Industrial Hygiene Association 2700 Prosperity Ave., Suite 250 Fairfax, VA 22031 www.aiha.org	(703) 849-8888
AISC	American Institute of Steel Construction One East Wacker Dr., Suite 3100 Chicago, IL 60601-2001 www.aisc.web.com	(800) 644-2400 (312) 670-2400
AISI	American Iron and Steel Institute 1101 17th St., NW, Suite 1300 Washington, DC 20036-4700 www.steel.org	(202) 452-7100
AITC	American Institute of Timber Construction 7012 S. Revere Pkwy, Suite 140 Englewood, CO 80112 www.aitc-glulam.org	(303) 792-9559
ALA	American Laminators Association (See LMA)	
ALCA	Associated Landscape Contractors of America 150 Elden St., Suite 270 Herndon, VA 20170-4831 www.alca.org	(800) 395-2522 (703) 736-9666
ALI	Associated Laboratories, Inc. P.O. Box 152837 Dallas, TX 75315 www.assoc-labs.com	(214) 565-0593
ALSC	American Lumber Standards Committee P.O. Box 210 Germantown, MD 20875	(301) 972-1700

AMCA	Air Movement and Control Association International, Inc. 30 W. University Dr. Arlington Heights, IL 60004-1893 www.amca.org	(847) 394-0150
ANLA	American Nursery and Landscape Association (Formerly: American Association of Nurserymen) 1250 Eye St., NW, Suite 500 Washington, DC 20005 www.anla.org	(202) 789-2900
ANSI	American National Standards Institute 11 West 42nd St., 13th Floor New York, NY 10036-8002 www.ansi.org	(888) 267-4783 (212) 642-4900
AOAC	AOAC International 481 N. Frederick Ave., Suite 500 Gaithersburg, MD 20877 www.aoac.org	(301) 924-7077
AOSA	Association of Official Seed Analysts P.O. Box 81152 Lincoln, NE 68501-1152 www.zianet.com/AOSA	(402) 476-3852
APA	APA-The Engineered Wood Association (Formerly: American Plywood Association) P.O. Box 11700 Tacoma, WA 98411-0700 www.apawood.org	(253) 565-6600
APA	Architectural Precast Association P.O. Box 08669 Fort Myers, FL 33908-0669 www.archprecast.org	(941) 454-6989
API	American Petroleum Institute 1220 L St., NW, Suite 900 Washington, DC 20005-8029 www.api.org	(202) 682-8000
ARI	Air-Conditioning and Refrigeration Institute 4301 Fairfax Dr., Suite 425 Arlington, VA 22203 www.ari.org	(703) 524-8800

ARMA	Asphalt Roofing Manufacturers Association Center Park 4041 Powder Mill Rd., Suite 404 Calverton, MD 20705 www.asphaltroofing.org	(301) 348-2002
ASA	Acoustical Society of America 500 Sunnyside Blvd. Woodbury, NY 11797 //asa.aip.org	(516) 576-2360
ASC	Adhesive and Sealant Council 1627 K St., NW, Suite 1000 Washington, DC 20006-1707 www.ascouncil.org	(202) 452-1500
ASCA	Architectural Spray Coaters Association 895 Doncaster Dr. West Deptford, NJ 08066	(609) 848-6120
ASCE	American Society of Civil Engineers World Headquarters 1801 Alexander Graham Bell Dr. Reston, VA 20191-4400 www.asce.org	(800) 548-2723 (703) 295-6000
ASHES	American Society for Healthcare Environmental Services Division of the American Hospital Association One North Franklin, Suite 2700 Chicago, IL 60606	(312) 422-3860
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers 1791 Tullie Circle, NE Atlanta, GA 30329-2305 www.ashrae.org	(800) 527-4723 (404) 636-8400
ASLA	American Society of Landscape Architects 636 Eye St., NW Washington, DC 20001-3736 www.asla.org	(202) 898-2444
ASME	American Society of Mechanical Engineers 345 East 47th St. New York, NY 10017-2392 www.asme.org	(800) 843-2763 (212) 705-7722
ASPA	American Sod Producers Association (See TPI)	

ASPE	American Society of Plumbing Engineers 3617 Thousand Oaks Blvd., Suite 210 Westlake Village, CA 91362-3649	(805) 495-7120
ASQ	American Society for Quality 611 East Wisconsin Ave. Milwaukee, WI 53201-3005 www.asq.org	(800) 248-1946 (414) 272-8575
ASSE	American Society of Sanitary Engineering 28901 Clemens Rd. Westlake, OH 44145 www.asse-plumbing.org	(440) 835-3040
ASTM	American Society for Testing and Materials 100 Barr Harbor Dr. West Conshohocken, PA 19428-2959 www.astm.org	(610) 832-9500
ATIS	Alliance for Telecommunications Industry Solutions (Formerly: Exchange Carriers Standards Association) 1200 G St., NW, Suite 500 Washington, DC 20005 www.atis.org	(202) 628-6380
AWCI	Association of the Wall and Ceiling Industries--International 803 West Broad St., Suite 600 Falls Church, VA 22046 www.awci.org	(703) 534-8300
AWCMA	American Window Covering Manufacturers Association (See WCMA)	
AWI	Architectural Woodwork Institute 1952 Isaac Newton Sq. West Reston, VA 20190 www.awinet.org	(800) 449-8811 (703) 733-0600
AWPA	American Wood-Preservers' Association P.O. Box 5690 Granbury, TX 76049 www.awpa.com	(817) 326-6300
AWPB	American Wood Preservers' Bureau (This organization is now defunct.)	
AWS	American Welding Society 550 NW LeJeune Rd. Miami, FL 33126 www.amweld.org	(800) 443-9353 (305) 443-9353

AWWA	American Water Works Association 6666 W. Quincy Ave. Denver, CO 80235 www.awwa.org	(800) 926-7337 (303) 794-7711
BAC	Brick Association of the Carolinas (Formerly: Brick Association of North Carolina) P.O. Box 13290 Greensboro, NC 27415-3290 www.gobrick.com	(800) 622-7425 (336) 273-5566
BHMA	Builders Hardware Manufacturers Association 355 Lexington Ave., 17th Floor New York, NY 10017-6603	(212) 661-4261
BIA	Brick Industry Association 11490 Commerce Park Dr. Reston, VA 22091-1525 www.bia.org	(703) 620-0010
BIFMA	The Business and Institutional Furniture Manufacturer's Association International 2680 Horizon Dr., SE, Suite A1 Grand Rapids, MI 49546-7500 www.bifma.com	(616) 285-3963
CAGI	Compressed Air and Gas Institute c/o Thomas Associates, Inc. 1300 Sumner Ave. Cleveland, OH 44115-2851 www.taol.com/cagi	(216) 241-7333
CAUS	Color Association of the United States 409 W. 44th St. New York, NY 10036-4402	(212) 582-6884
CBMA	Certified Ballast Manufacturers Association 355 Lexington Ave., 17th Floor New York, NY 10017 www.certbal.org	(212) 661-4261
CCC	Carpet Cushion Council P.O. Box 546 Riverside, CT 06878-0546	(203) 637-1312
CDA	Copper Development Association Inc. 260 Madison Ave., 16th Floor New York, NY 10016-2401 www.copper.org	(800) 232-3282 (212) 251-7200

CFFA	Chemical Fabrics & Film Association, Inc. c/o Thomas Associates, Inc. 1300 Sumner Ave. Cleveland, OH 44115-2851 www.taol.com/cffa	(216) 241-7333
CGA	Compressed Gas Association 1725 Jefferson Davis Hwy, Suite 1004 Arlington, VA 22202-4102 www.cganet.com	(703) 412-0900
CGSB	Canadian General Standards Board Place du Portage Phase III, 6B1 11 Laurier St. Hull, Quebec K1A 0S5 CANADA www.pwgsc.gc.ca/cgsb Mailing Address: Canadian General Standards Board Sales Centre Ottawa K1A 1G6 CANADA	(819) 956-3500 (819) 956-0425
CISCA	Ceilings and Interior Systems Construction Association 1500 Lincoln Hwy, Suite 202 St. Charles, IL 60174 www.cisca.org	(630) 584-1919
CISPI	Cast Iron Soil Pipe Institute 5959 Shallowford Rd., Suite 419 Chattanooga, TN 37421 www.cispi.org	(423) 892-0137
CLFMI	Chain Link Fence Manufacturers Institute 9891 Broken Land Pkwy, Suite 300 Columbia, MD 21046 www.baileadership.com	(301) 596-2584
CPA	Composite Panel Association (Formerly: National Particleboard Association) 18928 Premiere Ct. Gaithersburg, MD 20879-1569 www.pbmdf.com	(301) 670-0604
CPPA	Corrugated Polyethylene Pipe Association 3621 Secor Rd., Suite 320 Toledo, OH 436046 www.cppa-info.org	(800) 510-2772 (419) 241-2221

CRI	Carpet and Rug Institute 310 S. Holiday Ave. Dalton, GA 30722-2048 www.carpet-rug.com	(800) 882-8846 (706) 278-3176
CRSI	Concrete Reinforcing Steel Institute 933 N. Plum Grove Rd. Schaumburg, IL 60173-4758 www.crsi.org	(847) 517-1200
CSSB	Cedar Shake and Shingle Bureau 515 116th Ave., NE, Suite 275 Bellevue, WA 98004-5294 www.cedarbureau.org	(206) 453-1323
CTI	Ceramic Tile Institute of America 12061 West Jefferson Blvd. Culver City, CA 90230-6219	(310) 574-7800
CTI	Cooling Tower Institute P.O. Box 73383 Houston, TX 77273 www.cti.org	(281) 583-4087
DASMA	Door and Access Systems Manufacturers Association, International (Formerly: National Association of Garage Door Manufacturers) c/o Thomas Associates, Inc. 1300 Sumner Ave. Cleveland, OH 44115-2851 www.taol.com/dasma	(216) 241-7333
DHI	Door and Hardware Institute (Formerly: National Builders Hardware Association) 14170 Newbrook Dr. Chantilly, VA 20151-2223 www.dhi.org	(703) 222-2010
DIPRA	Ductile Iron Pipe Research Association 245 Riverchase Pkwy East, Suite O Birmingham, AL 35244 www.dipra.org	(205) 402-8702
DLPA	Decorative Laminate Products Association (Dissolved in 1995 - Now part of KCMA.)	
ECSA	Exchange Carriers Standards Association (See ATIS)	

EIA	Electronic Industries Association 2500 Wilson Blvd. Arlington, VA 22201 www.eia.org	(703) 907-7500
EIMA	EIFS Industry Members Association 3000 Corporate Center Dr., Suite 270 Morrow, GA 30260-4116 www.eifsfacts.com	(800) 294-3462 (770) 968-7945
EJMA	Expansion Joint Manufacturers Association 25 N. Broadway Tarrytown, NY 10591-3201 www.ejma.org	(914) 332-0040
ETL	ETL Testing Laboratories, Inc. (Now part of ITS)	
FCI	Fluid Controls Institute c/o Thomas Associates, Inc 1300 Sumner Ave. Cleveland, OH 44115-2851 www.taol.com/fci	(216) 241-7333
FCICA	Floor Covering Installation Contractors Association P.O. Box 948 Dalton, GA 30722-0948	(706) 226-5488
FGMA	Flat Glass Marketing Association (See GANA)	
FM	Factory Mutual System 1151 Boston-Providence Tnpk. P.O. Box 9102 Norwood, MA 02062-9102 www.factorymutual.com	(781) 762-4300
GA	Gypsum Association 810 First St., NE, Suite 510 Washington, DC 20002 www.usg.com	(202) 289-5440
GANA	Glass Association of North America (Formerly: Flat Glass Marketing Association) 2945 Southwest Wanamaker Dr., Suite A Topeka, KS 66614 www.glasswebsite.com/gana	(913) 266-7013

GRI	Geosynthetic Research Institute 475 Kedron Ave. Folsom, PA 19033 www.drexel.edu/gri	(610) 522-8440
HEI	Heat Exchange Institute c/o Thomas Associates, Inc. 1300 Sumner Ave. Cleveland, OH 44115-2851 www.taol.com/hei	(216) 241-7333
HI	Hydraulic Institute 9 Sylvan Way Parsippany, NJ 07054-3802	(888) 786-7744 (973) 267-9700
HI	Hydronics Institute Division of Gas Appliance Manufacturers Association P.O. Box 218 35 Russo Pl. Berkeley Heights, NJ 07922 www.gamanet.org	(908) 464-8200
HMA	Hardwood Manufacturers Association (Formerly: Southern Hardwood Lumber Manufacturers Association) 400 Penn Center Blvd., Suite 530 Pittsburgh, PA 15235-5605 www.hardwood.org	(412) 829-0770
HPVA	Hardwood Plywood and Veneer Association 1825 Michael Farraday Dr. P.O. Box 2789 Reston, VA 22195-0789 www.hpva.org	(703) 435-2900
IAS	International Approval Services Division of Canadian Standards Association 8501 East Pleasant Valley Rd. Cleveland, OH 44131 www.iasapprovals.org	(216) 524-4990
IBD	Institute of Business Designers (Now part of IIDA)	
ICC	International Code Council 5203 Leesburg Pike #708 Falls Church, VA 22041 www.intlcode.org	(703) 931-4533

ICEA	Insulated Cable Engineers Association P.O. Box 440 South Yarmouth, MA 02664 www.icea.net	(508) 394-4424
IEC	International Electrotechnical Commission (Available from ANSI) 11 West 42nd St., 13th Floor New York, NY 10036-8002 www.ansi.org	(888) 267-4783 (212) 642-4900
IEEE	Institute of Electrical and Electronics Engineers 345 E. 47th St. New York, NY 10017-2394 www.ieee.org	(800) 678-4333 (212) 705-7900
IESNA	Illuminating Engineering Society of North America 120 Wall St., 17th Floor New York, NY 10005-4001 www.iesna.org	(212) 248-5000
IGCC	Insulating Glass Certification Council P.O. Box 9 Henderson Harbor, NY 13651	(315) 938-7444
IIDA	International Interior Design Association 341 Merchandise Mart Chicago, IL 60654-1104 www.iida.com	(800) 888-4432 (312) 467-1950
ILI	Indiana Limestone Institute of America Stone City Bank Building, Suite 400 Bedford, IN 47421 www.iliai.com	(812) 275-4426
IMSA	International Municipal Signal Association P.O. Box 539 165 E. Union St. Newark, NY 14513 www.imsasafety.org	(800) 723-4672 (315) 331-2182
INCE	Institute of Noise Control Engineering P.O. Box 3206, Arlington Branch Poughkeepsie, NY 12603 www.ince.org	(914) 462-4006
IRI	HSB Industrial Risk Insurers P.O. Box 5010 85 Woodland St. Hartford, CT 06102-5010 www.industrialrisk.com	(800) 520-7300 (860) 520-7300

ISA	ISA - International Society for Measurement and Control P.O. Box 12277 67 Alexander Dr. Research Triangle Park, NC 27709 www.isa.org	(919) 549-8411
ISEA	Industrial Safety Equipment Association 1901 N. Moore St., Suite 808 Arlington, VA 22209 www.safetycentral.org/isea	(703) 525-1695
ISS	Iron and Steel Society 410 Commonwealth Dr. Warrendale, PA 15086-7512 www.issource.org	(412) 776-1535
ITS	Intertek Testing Services (Formerly: Inchcape Testing Services) P.O. Box 2040 3933 US Route 11 Cortland, NY 13045-7902 www.itsglobal.com	(800) 345-3851 (607) 753-6711
KCMA	Kitchen Cabinet Manufacturers Association (Formerly: National Kitchen Cabinet Association) 1899 Preston White Dr. Reston, VA 22191 www.kema.org	(703) 264-1690
LGSI	Light Gage Structural Institute P.O. Box 560746 The Colony, TX 75056	(972) 625-4560
LIA	Lead Industries Association, Inc. 295 Madison Ave., Suite 808 New York, NY 10017 www.leadinfo.com	(800) 422-5323 (212) 578-4750
LMA	Laminating Materials Association (Formerly: American Laminators Association) 116 Lawrence St. Hillsdale, NJ 07642-2730 www.lma.org	(201) 664-2700
LPI	Lightning Protection Institute 3335 N. Arlington Heights Rd., Suite E Arlington Heights, IL 60004-7700 www.lightning.org	(800) 488-6864 (847) 577-7200

MBMA	Metal Building Manufacturers Association c/o Thomas Associates, Inc. 1300 Sumner Ave. Cleveland, OH 44115-2851 www.taol.com/mbma	(216) 241-7333
MCAA	Mechanical Contractors Association of America 1385 Piccard Dr. Rockville, MD 20850-4329 www.mcaa.org	(301) 869-5800
MFMA	Maple Flooring Manufacturers Association (Formerly: Wood and Synthetic Flooring Institute) 60 Revere Dr., Suite 500 Northbrook, IL 60062 www.maplefloor.com	(847) 480-9138
MFMA	Metal Framing Manufacturers Association 401 N. Michigan Ave. Chicago, IL 60611	(312) 644-6610
MHIA	Material Handling Industry Association 8720 Red Oak Blvd., Suite 201 Charlotte, NC 28217-3957 www.mhia.org	(800) 345-1815 (704) 676-1190
MIA	Marble Institute of America 30 Eden Alley, Suite 301 Columbus, OH 43215 www.marble-institute.com	(614) 228-6194
MIA	Masonry Institute of America 2550 Beverly Blvd. Los Angeles, CA 90057 www.masonryinstitute.org	(213) 388-0472
ML/SFA	Metal Lath/Steel Framing Association 8 South Michigan Ave., Suite 1000 Chicago, IL 60603	(312) 456-5590
MRCA	Midwest Roofing Contractors Association 4840 W. 15th St., Suite 1000 Lawrence, KS 66049 www.mrca.org	(913) 843-4888
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry 127 Park St., NE Vienna, VA 22180-4602 www.mss-hq.com	(703) 281-6613

NAA	National Arborist Association P.O. Box 1094 Amherst, NH 03031-1094 www.natlarb.com	(800) 733-2622 (603) 673-3311
NAAMM	National Association of Architectural Metal Manufacturers 8 South Michigan Ave., Suite 1000 Chicago, IL 60603 www.gss.net/naamm	(312) 322-0405
NAAMM	North American Association of Mirror Manufacturers (See GANA) 2945 Southwest Wanamaker Dr., Suite A Topeka, KS 66614 www.glasswebsite.com/naamm	(913) 266-7013
NACE	NACE International (Formerly: National Association of Corrosion Engineers) P.O. Box 218340 Houston, TX 77218-8340	(281) 492-0535 (281) 492-8254
NAGDM	National Association of Garage Door Manufacturers (See DASMA)	
NAIMA	North American Insulation Manufacturers Association (Formerly: Thermal Insulation Manufacturers Association) 44 Canal Center Plaza, Suite 310 Alexandria, VA 22314 www.naima.org	(703) 684-0084
NAMI	National Accreditation & Management Institute, Inc. P.O. Box 366 207 S. Washington St. Berkeley Springs, WV 25411	(304) 258-5100
NAPA	National Asphalt Pavement Association NAPA Building 5100 Forbes Blvd. Lanham, MD 20706-4413 www.hotmix.org	(888) 468-6499 (301) 731-4748
NBHA	National Builders Hardware Association (See DHI)	
NBGQA	National Building Granite Quarries Association, Inc. 1220 L. St., NW, Suite 100-167 Washington, DC 20005	(800) 557-2848

NCAC	National Council of Acoustical Consultants 66 Morris Ave., Suite 1A Springfield, NJ 07081 www.ncac.com	(973) 564-5859
NCCA	National Coil Coaters Association 401 N. Michigan Ave. Chicago, IL 60611 www.coilcoaters.org	(312) 321-6894
NCMA	National Concrete Masonry Association 2302 Horse Pen Rd. Herndon, VA 20171-3499 www.ncma.org	(703) 713-1900
NCPI	National Clay Pipe Institute P.O. Box 759 253-80 Center St. Lake Geneva, WI 53147 www.ncpi.org	(414) 248-9094
NCRPM	National Council on Radiation Protection and Measurements 7910 Woodmont Ave., Suite 800 Bethesda, MD 20814-3095 www.ncrp.com	(800) 229-2652 (301) 657-2652
NCSPA	National Corrugated Steel Pipe Association 1255 23rd St., NW, Suite 850 Washington, DC 20037 www.ncspa.org	(202) 452-1700
NEBB	Natural Environmental Balancing Bureau 8575 Grovemont Circle Gaithersburg, MD 20877-4121 www.mcaa.org/nebb.htm www.nebb.org	(301) 977-3698
NECA	National Electrical Contractors Association 3 Bethesda Metro Center, Suite 1100 Bethesda, MD 20814-3299 www.necanet.org	(301) 657-3110
NEI	National Elevator Industry 185 Bridge Plaza North, Suite 310 Fort Lee, NJ 07024	(201) 944-3211

NELMA	Northeastern Lumber Manufacturers Association 272 Tuttle Rd. P.O. Box 87A Cumberland Center, ME 04021 www.nelma.org	(207) 829-6901
NEMA	National Electrical Manufacturers Association 1300 N 17th St., Suite 1847 Rosslyn, VA 22209 www.nema.org	(703) 841-3200
NETA	InterNational Electrical Testing Association P.O. Box 687 106 Stone St. Morrison, CO 80465-1526 www.electricnet.com/neta	(303) 697-8441
NFPA	National Fire Protection Association One Batterymarch Park P.O. Box 9101 Quincy, MA 02269-9101 www.nfpa.org	(800) 344-3555 (617) 770-3000
NFPA	National Forest Products Association (See AFPA)	
NFRC	National Fenestration Rating Council Incorporated 1300 Spring St., Suite 500 Silver Spring, MD 20910 www.nfrc.org	(301) 589-6372
NGA	National Glass Association 8200 Greensboro Drive, 3rd Floor McLean, VA 22102-3881	(703) 442-4890
NHLA	National Hardwood Lumber Association P.O. Box 34518 Memphis, TN 38184-0518 www.natlhardwood.org	(901) 377-1818
NIA	National Insulation Association (Formerly: National Insulation and Abatement Contractors Association) 99 Canal Center Plaza, Suite 222 Alexandria, VA 22314 www.insulation.org	(703) 683-6422
NIAC	National Insulation and Abatement Contractors Association (See NIA)	

NKCA	National Kitchen Cabinet Association (See KCMA)	
NLGA	National Lumber Grades Authority #406-First Capital Pl. 960 Quayside Dr. New Westminster, BC V3M 6G2 CANADA	(604) 524-2393
NOFMA	National Oak Flooring Manufacturers Association P.O. Box 3009 Memphis, TN 38173-0009 www.nofma.org	(901) 526-5016
NPA	National Parking Association 1112 16th Street, NW, Suite 300 Washington, DC 20036	(202) 296-4336 (800) 647-7275
NPCA	National Paint and Coatings Association 1500 Rhode Island Ave., NW Washington, DC 20005-5597 www.paint.org	(202) 462-6272
NRCA	National Roofing Contractors Association O'Hare International Center 10255 W. Higgins Rd., Suite 600 Rosemont, IL 60018-5607 www.roofonline.org	(800) 323-9545 (847) 299-9070
NRMCA	National Ready Mixed Concrete Association 900 Spring St. Silver Spring, MD 20910 www.nrmca.org	(301) 587-1400
NSA	National Stone Association 1415 Elliot Pl., NW Washington, DC 20007 www.aggregates.org	(800) 342-1415 (202) 342-1100
NSF	NSF International (Formerly: National Sanitation Foundation) 3475 Plymouth Rd. Ann Arbor, MI 48105 www.nsf.org	(734) 769-8010
NSSEA	National School Supply and Equipment Association 8300 Colesville Rd., Suite 250 Silver Spring, MD 20910 www.nssea.org	(800) 395-5550 (301) 495-0240

NTMA	National Terrazzo and Mosaic Association 110 E. Market St., Suite 200-A Leesburg, VA 20176-3122 www.ntma.com	(800) 323-9736 (703) 779-1022
NUSIG	National Uniform Seismic Installation Guidelines P.O. Box 0933 Alamo, CA 94507	(925) 555-6331
NWMA	National Woodwork Manufacturers Association (See NWWDA)	
NWWDA	National Wood Window and Door Association (Formerly: National Woodwork Manufacturers Association) 1400 E. Touhy Ave. Des Plaines, IL 60018 www.nwwda.org	(800) 223-2301 (847) 299-5200
PATMI	Powder Actuated Tool Manufacturers' Institute 1603 Boonslick Rd. St. Charles, MO 63301-2244	(314) 947-6610
PCA	Portland Cement Association 5420 Old Orchard Rd. Skokie, IL 60077-1083 www.portcement.org	(847) 966-6200
PCI	Precast/Prestressed Concrete Institute 175 W. Jackson Blvd. Chicago, IL 60604 www.pci.org	(312) 786-0300
PDCA	Painting and Decorating Contractors of America 3913 Old Lee Hwy, Suite 33-B Fairfax, VA 22030 www.pdca.com	(800) 332-7322 (703) 359-0826
PDI	Plumbing and Drainage Institute 45 Bristol Dr., Suite 101 South Easton, MA 02375 //pdi-online.org	(800) 589-8956 (508) 230-3516
PEI	Porcelain Enamel Institute 4004 Hillsboro Pike, Suite 224-B Nashville, TN 37215 www.porcelainenamel.com	(615) 385-5357

PGI	PVC Geomembrane Institute/Technology Program University of Illinois-Urbana Champaign 205 N. Mathews Ave. 2215 Newmark Civil Engineering Lab Urbana, IL 61801 //pgi-tp.ce.vivc.edu	(217) 333-3929
PIMA	Photographic and Imaging Manufacturers Association 550 Mamaroneck Ave., Suite 307 Harrison, NY 10528 www.pima.net	(914) 698-7603
PPFA	Plastic Pipe and Fittings Association 800 Roosevelt Rd., Building C, Suite 20 Glen Ellyn, IL 60137-5833	(888) 314-6774 (630) 858-6540
PPI	Plastics Pipe Institute (The Society of the Plastics Industry, Inc.) 1801 K St., NW, Suite 600K Washington, DC 20006 www.plasticpipe.org	(202) 974-5306
RCMA	Roof Coatings Manufacturers Association Center Park 4041 Powder Mill Rd., Suite 404 Calverton, MD 20705 www.roofcoatings.org	(301) 348-2003
RCSC	Research Council on Structural Connections Sargent & Lundy 55 E. Monroe St. Chicago, IL 60603	(312) 269-2424
RFCI	Resilient Floor Covering Institute 966 Hungerford Dr., Suite 12-B Rockville, MD 20850-1714	(301) 340-8580
RMA	Rubber Manufacturers Association 1400 K St., NW, Suite 900 Washington, DC 20005 www.rma.org	(800) 220-7620 (202) 682-4800
SAE	SAE International 400 Commonwealth Dr. Warrendale, PA 15096-0001 For publications: Call (724) 776-4970 www.sae.org	(724) 776-4841

SDI	Steel Deck Institute P.O. Box 25 Fox River Grove, IL 60021 www.sdi.org	(847) 462-1930
SDI	Steel Door Institute 30200 Detroit Rd. Cleveland, OH 44145-1967 www.steeldoor.org	(440) 899-0010
SEFA	Scientific Equipment and Furniture Association 7 Wildbird Lane Hilton Head Island, SC 29926 www.sefalabfurn.com	(843) 689-6878
SEGD	Society for Environmental Graphic Design 401 F St., NW, Suite 333 Washington, DC 20001-2728	(202) 638-5555
SGCC	Safety Glazing Certification Council P.O. Box 9 Henderson Harbor, NY 13651	(315) 938-7444
SHLMA	Southern Hardwood Lumber Manufacturers Association (See HMA)	
SIGMA	Sealed Insulating Glass Manufacturers Association 401 N. Michigan Ave. Chicago, IL 60611-4267 www.sigmaonline.org/sigma	(312) 644-6610 x3279
SJI	Steel Joist Institute 3127 10th Ave., North Ext. Myrtle Beach, SC 29577-6760	(803) 626-1995
SMA	Screen Manufacturers Association 2850 S. Ocean Blvd., Suite 114 Palm Beach, FL 33480-5535	(561) 533-0991
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association 4201 Lafayette Center Dr. P.O. Box 221230 Chantilly, VA 20151-1209 www.smacna.org	(703) 803-2980
SPI	The Society of the Plastics Industry, Inc. Spray Polyurethane Division 1801 K St., NW, Suite 600K Washington, DC 20006 www.socplas.org	(800) 951-2001 (202) 974-5200

SPIB	Southern Pine Inspection Bureau 4709 Scenic Hwy Pensacola, FL 32504-9094 www.spib.org	(850) 434-2611
SPRI	SPRI (Formerly: Single Ply Roofing Institute) 200 Reservoir St., Suite 309A Needham, MA 02494-3034 www.spri.org	(781) 444-0242
SSINA	Specialty Steel Industry of North America c/o Collier, Shannon Rill & Scott 3050 K St., NW, Suite 400 Washington, DC 20007 www.ssina.com	(800) 982-0355 (202) 342-8630
SSPC	SSPC: The Society for Protective Coatings 40 24th St., 6th Floor Pittsburgh, PA 15222-4656 www.sspc.org	(800) 837-8303 (412) 281-2331
SSPMA	Sump and Sewage Pump Manufacturers Association P.O. Box 647 Northbrook, IL 60065-0647	(847) 559-9233
STI	Steel Tank Institute 570 Oakwood Rd. Lake Zurich, IL 60047-1559 www.steeltank.com	(847) 438-8265
SWI	Steel Window Institute c/o Thomas Associates, Inc. 1300 Sumner Ave. Cleveland, OH 44115-2851 www.taol.com/swi	(216) 241-7333
SWPA	Submersible Wastewater Pump Association 1806 Johns Dr. Glenview, IL 60025-1657	(847) 729-7972
SWRI	Sealant, Waterproofing and Restoration Institute 2841 Main St. Kansas City, MO 64108 www.swrionline.org	(816) 472-7974
TCA	Tile Council of America P.O. Box 1787 Clemson, SC 29633 www.tileusa.com	(864) 646-8453

TIMA	Thermal Insulation Manufacturers Association (See NAIMA)	
TPI	Truss Plate Institute 583 D'Onofrio Dr., Suite 200 Madison, WI 53719	(608) 833-5900
TPI	Turfgrass Producers International (Formerly: American Sod Producers Association) 1855-A Hicks Rd. Rolling Meadows, IL 60008 www.turfgrassod.org	(800) 405-8873 (847) 705-9898
UFAC	Upholstered Furniture Action Council P.O. Box 2436 High Point, NC 27261	(910) 885-6085
UL	Underwriters Laboratories Inc. 333 Pfingsten Rd. Northbrook, IL 60062 www.ul.com	(800) 704-4050 (847) 272-8800
UNI	Uni-Bell PVC Pipe Association 2655 Villa Creek Dr., Suite 155 Dallas, TX 75234 members.aol.com/unibell	(972) 243-3902
USITT	USITT: The American Association of Design and Production Professionals in the Performing Arts 6443 Ridings Rd. Syracuse, NY 13206-1111 www.culturenet.ca/usitt	(800) 938-7488 (315) 463-6463
USP	U.S. Pharmacopeia (Formerly: U.S. Pharmacopoeial Convention) 12601 Twinbrook Pkwy Rockville, MD 20852-1790 www.usp.org	(800) 227-8772 (301) 881-0666
WA	Wallcoverings Association 401 N. Michigan Ave. Chicago, IL 60611-4267	(312) 644-6610
WASTEC	Waste Equipment Technology Association 4301 Connecticut Ave. NW, Suite 300 Washington, DC 20008	(202) 244-4700
WCLIB	West Coast Lumber Inspection Bureau P.O. Box 23145 Portland, OR 97281-3145	(800) 283-1486 (503) 639-0651

WCMA	Window Covering Manufacturers Association (Formerly: American Window Covering Manufacturers Association) 355 Lexington Ave., 17th Floor New York, NY 10017-6603	(212) 661-4261
WEF	Water Environment Federation (Formerly: Water Pollution Control Federation) 601 Wythe St. Alexandria, VA 22314-1994 www.wef.org	(800) 666-0206 (703) 684-2400
WIC	Woodwork Institute of California P.O. Box 980247 West Sacramento, CA 95798-0247 www.wicnet.org	(916) 372-9943
WMMPA	Wood Moulding & Millwork Producers Association 507 First St. Woodland, CA 95695 www.wmmpa.com	(800) 550-7889 (530) 661-9591
WPCF	Water Pollution Control Federation (See WEF)	
WRI	Wire Reinforcement Institute 301 E. Sandusky St. Findlay, OH 45840 www.bright.net/~rreiter	(419) 425-9473
WSC	Water Systems Council Building C, Suite 20 800 Roosevelt Rd. Glen Ellyn, IL 60137	(630) 545-1762
WSFI	Wood and Synthetic Flooring Institute (See MFMA)	
WWPA	Western Wood Products Association Yeon Building 522 SW 5th Ave. Portland, OR 97204-2122 www.wwpa.org	(503) 224-3930

G. Federal Government Agencies: Names and titles of Federal Government standards- or specification-developing agencies are often abbreviated. The following abbreviations and acronyms referenced in the Contract Documents indicate names of standards- or specification-developing agencies of the Federal Government. Names and addresses are subject to change and are believed, but are not assured, to be accurate and up-to-date as of the date of the Contract Documents.

CE	Corps of Engineers (U.S. Department of the Army) 20 Massachusetts Ave., NW Washington, DC 20314 www.usace.army.mil CRD standards are available from: U.S. Army Corps of Engineers Waterways Experiment Station Technical Report Distribution Section Services Branch, TIC 3909 Halls Ferry Rd. Vicksburg, MS 39180-6199	(202) 761-0660 (601) 634-2696
CFR	Code of Federal Regulations (Available from the Government Printing Office) Washington, DC 20401 (Material is usually published first in the "Federal Register.") www.access.gpo.gov	(202) 512-1800
CPSC	Consumer Product Safety Commission East West Towers 4330 East-West Hwy Bethesda, MD 20814 www.cpcs.gov	(800) 638-2772 (301) 504-0990
CS	Commercial Standard (U.S. Department of Commerce) Government Printing Office Washington, DC 20402 For commercial standards, contact: Ms. Brenda Umberger CS & PS Specialist c/o NIST Gaithersburg, MD 20899 www.nist.gov	(202) 512-1800 (301) 975-4036
DOC	Department of Commerce 14th St. and Constitution Ave., NW Washington, DC 20230 www.doc.gov	(202) 482-2000
DOT	Department of Transportation 400 Seventh St., SW Washington, DC 20590 www.dot.gov	(202) 366-4000

EPA	Environmental Protection Agency 401 M St., SW Washington, DC 20460 www.epa.gov	(202) 260-2090
FAA	Federal Aviation Administration (U.S. Department of Transportation) 800 Independence Ave., SW Washington, DC 20591 www.faa.gov	(202) 366-4000
FCC	Federal Communications Commission 1919 M St., NW Washington, DC 20554 www.fcc.gov	(202) 418-0126
FDA	Food and Drug Administration 5600 Fishers Lane Rockville, MD 20857 www.fda.gov	(301) 443-1544
FHA	Federal Housing Administration (U.S. Department of Housing and Urban Development) 451 Seventh St., SW Washington, DC 20410 www.hud.gov	(202) 401-0388
FS	Federal Specification Unit (Available from GSA) 470 East L'Enfant Plaza, SW, Suite 8100 Washington, DC 20407 www.gsa.gov	(202) 619-8925
GSA	General Services Administration F St. and 18th St., NW Washington, DC 20405 www.gsa.gov	(202) 708-5082
MIL	Military Standardization Documents (U.S. Department of Defense) Defense Automated Printing Service 700 Robbins Ave., Building 4D Philadelphia, PA 19111 www.dodssp.daps.mil	(215) 697-2179
NIST	National Institute of Standards and Technology (U.S. Department of Commerce) Building 101, #A1134, Rte. I-270 and Quince Orchard Rd. Gaithersburg, MD 20899 www.nist.gov	(301) 975-2000

OSHA	Occupational Safety and Health Administration (U.S. Department of Labor) 200 Constitution Ave., NW Washington, DC 20210 www.osha.gov	(202) 219-8148
PS	Product Standard of NBS (U.S. Department of Commerce) Government Printing Office Washington, DC 20402 For product standards, contact: Ms. Brenda Umberger CS & PS Specialist c/o NIST Gaithersburg, MD 20899 www.nist.gov	(202) 512-1800 (301) 975-4036
RUS	Rural Utilities Service (Formerly: Rural Electrification Administration) (U.S. Department of Agriculture) 14th St. and Independence Ave., SW Washington, DC 20250	(202) 692-0187
TRB	Transportation Research Board, National Research Council 2101 Constitution Ave., NW Washington, DC 20418 www.nas.edu/trb	(202) 334-2934
USDA	U.S. Department of Agriculture 14th St. and Independence Ave., SW Washington, DC 20250 www.usda.gov	(202) 720-8732
USPS	U.S. Postal Service 475 L'Enfant Plaza, SW Washington, DC 20260-0010 www.usps.gov	(202) 268-2000

H. State Government Agencies: The following state government agencies develop standards referenced in the Contract Documents:

California

CBHF	State of California, Department of Consumer Affairs Bureau of Home Furnishings and Thermal Insulation Technical Information 3485 Orange Grove Ave. North Highland, CA 95660-5595	(916) 574-2041 (800) 952-5210

Texas

TFS	Texas Forest Service Forest Products Laboratory Highway 59 S. P.O. Box 310 Lufkin, TX 75902-0310	(409) 639-8180

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01420

SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

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 requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities.

B. Temporary utilities include, but are not limited to, the following:

1. Sewers and drainage.
2. Water service and distribution.
3. Sanitary facilities, including toilets, wash facilities, and drinking-water facilities.
4. Heating and cooling facilities.
5. Ventilation.
6. Electric power service.
7. Lighting.
8. Telephone service.
9. **<Insert special temporary utility if required.>**

C. Support facilities include, but are not limited to, the following:

1. Temporary roads and paving.
2. Dewatering facilities and drains.
3. Project identification and temporary signs.
4. Waste disposal facilities.
5. Field offices.
6. Storage and fabrication sheds.
7. Lifts and hoists.
8. Temporary elevator usage.
9. Temporary stairs.
10. Construction aids and miscellaneous services and facilities.
11. **<Insert special temporary support facility if required.>**

D. Security and protection facilities include, but are not limited to, the following:

1. Environmental protection.
2. Stormwater control.
3. Tree and plant protection.
4. Pest control.
5. Site enclosure fence.
6. Security enclosure and lockup.

7. Barricades, warning signs, and lights.
8. Covered walkways.
9. Temporary enclosures.
10. Temporary partitions.
11. Fire protection.
12. **<Insert special temporary security and protection facility if required.>**

E. Related Sections include the following:

1. Division 1 Section "Summary of Multiple Contracts" for division of responsibilities for temporary facilities and controls.
2. Division 1 Section "Submittal Procedures" for procedures for submitting copies of implementation and termination schedule and utility reports.
3. Division 1 Section "Execution Requirements" for progress cleaning requirements.
4. Division 2 Section "Dewatering" for disposal of ground water at Project site.
5. Division 2 Section "Termite Control" for pest control.
6. Division 2 Section "Hot-Mix Asphalt Paving" for construction and maintenance of asphalt paving for temporary roads and paved areas.
7. Division 2 Section "Cement Concrete Pavement" for construction and maintenance of cement concrete pavement for temporary roads and paved areas.
8. Divisions 2 through 16 for temporary heat, ventilation, and humidity requirements for products in those Sections.

1.3 DEFINITIONS

A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.4 USE CHARGES

A. General: Cost or use charges for temporary facilities are not chargeable to Owner or Architect and shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the following:

1. Owner's construction forces.
2. Occupants of Project.
3. Architect.
4. Testing agencies.
5. Personnel of authorities having jurisdiction.

B. Sewer Service: Pay sewer service use charges for sewer usage, by all parties engaged in construction, at Project site.

C. Water Service: Use water from Owner's existing water system without metering and without payment of use charges.

D. Water Service: Pay water service use charges, whether metered or otherwise, for water used by all entities engaged in construction activities at Project site.

E. Electric Power Service: Use electric power from Owner's existing system without metering and without payment of use charges.

F. Electric Power Service: Pay electric power service use charges, whether metered or otherwise, for electricity used by all entities engaged in construction activities at Project site.

1.5 SUBMITTALS

A. Temporary Utility Reports: Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.

B. Implementation and Termination Schedule: Within 15 days of date established for submittal of Contractor's Construction Schedule, submit a schedule indicating implementation and termination of each temporary utility.

1.6 QUALITY ASSURANCE

A. Standards: Comply with ANSI A10.6, NECA's "Temporary Electrical Facilities," and NFPA 241.

1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with trade regulations and union jurisdictions.
2. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

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

1.7 PROJECT CONDITIONS

A. Temporary Utilities: At earliest feasible time, when acceptable to Owner, change over from use of temporary service to use of permanent service.

1. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

B. Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:

1. Keep temporary services and facilities clean and neat.
2. Relocate temporary services and facilities as required by progress of the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by Architect. Provide materials suitable for use intended.

B. Pavement: Comply with Division 2 **[Section "Hot-Mix Asphalt Paving."] [Section "Cement Concrete Pavement."] [pavement Sections.]**

C. Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.76-mm-) thick, galvanized steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts**[, with 1-5/8-inch- (42-mm-) OD top rails] [, with galvanized barbed-wire top strand]**.

D. Portable Chain-Link Fencing: Minimum 2-inch (50-mm) 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top and bottom rails. Provide **[concrete] [galvanized steel]** bases for supporting posts.

E. Wood Enclosure Fence: Plywood, **[6 feet (1.8 m)] [8 feet (2.4 m)]** high, framed with four 2-by-4-inch (50-by-100-mm) rails, with preservative-treated wood posts spaced not more than 8 feet (2.4 m) apart.

F. Lumber and Plywood: Comply with requirements in Division 6 Section "**[Rough Carpentry] [Miscellaneous Carpentry]**."

G. Roofing: Standard-weight, mineral-surfaced, asphalt shingles or asphalt-impregnated and -coated, mineral-surfaced, roll-roofing sheet.

H. Gypsum Board: Minimum 1/2 inch (12.7 mm) thick by 48 inches (1219 mm) wide by maximum available lengths; regular-type panels with tapered edges. Comply with ASTM C 36.

I. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indices of 25 and 50, respectively.

J. Paint: Comply with requirements in Division 9 Section "Painting."

K. Tarpaulins: Fire-resistive labeled with flame-spread rating of 15 or less.

L. Water: Potable.

2.2 EQUIPMENT

A. General: Provide equipment suitable for use intended.

B. Field Offices: **[Prefabricated] [Mobile units] [or] [Job-built construction]** with lockable entrances, operable windows, and serviceable finishes; heated and air conditioned; on foundations adequate for normal loading. **[Provide the following for job-built construction:]**

1. Exposed Lumber and Plywood: Paint with exterior-grade, acrylic-latex emulsion over exterior primer.
2. Interior Walls: Paint with two coats of interior latex-flat wall paint.
3. Roofs: Asphalt shingles or roll roofing.

C. Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA-recommended classes for exposures.

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

D. Self-Contained Toilet Units: Single-occupant units of chemical, aerated recirculation, or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

E. Drinking-Water Fixtures: **[Drinking-water fountains] [Containerized, tap-dispenser, bottled-water drinking-water units]**, including paper cup supply.

1. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg F (7.2 to 12.7 deg C).

F. Heating Equipment: Unless Owner authorizes use of permanent heating system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use for type of fuel being consumed.

G. Electrical Outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light.

H. Power Distribution System Circuits: Where permitted and overhead and exposed for surveillance, wiring circuits, not exceeding 125-V ac, 20-A rating, and lighting circuits may be nonmetallic sheathed cable.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve 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 appropriate local utility company to install temporary service or connect to existing service. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
2. Provide adequate capacity at each stage of construction. Before temporary utility is available, provide trucked-in services.
3. Obtain easements to bring temporary utilities to Project site where Owner's easements cannot be used for that purpose.

B. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds, and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off-site in a lawful manner.

1. Filter out excessive soil, construction debris, chemicals, oils, and similar contaminants that might clog sewers or pollute waterways before discharge.
2. Connect temporary sewers to **[municipal system]** **[private system indicated]** as directed by sewer department officials.
3. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. After heavy use, restore normal conditions promptly.
4. Provide temporary filter beds, settlement tanks, separators, and similar devices to purify effluent to levels acceptable to authorities having jurisdiction.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction until permanent water service is in use. Sterilize temporary water piping before use.

D. Water Service: Use of Owner's existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

1. Provide rubber hoses as necessary to serve Project site.
2. As soon as water is required at each level, extend service to form a temporary water- and fire-protection standpipe. Provide distribution piping. Space outlets so water can be reached with a 100-foot (30-m) hose. Provide one hose at each outlet.
3. Where installations below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans.
4. Provide pumps to supply a minimum of 30-psi (200-kPa) static pressure at highest point. Equip pumps with surge and storage tanks and automatic controls to supply water uniformly at reasonable pressures.

E. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.

1. Disposable Supplies: Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.
2. Toilets: Use of Owner's existing toilet facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use. **[Provide separate facilities for male and female personnel.]**
3. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. **[Provide separate facilities for male and female personnel.]**
4. Toilets: Install toilet facilities connected to local water and sewer lines. Provide lavatories, mirrors, urinals, and water closets. Provide only potable-water connections. Provide individual compartments for water closets. Provide suitable enclosure with nonabsorbent sanitary finish materials and adequate heat, ventilation, and lighting.
5. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel who handle materials that require wash up. Dispose of drainage properly. Supply cleaning compounds appropriate for each type of material handled.

    a. Provide safety showers, eyewash fountains, and similar facilities for convenience, safety, and sanitation of personnel.

6. Drinking-Water Fixtures: Install drinking-water fountains where indicated.
7. Drinking-Water Facilities: Provide bottled-water, drinking-water units.

    a. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg F (7.2 to 12.7 deg C).

8. Locate toilets and drinking-water fixtures so personnel need not walk more than two stories vertically [**or 200 feet (60 m) horizontally**] to facilities.

F. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed.

1. Maintain a minimum temperature of 50 deg F (10 deg C) in permanently enclosed portions of building for normal construction activities, and 65 deg F (18.3 deg C) for finishing activities and areas where finished Work has been installed.

G. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

H. 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 disconnecting means, automatic ground-fault interrupters, and main distribution switchgear.

1. Install electric power service underground, unless overhead service must be used.
2. Install power distribution wiring overhead and rise vertically where least exposed to damage.
3. Connect temporary service to Owner's existing power source, as directed by electric company officials.

I. Electric Power Service: Use of Owner's existing electric power service will be permitted, as long as equipment is maintained in a condition acceptable to Owner.

J. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment.

1. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
2. Provide warning signs at power outlets other than 110 to 120 V.
3. Provide metal conduit, tubing, or metallic cable for wiring exposed to possible damage. Provide rigid steel conduits for wiring exposed on grades, floors, decks, or other traffic areas.
4. Provide metal conduit enclosures or boxes for wiring devices.
5. Provide 4-gang outlets, spaced so 100-foot (30-m) extension cord can reach each area for power hand tools and task lighting. Provide a separate 125-V ac, 20-A circuit for each outlet.

K. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
2. Provide one 100-W incandescent lamp per 500 sq. ft. (45 sq. m), uniformly distributed, for general lighting, or equivalent illumination.
3. Provide one 100-W incandescent lamp every 50 feet (15 m) in traffic areas.
4. Provide one 100-W incandescent lamp per story in stairways and ladder runs, located to illuminate each landing and flight.

5. Install exterior-yard site lighting that will provide adequate illumination for construction operations, traffic conditions, and signage visibility when the Work is being performed.
6. Install lighting for Project identification sign.

L. Telephone Service: Provide temporary telephone service throughout construction period for common-use facilities used by all personnel engaged in construction activities. Install separate telephone line for each field office and first-aid station.

1. Provide additional telephone lines for the following:

   a. In field office with more than two occupants, install a telephone for each additional occupant or pair of occupants.
   b. Provide a dedicated telephone line for each facsimile machine and computer with modem in each field office.
   c. Provide a separate telephone line for Owner's use.
   d. Install a telephone on every second or third story of construction.

2. At each telephone, post a list of important telephone numbers.

   a. Police and fire departments.
   b. Ambulance service.
   c. Contractor's home office.
   d. Architect's office.
   e. Engineers' offices.
   f. Owner's office.
   g. Principal subcontractors' field and home offices.

3. Provide **[an answering machine] [voice-mail service] [messaging service]** on superintendent's telephone.
4. Furnish superintendent with **[electronic paging device] [portable two-way radio]** for use when away from field office.
5. Provide a portable cellular telephone for superintendent's use in making and receiving telephone calls when away from field office.
6. Install a coin-operated telephone station at a convenient grade-level location for convenience of personnel.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Locate field offices, storage sheds, sanitary facilities, and other temporary construction and support facilities for easy access.
2. Provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines. Comply with NFPA 241.
3. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate to support loads and to withstand exposure to traffic during construction period. Locate temporary roads and paved areas **[as indicated] [within construction limits indicated]** on Drawings.

1. Provide a reasonably level, graded, well-drained subgrade of satisfactory soil material, compacted to not less than 95 percent of maximum dry density in the top 6 inches (150 mm).

2. Provide gravel paving course of subbase material not less than 3 inches (75 mm) thick; roller compacted to a level, smooth, dense surface.
3. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

C. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate to support loads and to withstand exposure to traffic during construction period. Locate temporary roads and paved areas in same location as permanent roads and paved areas. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.

1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
2. Prepare subgrade and install subbase and base for temporary roads and paved areas according to Division 2 Section "Earthwork."
3. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting, and testing.
4. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course according to Division 2 Section "Hot-Mix Asphalt Paving."

D. Traffic Controls: Provide temporary traffic controls at junction of temporary roads with public roads. Include warning signs for public traffic and "STOP" signs for entrance onto public roads. Comply with requirements of authorities having jurisdiction.

E. Dewatering Facilities and Drains: Comply with requirements in applicable Division 2 Sections for temporary drainage and dewatering facilities and operations not directly associated with construction activities included in individual Sections. Where feasible, use same facilities. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining property nor endanger permanent Work or temporary facilities.
2. Before connection and operation of permanent drainage piping system, provide temporary drainage where roofing or similar waterproof deck construction is completed.
3. Remove snow and ice as required to minimize accumulations.

F. Project Identification and Temporary Signs: Prepare Project identification and other signs in sizes indicated. Install signs where indicated to inform public and persons seeking entrance to Project. Do not permit installation of unauthorized signs.

1. Engage an experienced sign painter to apply graphics for Project identification signs. Comply with details indicated.
2. Prepare temporary signs to provide directional information to construction personnel and visitors.
3. Construct signs of exterior-type Grade B-B high-density concrete form overlay plywood in sizes and thicknesses indicated. Support on posts or framing of preservative-treated wood or steel.
4. Paint sign panel and applied graphics with exterior-grade alkyd gloss enamel over exterior primer.

G. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements.

1. If required by authorities having jurisdiction, provide separate containers, clearly labeled, for each type of waste material to be deposited.
2. Develop a waste management plan for Work performed on Project. Indicate types of waste materials Project will produce and estimate quantities of each type. Provide detailed information

for on-site waste storage and separation of recyclable materials. Provide information on destination of each type of waste material and means to be used to dispose of all waste materials.

H. Janitorial Services: Provide janitorial services on a daily basis for temporary offices, first-aid stations, toilets, wash facilities, lunchrooms, and similar areas.

I. Common-Use Field Office: Provide an insulated, weathertight, air-conditioned field office for use as a common facility by all personnel engaged in construction activities; of sufficient size to accommodate required office personnel and meetings of **[10]** <**Insert number**> persons at Project site. Keep office clean and orderly.

1. Furnish and equip offices as follows:

   a. Desk and four chairs, four-drawer file cabinet, a plan table, a plan rack, and bookcase.
   b. Water cooler and private toilet complete with water closet, lavatory, and medicine cabinet with mirror.
   c. Coffee machine and supplies, including regular and decaffeinated coffee, filters, cups, stirring sticks, creamer, sugar, and sugar substitute.
   d. Provide a room of not less than 240 sq. ft. (22.5 sq. m) for Project meetings. Furnish room with conference table, 12 folding chairs, and 4-foot- (1.2-m-) square tack board.

2. Construct framing, sheathing, and siding using fire-retardant-treated lumber and plywood.
3. Paint exposed lumber and plywood with exterior-grade acrylic-latex emulsion over exterior primer. Paint interior walls with two coats of interior latex-flat wall paint.
4. Provide resilient floor covering and painted gypsum wallboard walls and acoustical ceiling. Provide operable windows with adjustable blinds and insect screens.
5. Provide an electric heater with thermostat capable of maintaining a uniform indoor temperature of 68 deg F (20 deg C). Provide an air-conditioning unit capable of maintaining an indoor temperature of 72 deg F (23 deg C).
6. Provide fluorescent light fixtures capable of maintaining average illumination of 20 fc (215 lx) at desk height. Provide 110- to 120-V duplex outlets spaced at not more than 12-foot (4-m) intervals, 1 per wall in each room.

J. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility services. Sheds may be open shelters or fully enclosed spaces within building or elsewhere on-site.

1. Construct framing, sheathing, and siding using fire-retardant-treated lumber and plywood.
2. Paint exposed lumber and plywood with exterior-grade acrylic-latex emulsion over exterior primer.

K. Lifts and Hoists: Provide facilities for hoisting materials and personnel. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

L. Temporary Elevator Usage: Refer to Division 14 Sections for temporary use of new elevators.

M. Existing Elevator Usage: Use of Owner's existing elevators will be permitted, as long as elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.

1. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return

items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.

N. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate. Cover finished, permanent stairs with protective covering of plywood or similar material so finishes will be undamaged at time of acceptance.

O. Existing Stair Usage: Use of Owner's existing stairs will be permitted, as long as stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.

1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If, despite such protection, stairs become damaged, restore damaged areas so no evidence remains of correction work.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near Project site. Follow local ordinances for noise and construction activity times.

B. Stormwater Control: Provide earthen embankments and similar barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of stormwater from heavy rains.

C. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from construction damage. Protect tree root systems from damage, flooding, and erosion.

D. Tree and Plant Protection: Comply with requirements in Division 2 Section "Tree Protection and Trimming."

E. 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. Engage this pest-control service to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.

F. Site Enclosure Fence: **[Before construction operations begin] [When excavation begins]**, install **[chain-link] [portable chain-link] [wood]** enclosure fence with lockable entrance gates. Locate where indicated, or enclose entire Project site or portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs, and other animals from easily entering site except by entrance gates.

1. Set fence posts in **[compacted mixture of gravel and earth] [in concrete bases]**.
2. Provide gates in sizes and at locations necessary to accommodate delivery vehicles and other construction operations.
3. Maintain security by limiting number of keys and restricting distribution to authorized personnel. **[Provide Owner with one set of keys.]**

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

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

1. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8-inch- (16-mm-) thick exterior plywood.

I. Covered Walkway: Erect a structurally adequate, protective, covered walkway for passage of persons along adjacent public street. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction.

1. Construct covered walkways using scaffold or shoring framing.
2. Provide wood-plank overhead decking, protective plywood enclosure walls, handrails, barricades, warning signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
3. Extend back wall beyond the structure to complete enclosure fence.
4. Paint and maintain in a manner approved by Owner and Architect.
5. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8-inch- (16-mm-) thick exterior plywood.

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

1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
2. Vertical Openings: Close openings of 25 sq. ft. (2.3 sq. m) or less with plywood or similar materials.
3. Horizontal Openings: Close openings in floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
4. Install tarpaulins securely using fire-retardant-treated wood framing and other materials.
5. Where temporary wood or plywood enclosure exceeds 100 sq. ft. (9.2 sq. m) in area, use fire-retardant-treated material for framing and main sheathing.

K. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.

1. Construct dustproof partitions of not less than nominal 4-inch (100-mm) studs, 5/8-inch (16-mm) gypsum wallboard with joints taped on occupied side, and 1/2-inch (13-mm) fire-retardant plywood on construction side.
2. Construct dustproof, floor-to-ceiling partitions of not less than nominal 4-inch (100-mm) studs, 2 layers of 3-mil (0.07-mm) polyethylene sheets, inside and outside temporary enclosure. Cover floor with 2 layers of 3-mil (0.07-mm) polyethylene sheets, extending sheets 18 inches (460 mm) up the side walls. Overlap and tape full length of joints. Cover floor with 3/4-inch (19-mm) fire-retardant plywood.

a. Construct a vestibule and airlock at each entrance to temporary enclosure with not less than 48 inches (1219 mm) between doors. Maintain water-dampened foot mats in vestibule.

3. Insulate partitions to provide noise protection to occupied areas.
4. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
5. Protect air-handling equipment.
6. Weatherstrip openings.

L. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.

1. Provide fire extinguishers, installed on walls on mounting brackets, visible and accessible from space being served, with sign mounted above.

   a. Field Offices: Class A stored-pressure water-type extinguishers.
   b. Other Locations: Class ABC dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for exposures.
   c. Locate fire extinguishers where convenient and effective for their intended purpose; provide not less than one extinguisher on each floor at or near each usable stairwell.

2. Store combustible materials in containers in fire-safe locations.
3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for firefighting. Prohibit smoking in hazardous fire-exposure areas.
4. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition. In occupied facilities the security department must be notified prior to any open - flame device being used.
5. Permanent Fire Protection: At earliest feasible date in each area of Project, complete installation of permanent fire-protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.
6. Develop and supervise an overall fire-prevention and first-aid fire-protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
7. Provide hoses for fire protection of sufficient length to reach construction areas. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.
8. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 OPERATION, TERMINATION, AND REMOVAL

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

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

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
2. Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

C. Operate Project-identification-sign lighting daily from dusk until 12:00 midnight.

D. Temporary Facility Changeover: Except for using permanent fire protection as soon as available, do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

E. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been 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 temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are the property of Contractor. Owner reserves right to take possession of Project identification signs.
2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
3. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements in Division 1 Section "Closeout Procedures."

END OF SECTION 01500

SECTION 01500_a Minimum signage at all construction area doors.

All signage shall be minimum 3 color, shall be commercial grade heavy-duty plastic and 14" wide by 10" tall.

Any additional signage required by OSHA shall also be posted.

SECTION 01600 - PRODUCT REQUIREMENTS

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 the following administrative and procedural requirements: selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.

B. Related Sections include the following:
1. Division 1 Section "Alternates" for products selected under an alternate.
2. Division 1 Section "References" for applicable industry standards for products specified.
3. Division 1 Section "Closeout Procedures" for submitting warranties for contract closeout.

1.3 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation, shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility[, **except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise**]. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Revisions to the contract documents, where requested by the Owner or Architect are considered as "changes" not substitutions.
2. Substitutions requested during the bidding period, which have been accepted prior to the Contract Date, are included in the contract documents and are not subject to the requirements for substitutions as herein specified.
3. Specified Contractor options on products and construction methods included in the contract documents are choices available to the Contractor and are not subject to the requirements for substitutions as herein specified.

4. Except as otherwise provided in the contract documents, the Contractor's determination of and compliance with governing regulations and orders as issued by governing authorities do not constitute "substitutions" and do not constitute a basis for change orders.

C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

D. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

E. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

1.4 SUBMITTALS

A. Product List: Submit a list, in tabular from, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.

1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
2. Form: Tabulate information for each product under the following column headings:

   a. Specification Section number and title.
   b. Generic name used in the Contract Documents.
   c. Proprietary name, model number, and similar designations.
   d. Manufacturer's name and address.
   e. Supplier's name and address.
   f. Installer's name and address.
   g. Projected delivery date or time span of delivery period.
   h. Identification of items that require early submittal approval for scheduled delivery date.

3. Initial Submittal: Within **[10]** days after date of commencement of the Work, submit **[4]** copies of initial product list. Include a written explanation for omissions of data and for variations from Contract requirements.

4. Completed List: Within **[20]** days after date of commencement of the Work, submit [**4**] copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.
5. Architect's Action: Architect will respond in writing to Contractor within [**10**] days of receipt of completed product list. Architect's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement that products comply with the Contract Documents.

B. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use **[CSI Form 13.1A] [form provided at end of Section]**.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

   a. Statement indicating why specified material or product cannot be provided.

b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
j. Cost information, including a proposal of change, if any, in the Contract Sum.
k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a request for substitution. Architect will notify Contractor **[through Construction Manager]** of acceptance or rejection of proposed substitution within **10** days of receipt of request, or **7** days of receipt of additional information or documentation, whichever is later.

   a. Form of Acceptance: Change Order.

C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

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

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

1. Schedule delivery to minimize long-term storage at Project 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 Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
5. Store products to allow for inspection and measurement of quantity or counting of units.
6. Store materials in a manner that will not endanger Project structure.
7. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
8. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
9. Protect stored products from damage.

B. Storage: Provide a secure location and enclosure at Project site for storage of materials and equipment

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.

C. Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT OPTIONS

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

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.

7. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures: Procedures for product selection include the following:

1. Product: Where Specification paragraphs or subparagraphs titled "Product" name a single product and manufacturer, provide the product named.

   a. Substitutions may be considered**[, unless otherwise indicated]**.

2. Manufacturer/Source: Where Specification paragraphs or subparagraphs titled "Manufacturer" or "Source" name single manufacturers or sources, provide a product by the manufacturer or from the source named that complies with requirements.

   a. Substitutions may be considered**[, unless otherwise indicated]**.

3. Products: Where Specification paragraphs or subparagraphs titled "Products" introduce a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.

   a. Substitutions may be considered**[, unless otherwise indicated]**.

4. Manufacturers: Where Specification paragraphs or subparagraphs titled "Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.

   a. Substitutions may be considered**[, unless otherwise indicated]**.

5. Available Products: Where Specification paragraphs or subparagraphs titled "Available Products" introduce a list of names of both products and manufacturers, provide one of the products listed or another product that complies with requirements. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.

6. Available Manufacturers: Where Specification paragraphs or subparagraphs titled "Available Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed or another manufacturer that complies with requirements. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.

7. Product Options: Where Specification paragraphs titled "Product Options" indicate that size, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide either the specific product or system indicated or a comparable product or system by another manufacturer. Comply with provisions in "Product Substitutions" Article.

8. Basis-of-Design Products: Where Specification paragraphs or subparagraphs titled "Basis-of-Design Product**[s]**" are included and also introduce or refer to a list of manufacturers' names, provide either the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.

   a. Substitutions [**may**]] be considered**[, unless otherwise indicated]**.

9. Visual Matching Specification: Where Specifications require matching an established Sample, select a product (and manufacturer) that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches satisfactorily.

    a. If no product available within specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents on "substitutions" for selection of a matching product.

10. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product (and manufacturer) that complies with other specified requirements.

    a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer's product line that does not include premium items.
    b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer's product line that includes both standard and premium items.

11. Allowances: Refer to individual Specification Sections and "Allowance" provisions in Division 1 for allowances that control product selection and for procedures required for processing such selections.

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

1. Labels: Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface which, in occupied spaces, is not conspicuous.
2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate the nameplate on an easily accessible surface which is inconspicuous in occupied spaces. The nameplate shall contain essential operating data.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: Architect will consider requests for substitution if received within **[10]** days after **[the Notice to Proceed]**. Requests received after that time may be considered or rejected at discretion of Architect.

B. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
2. Requested substitution does not require extensive revisions to the Contract Documents.
3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
4. Substitution request is fully documented and properly submitted.

5. Requested substitution will not adversely affect Contractor's Construction Schedule.
6. Requested substitution has received necessary approvals of authorities having jurisdiction.
7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated with other portions of the Work.
9. Requested substitution provides specified warranty.
10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

2.3 COMPARABLE PRODUCTS

A. Where products or manufacturers are specified by name, submit the following, in addition to other required submittals, to obtain approval of an unnamed product:

1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01600

Advancement of Construction Technology

SUBSTITUTION REQUEST

(After the Bidding Phase)

Project: _____ Substitution Request Number: _____

_____ From: _____

To: _____ Date: _____

_____ A/E Project Number: _____

Re: _____ Contract For: _____

Specification Title: _____ Description: _____

Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____

Manufacturer: _____ Address: _____ Phone: _____

Trade Name: _____ Model No.: _____

Installer: _____ Address: _____ Phone: _____

History: ☐ New product ☐ 2-5 years old ☐ 5-10 yrs old ☐ More than 10 years old

Differences between proposed substitution and specified product: _____

_____

_____

☐ Point-by-point comparative data attached - REQUIRED BY A/E

Reason for not providing specified item: _____

_____

Similar Installation:

Project: _____ Architect: _____

Address: _____ Owner: _____

_____ Date Installed: _____

Proposed substitution affects other parts of Work: ☐ No ☐ Yes; explain _____

_____

Savings to Owner for accepting substitution: _____ ($ _____).

Proposed substitution changes Contract Time: ☐ No ☐ Yes [Add] [Deduct] _____ days.

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

SUBSTITUTION REQUEST
(Continued)

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

_____

Telephone: _____

Attachments: _____

A/E's REVIEW AND ACTION

☐ Substitution approved - Make submittals in accordance with Specification Section 01330.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: Date:

Additional Comments: ☐ Contractor ☐ Subcontractor ☐ Supplier ☐ Manufacturer ☐ A/E ☐ _____

SECTION 01700 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. General installation of products.
4. Coordination of Owner-installed products.
5. Progress cleaning.
6. Starting and adjusting.
7. Protection of installed construction.
8. Correction of the Work.

B. Related Sections include the following:

1. Division 1 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
2. Division 1 Section "Submittal Procedures" for submitting surveys.
3. Division 1 Section "Cutting and Patching" for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.
4. Division 1 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.3 SUBMITTALS

A. Qualification Data: For **[land surveyor]** **[professional engineer]** to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

B. Certificates: Submit certificate signed by **[land surveyor]** **[professional engineer]** certifying that location and elevation of improvements comply with requirements.

C. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

D. Certified Surveys: Submit **[two]** **<Insert number>** copies signed by **[land surveyor]** **[professional engineer]**.

E. Final Property Survey: Submit [**10**] <**Insert number**> copies showing the Work performed and record survey data.

1.4 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

B. General: Develop and maintain procedures to ensure that entities performing work at site are skilled and knowledgeable in methods and craftsmanship needed to produce required quality-levels for workmanship in completed work. Remove and replace work which does not comply with workmanship standards as specified and as recognized in the construction industry for applications indicated. Remove and replace other work damaged or deteriorated by faulty workmanship or its replacement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.

1. Before construction, verify the location and points of connection of utility services.

B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations. Reject damaged and defective items.

1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

a. Description of the Work.

b. List of detrimental conditions, including substrates.
c. List of unacceptable installation tolerances.
d. Recommended corrections.

2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to **[local utility]** **[Owner]** that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify **[Architect]** **[Construction Manager]** **[Owner]** not less than **[two]** **<Insert number>** days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without **[Architect's]** **[Construction Manager's]** **[Owner's]** written permission.

C. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

E. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. **[Submit requests on CSI Form 13.2A, "Request for Interpretation."]**

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect **[and Construction Manager]** promptly.

B. General: Engage a **[land surveyor]** **[professional engineer]** to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
3. Inform installers of lines and levels to which they must comply.
4. Check the location, level and plumb, of every major element as the Work progresses.
5. Notify Architect [**and Construction Manager**] when deviations from required lines and levels exceed allowable tolerances.
6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect [**and Construction Manager**].

3.4 FIELD ENGINEERING

A. Identification: Owner will identify existing benchmarks, control points, and property corners.

B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect [**or Construction Manager**]. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect [**and Construction Manager**] before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

C. Benchmarks: Establish and maintain a minimum of [**two**] <**Insert number**> permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

E. Final Property Survey: Prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by **[land surveyor]** **[professional engineer]**, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.

1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
4. Maintain minimum headroom clearance of **[8 feet (2.4 m)]** **<Insert dimension>** in spaces without a suspended ceiling.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion. Isolate each unit of work from incompatible work as necessary to prevent deterioration.

D. Recheck measurements and dimensions of the work, as an integral step of starting each installation.

E. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

F. Coordinate enclosure of the work with required inspections and tests, so as to minimize the necessity of uncovering work for that purpose. Apply protective finish to items before concealment. Paint aluminum, built into masonry or buried, with one coat bituminous paint. Paint other concealed materials with same finish specified for exposed surfaces. Concealed corrosion-protected materials need not be painted unless so specified.

G. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

H. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work. Installed items shall be able to withstand 150% of maximum anticipated load, as estimated by the Architect.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect. Refer questionable mounting height choices to the Architect/Engineer for final decision.
2. Allow for building movement, including thermal expansion and contraction.
3. Provide galvanic insulation between dissimilar metals.
4. All fasteners used by all trades on the exterior or where exposed to dampness shall be corrosion resistant. Exposed fasteners used for finished metals shall match adjacent metals in finish. Exposed fasteners used for other materials shall have hardware finish specified in FINISH HARDWARE section. Nails used for exterior siding and trim, whether set and puttied or not, shall be stainless steel. Concealed and painted fasteners for wood and ferrous metal shall be galvanized or zinc plated
5.

I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints. Make joints tight to the extent provided in the design or per industry standards. If such is impossible, and if directed by the Architect, apply moldings, sealant, or other closure.

J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

K. Provide adequate blocking, bracing, nailers and fastenings. Install items securely.

3.6 OWNER-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for Owner's construction forces.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction forces.

1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
2. Preinstallation Conferences: Include Owner's construction forces at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction forces if portions of the Work depend on Owner's construction.

3.7 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F (27 deg C).
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

1. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

H. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

I. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

J. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

K. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."

3.9 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.10 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 1 Section "Cutting and Patching."

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01700

Advancement of Construction Technology

REQUEST FOR INTERPRETATION

Project: _____ R.F.I. Number: _____

_____ From: _____

To: _____ Date: _____

_____ A/E Project Number: _____

Re: _____ Contract For: _____

Specification Section: Paragraph: Drawing Reference: Detail:

Request:

Signed by: Date:

Response:

☐ Attachments

Response From: To: Date Rec'd: Date Ret'd:

Signed by: Date:

Copies: ☐ Owner ☐ Consultants ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ File

SECTION 01731 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

B. Related Sections include the following:

1. Division 1 Section "Selective Demolition" for demolition of selected portions of the building for alterations.
2. Division 7 Section "Through-Penetration Firestop Systems" for patching fire-rated construction.
3. Divisions 2 through 16 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

    a. Requirements in this Section apply to mechanical and electrical installations. Refer to Divisions 15 and 16 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.3 DEFINITIONS

A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 SUBMITTALS

A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:

1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
2. Changes to Existing Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
3. Products: List products to be used and firms or entities that will perform the Work.

4. Dates: Indicate when cutting and patching will be performed.
5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.
6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
7. [**Architect's**] [**Construction Manager's**] Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.5 QUALITY ASSURANCE

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

1. **<Insert list of elements that might otherwise be overlooked as structural elements and that require Architect's or Construction Manager's approval of a cutting and patching proposal.>**

B. Operational Elements: Do not cut and patch [**the following**] operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

1. Primary operational systems and equipment.
2. Air or smoke barriers.
3. Fire-protection systems.
4. Control systems.
5. Communication systems.
6. Conveying systems.
7. Electrical wiring systems.
8. Operating systems of special construction in Division 13 Sections.
9. **<Insert other operating system.>**

C. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Exterior curtain-wall construction.
4. Equipment supports.
5. Piping, ductwork, vessels, and equipment.
6. Noise- and vibration-control elements and systems.
7. **<Insert other miscellaneous element.>**

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's

aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

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

    a. Processed concrete finishes.
    b. Stonework and stone masonry.
    c. Ornamental metal.
    d. Matched-veneer woodwork.
    e. Preformed metal panels.
    f. Roofing.
    g. Firestopping.
    h. Window wall system.
    i. Stucco and ornamental plaster.
    j. Terrazzo.
    k. Finished wood flooring.
    l. Fluid-applied flooring.
    m. Aggregate wall coating.
    n. Wall covering.
    o. HVAC enclosures, cabinets, or covers.
    p. **<Insert other type of exposed construction.>**

E. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

F. Prevent movement or settlement of adjacent elements of construction. Provide and place bracing or shoring and be responsible for safety and support of structure. Be liable for any such movement or settlement and any damage or injury caused.

1.6 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections of these Specifications.

B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

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 Project that might be exposed during cutting and patching operations.

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

D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to **[minimize]** [**avoid**] interruption of services to occupied areas.

3.3 PERFORMANCE

A. General: Employ skilled workers 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, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and 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. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. **[Concrete]** [**Masonry**]: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
2. Exposed Finishes: 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. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, 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 painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

D. Cease operations and notify the Architect immediately, if safety of structure appears to be endangered. Take all precautions to properly support structure. Do not resume operations until permission is granted by the Architect and authorities having jurisdiction.

END OF SECTION 01731

SECTION 01732 - SELECTIVE DEMOLITION

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 the following:

1. Demolition and removal of selected portions of a building or structure.
2. Demolition and removal of selected site elements.
3. Repair procedures for selective demolition operations.

B. Related Sections include the following:

1. Division 1 Section "Summary" for use of the premises and phasing requirements.
2. Division 1 Section "Work Restrictions" for restrictions on use of the premises due to Owner or tenant occupancy.
3. Division 1 Section "Construction Progress Documentation" for preconstruction photographs taken before selective demolition.
4. Division 1 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.
5. Division 1 Section "Cutting and Patching" for cutting and patching procedures for selective demolition operations.
6. Division 1 Section "Dust Control Measures" for dust control measures in adjacent owner occupied areas.
7. Division 2 Section "Building Demolition" for demolition of entire buildings, structures, and site improvements.
8. Division 2 Section "Site Clearing" for site clearing and removal of above- and below-grade improvements.
9. Division 15 Sections for demolishing, cutting, patching, or relocating mechanical items.
10. Division 16 Sections for demolishing, cutting, patching, or relocating electrical items.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner **[ready for reuse]**.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

B. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.

1. Coordinate with Owner's **[archaeologist]** [**historical adviser**], who will establish special procedures for removal and salvage.

1.5 SUBMITTALS

A. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

B. Proposed **[Dust-Control]** [**and**] [**Noise-Control**] Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.

C. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's **[building manager's]** [**and**] [**other tenants'**] on-site operations are uninterrupted.
2. Interruption of utility services.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of elevator and stairs.
5. Locations of temporary partitions and means of egress**[, including for other tenants affected by selective demolition operations]**.
6. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

D. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.

E. Predemolition Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.

F. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.6 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Professional Engineer Qualifications: Comply with Division 1 Section "Quality Requirements."

C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Standards: Comply with ANSI A10.6 and NFPA 241.

E. Predemolition Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

F. Predemolition Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to selective demolition including, but not limited to, the following:

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

1.7 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted. Provide not less than [**5**] <**Insert number**> days notice to Owner of activities that will affect Owner's operations.

B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

1. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.

C. Owner assumes no responsibility for condition of areas to be selectively demolished.

1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
2. Before selective demolition, Owner will remove the following items:

a. **<Insert items to be removed by Owner.>**

D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. Hazardous materials will be removed by Owner before start of the Work.
2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

E. Hazardous Materials: Hazardous materials are present in building to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.

1. Hazardous material remediation is specified elsewhere in the Contract Documents.
2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.

F. Storage or sale of removed items or materials on-site will not be permitted.

G. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

1.8 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

1. If possible, retain original Installer or fabricator to patch the exposed Work listed below that is damaged during selective demolition. If it is impossible to engage original Installer or fabricator, engage another recognized experienced and specialized firm.

a. Processed concrete finishes.
b. Stonework and stone masonry.
c. Ornamental metal.
d. Matched-veneer woodwork.
e. Preformed metal panels.
f. Roofing.
g. Firestopping.
h. Window wall system.
i. Stucco and ornamental plaster.
j. Terrazzo.
k. Finished wood flooring.
l. Fluid-applied flooring.
m. Aggregate wall coating.
n. Wall covering.
o. Swimming pool finishes.
p. HVAC enclosures, cabinets, or covers.
q. **<Insert other type of exposed construction.>**

PART 2 - PRODUCTS

2.1 REPAIR MATERIALS

A. Use repair materials identical to existing materials.

1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
2. Use materials whose installed performance equals or surpasses that of existing materials.

B. Comply with material and installation requirements specified in individual Specification Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

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

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

E. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.

F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES

A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.

B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction.

1. Provide at least [**72**] <**Insert number**> hours' notice to Owner if shutdown of service is required during changeover.

C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.

1. **[Owner] [Building manager]** will arrange to shut off indicated utilities when requested by Contractor.
2. Arrange to shut off indicated utilities with utility companies.
3. If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.
4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

D. Utility Requirements: Refer to Division 15 and 16 Sections for shutting off, disconnecting, removing, and sealing or capping utilities. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 PREPARATION

A. Dangerous Materials: Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.

B. Pest Control: Employ a certified, licensed exterminator to treat building and to control rodents and vermin before and during selective demolition operations.

C. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
3. Protect existing site improvements, appurtenances, and landscaping to remain.
4. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.

D. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
4. Cover and protect furniture, furnishings, and equipment that have not been removed.

E. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.

F. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.

G. Temporary Shoring: Provide and maintain **[interior] [and] [exterior]** shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

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

3.4 POLLUTION CONTROLS

A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.

1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
2. Wet mop floors to eliminate trackable dirt and wipe down walls and doors of demolition enclosure. Vacuum carpeted areas.

B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.5 SELECTIVE DEMOLITION

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.

2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain [**fire watch and**] portable fire-suppression devices during flame-cutting operations.
5. Maintain adequate ventilation when using cutting torches.
6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
9. Dispose of demolished items and materials promptly.
10. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.

B. Existing Facilities: Comply with building manager's requirements for using and protecting elevators, stairs, walkways, loading docks, building entries, and other building facilities during selective demolition operations.

C. Removed and Salvaged Items: Comply with the following:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area [**on-site**] [**off-site**] [**designated by Owner**] [**indicated on Drawings**].
5. Protect items from damage during transport and storage.

D. Removed and Reinstalled Items: Comply with the following:

1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition [**and cleaned**] and reinstalled in their original locations after selective demolition operations are complete.

F. Concrete: Demolish in small sections. Cut concrete to a depth of at least 3/4 inch (19 mm) at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated.

G. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals, using power-driven saw, then remove concrete between saw cuts.

H. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

I. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.

J. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI-WP and its Addendum.

1. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.

K. Roofing: Remove no more existing roofing than can be covered in one day by new roofing. Refer to applicable Division 7 Section for new roofing requirements.

L. Air-Conditioning Equipment: Remove equipment without releasing refrigerants.

3.6 PATCHING AND REPAIRS

A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.

B. Patching: Comply with Division 1 Section "Cutting and Patching."

C. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.

1. Completely fill holes and depressions in existing masonry walls that are to remain with an approved masonry patching material applied according to manufacturer's written recommendations.

D. Finishes: Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

E. Floors and Walls: Where walls or partitions that are demolished extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

1. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.

2. Where patching occurs in a painted surface, apply primer and intermediate paint coats over patch and apply final paint coat over entire unbroken surface containing patch. Provide additional coats until patch blends with adjacent surfaces.
3. Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

F. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

D. The Owner has right of first refusal for all salvageable items removed from the project, including but not limited to light fixtures, plumbing fixtures, doors, windows, equipment, artifacts, copper and other metals and the like.

3.8 SELECTIVE DEMOLITION SCHEDULE

A. Existing [**Items**] [**Construction**] to Be Removed as shown on the drawings, but not limited to: **<Insert description of items and construction to be removed.>**

B. Existing Items to Be Removed and Salvaged as shown on the drawings, but not limited to: **<Insert description of items to be removed and salvaged.>**

C. Existing Items to Be Removed and Reinstalled as shown on the drawings, but not limited to:
1. Doors.
2. Signs.
3. Mirrors.
4. Tackboards.
5. Chalkboards.
6. Handrails.
7. Fire Extingushers.
8. X-ray View Boxes.
9. I.V. Tracks/Trees.
10. T.V. Brackets.

END OF SECTION 01732

SECTION 01733 ALTERATIONS, GENERAL

1. GENERAL

1.01 GENERAL CONDITIONS: The General Conditions, Supplementary General Conditions and all Sections of Division 1 shall apply to each and every contract and contractor, person or persons supplying material, labor or entering into the work directly or indirectly.

1.02 DESCRIPTION:

A. The work covered by all sections of specifications shall conform to the conditions of this Section.

B. The phrase "match existing" shall mean the following: Where Contract Documents call for exact matching, match existing work exactly in quality and appearance. When Contract Documents do not call for exact matching, match existing work as nearly as possible, using normally available materials and workmanship. If normally available materials and workmanship do not approximate existing work notify Architect. If in the Architect's judgment it is impossible to approximate existing work with normally available materials and workmanship, the Architect may issue suitable Change Orders. Changes imposing extra costs to the Contractor will not be ordered without the Contractor's approval. Existing structures and materials are indicated "existing".

C. In general, structures and materials which are not indicated existing are included in the work.

2. PRODUCTS

2.01 GENERAL

A. Materials used to replace, patch or repair existing exposed work shall match or be compatible with existing adjacent finished surfaces.

B. Materials used for such replacement, patching and repairing shall be as specified in the applicable section of this specification and/or as indicated on the drawings, or as approved by the Architect.

3. EXECUTION

3.01 TEMPORARY PARTITIONS Construct necessary temporary dust proof partitions to isolate construction work from adjacent areas and remove partitions when work in area is completed.

3.02 CUTTING AND PATCHING

A. Contractor shall do all demolition, cutting, altering, removing, replacing and patching as necessary for the performance of the contract. Unless otherwise provided by the drawings or specifications, no structural members shall be cut or altered without authorization of the Architect.

B. Where any alteration or new work is indicated it will be required that the contractor perform all necessary cutting, patching, altering and rebuilding necessary to produce a complete, finished and operational element.

C. Work remaining in place which is damaged or defaced by reason of work done under this contract shall be restored equal to its condition at the time of the award of the contract.

D. Where existing work is removed, exposed surfaces shall be finished to match adjacent surfaces.

E. All disturbed plaster areas and all holes, cracks and loose plaster shall be patched to provide a smooth uniform and sound wall, matching existing surfaces. Plaster around the openings in existing walls shall be cut back to firm bond and patched to match surrounding area. Materials for patching shall be similar to adjacent materials. Bonding agents shall be used as required to produce positive bond.

F. Contractor shall provide all necessary shoring and temporary supports required for proper support of existing and new work during execution of the contract and shall remove same when support is no longer required.

3.03 COOPERATION: The Owner shall have the right, at any time during the construction of the structure, to enter the same for the purpose of installing any necessary work, or for any other purpose in connection with the installation of facilities, it being mutually understood and agreed, however, that the Contractor and the Owner will labor to mutual advantage where their several works in the above mentioned or unforeseen instances touch upon or interfere with each other.

3.04 SALVAGE All materials which are removed will become the property of the Contractor and shall be removed from the premises, unless indicated otherwise on the drawings or in these specifications.

END OF SECTION

SECTION 01770 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Project Record Documents.
3. Operation and maintenance manuals.
4. Warranties.
5. Instruction of Owner's personnel.
6. Final cleaning.

B. Related Sections include the following:

1. Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
2. Division 1 Section "Construction Progress Documentation" for submitting Final Completion construction photographs and negatives.
3. Division 1 Section "Execution Requirements" for progress cleaning of Project site.
4. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
5. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
6. Division 1 Section "Demonstration and Training" for requirements for instruction of Owner's personnel.
7. Divisions 2 through 16 Sections for specific closeout and special cleaning requirements for products of those Sections.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs [**and photographic negatives**], damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
8. Complete startup testing of systems.
9. Submit test/adjust/balance records.
10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
11. Advise Owner of changeover in heat and other utilities.
12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect [**and Construction Manager**] will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.[**needed?**]
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. [**Submit demonstration and training videotapes.**]

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect [**and Construction Manager**] will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit [**three**] <**Insert number**> copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. [**Use CSI Form 14.1A.**]

1. Organize list of spaces in sequential order, [**starting with exterior areas first**] [**and**] [**proceeding from lowest floor to highest floor**].
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:

   a. Project name.
   b. Date.
   c. Name of Architect [**and Construction Manager**].
   d. Name of Contractor.
   e. Page number.

1.6 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Partial Occupancy: Submit properly executed warranties within [**15**] <**Insert number**> days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (115-by-280-mm) paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark 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 Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

   a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
   b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
   c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
   d. Remove tools, construction equipment, machinery, and surplus material from Project site.
   e. Remove snow and ice to provide safe access to building.
   f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
   g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
   h. Sweep concrete floors broom clean in unoccupied spaces.
   i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.

j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

k. Remove labels that are not permanent.

l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

m. Wipe surfaces of mechanical and electrical equipment, [**elevator equipment,**] and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

n. Replace parts subject to unusual operating conditions.

o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

q. Clean ducts, blowers, and coils if units were operated without filters during construction.

r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

s. Leave Project clean and ready for occupancy.

C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.<**new construction only**>

D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01770

Advancement
of Construction
Technology

PUNCH LIST

Project: _____

_____

To (Contractor): _____

_____

From (A/E): _____

Site Visit Date: _____

A/E Project Number: _____

Contract For: _____

The following items require the attention of the Contractor for completion or correction. This list may not be all-inclusive, and the failure to include any items on this list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

Item Number	Room Number	Location (Area)	Description	Correction/Completion Date	Verification A/E Check

☐ Attachments

Signed by: Date:

Copies: ☐ Owner ☐ Consultants ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ File

SECTION 01781 - PROJECT RECORD DOCUMENTS

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 Project Record Documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.

B. Related Sections include the following:

1. Division 1 Section "Summary of Multiple Contracts" for coordinating Project Record Documents covering the Work of multiple contracts.
2. Division 1 Section "Closeout Procedures" for general closeout procedures **[and maintenance manual requirements]**.
3. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
4. Divisions 2 through 16 Sections for specific requirements for Project Record Documents of products in those Sections.

1.3 SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit **[one]** **<Insert number>** set**[s]** of marked-up Record Prints.
2. Number of Copies: Submit copies of Record Drawings as follows:

   a. Initial Submittal: Submit **[one]** **<Insert number>** set**[s]** of **[corrected Record Transparencies]** **[plots from corrected Record CAD Drawings]** and **[one]** **<Insert number>** set**[s]** of marked-up Record Prints. Architect will initial and date each **[transparency]** **[plot]** and mark whether general scope of changes, additional information recorded, and quality of drafting are acceptable. Architect will return **[transparencies]** **[plots]** and prints for organizing into sets, printing, binding, and final submittal.
   b. Final Submittal: Submit **[one]** **<Insert number>** set**[s]** of marked-up Record Prints, **[one]** **<Insert number>** set**[s]** of record transparencies, and **[three]** **<Insert number>** copies printed from Record Transparencies. Print each Drawing, whether or not changes and additional information were recorded.
   c. Final Submittal: Submit **[one]** **<Insert number>** set**[s]** of marked-up Record Prints, **[one]** **<Insert number>** set**[s]** of Record CAD Drawing files, **[one]** **<Insert number>** set**[s]** of Record CAD Drawing plots, and **[three]** **<Insert number>** copies printed from record plots.

Plot and print each Drawing, whether or not changes and additional information were recorded.

1) Electronic Media: **CD-ROM**.

B. Record Specifications: Submit **[one copy]** **<Insert number>** **[copies]** of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit **[one copy]** **<Insert number>** **[copies]** of each Product Data submittal.

1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in the manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
b. Accurately record information in an understandable drawing technique.
c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Content: Types of items requiring marking include, but are not limited to, the following:

a. Dimensional changes to Drawings.
b. Revisions to details shown on Drawings.
c. Depths of foundations below first floor.
d. Locations and depths of underground utilities.
e. Revisions to routing of piping and conduits.
f. Revisions to electrical circuitry.
g. Actual equipment locations.
h. Duct size and routing.
i. Locations of concealed internal utilities.
j. Changes made by Change Order or Construction Change Directive.
k. Changes made following Architect's written orders.
l. Details not on the original Contract Drawings.
m. Field records for variable and concealed conditions.
n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.

4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Transparencies: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Architect **[and Construction Manager]**. When authorized, prepare a full set of corrected transparencies of the Contract Drawings and Shop Drawings.

1. Incorporate changes and additional information previously marked on Record Prints. Erase, redraw, and add details and notations where applicable.
2. Refer instances of uncertainty to Architect **[through Construction Manager]** for resolution.
3. Owner will furnish Contractor one set of transparencies of the Contract Drawings for use in recording information.
4. Print the Contract Drawings and Shop Drawings for use as Record Transparencies. Architect will make the Contract Drawings available to Contractor's print shop.

C. Record CAD Drawings: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Architect **[and Construction Manager]**. When authorized, prepare a full set of corrected CAD Drawings of the Contract Drawings, as follows:

1. Format: Same CAD program, version, and operating system as the original Contract Drawings.
2. Format: **[DWG] [DXF]**, Version **<Insert designation>**, operating in **[Windows 3.x] [Windows 95] [Windows 98] [Windows NT] [Macintosh OS7.x] [Macintosh OS8.x]** operating system.
3. Incorporate changes and additional information previously marked on Record Prints. Delete, redraw, and add details and notations where applicable.
4. Refer instances of uncertainty to Architect **[through Construction Manager]** for resolution.
5. Architect will furnish Contractor one set of CAD Drawings of the Contract Drawings for use in recording information.

    a. Architect makes no representations as to the accuracy or completeness of CAD Drawings as they relate to the Contract Drawings.
    b. CAD Software Program: The Contract Drawings are available in **<Insert name and version of CAD program and operating system>**.

D. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing Record Drawings where Architect determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.

1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
2. Consult with Architect **[and Construction Manager]** for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared Record Drawings into Record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.

E. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.

2. Record Transparencies: Organize into unbound sets matching Record Prints. Place transparencies in durable tube-type drawing containers with end caps. Mark end cap of each container with identification. If container does not include a complete set, identify Drawings included.
3. Record CAD Drawings: Organize CAD information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each CAD file.
4. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Architect **[and Construction Manager]**.
    e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of the manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, Record Drawings, **[and] [Product Data]** where applicable.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, Record Drawings, **[and] [Product Data]** where applicable.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's [**and Construction Manager's**] reference during normal working hours.

END OF SECTION 01781

SECTION 01782 - OPERATION AND MAINTENANCE DATA

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 preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory.
2. Emergency manuals.
3. Operation manuals for systems, subsystems, and equipment.
4. Maintenance manuals for the care and maintenance of products, materials, and finishes systems and equipment.

B. Related Sections include the following:

1. Division 1 Section "Summary of Multiple Contracts" for coordinating operation and maintenance manuals covering the Work of multiple contracts.
2. Division 1 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
3. Division 1 Section "Closeout Procedures" for submitting operation and maintenance manuals.
4. Division 1 Section "Project Record Documents" for preparing Record Drawings for operation and maintenance manuals.
5. Divisions 2 through 16 Sections for specific operation and maintenance manual requirements for products in those Sections.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 SUBMITTALS

A. Initial Submittal: Submit 3 (three) draft copies of each manual at least 15 (fifteen) days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Architect will return 1 (one) copy of draft and mark whether general scope and content of manual are acceptable.

B. Final Submittal: Submit 3 (three) copies of each manual in final form at least 15 (fifteen) days before final inspection. Architect will return copy with comments within 15 (fifteen) days after final inspection.

1. Correct or modify each manual to comply with Architect's comments. Submit 3 (three) copies of each corrected manual within 15 (fifteen) days of receipt of Architect's comments.

1.5 COORDINATION

A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Organization: Include a section in the directory for each of the following:

1. List of documents.
2. List of systems.
3. List of equipment.
4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with the same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 MANUALS, GENERAL

A. Organization: Organize operating and maintenance data into suitable sets of manageable size. Bind data into individual binders properly identified and indexed. Bind each set of data in a heavy-duty 3-ring vinyl-covered binder, with picket folders for folded sheet information. Mark the appropriate identification on both front and spine of each binder. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.

4. Date of submittal.
5. Name, address, and telephone number of Contractor.
6. Name and address of Architect.
7. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (115-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

    a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
    b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch (115-by-280-mm), 20-lb/sq. ft. (75-g/sq. m) white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

    a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions.

3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.
2. Flood.
3. Gas leak.
4. Water leak.
5. Power failure.
6. Water outage.
7. System, subsystem, or equipment failure.
8. Chemical release or spill.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

2.4 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions.
2. Performance and design criteria if Contractor is delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.
11. Fuels and Lubricants
12. Material Safety Data Sheets (MSDS) for all applicable materials
13. Cleaning requirements
14. Hazards
15. Tools

B. Descriptions: Include the following:

1. Product name and model number.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.

6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.
10. Emergency operations.
11. Noise and vibration adjustments.
12. Safety procedures.
13. Economy and efficiency adjustments.
14. Effective energy utilization.
15. Preventive maintenance procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.

5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in the manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard printed maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training videotape, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

1. Do not use original Project Record Documents as part of operation and maintenance manuals.
2. Comply with requirements of newly prepared Record Drawings in Division 1 Section "Project Record Documents."

G. Comply with Division 1 Section "Closeout Procedures" for the schedule for submitting operation and maintenance documentation.

END OF SECTION 01782

SECTION 01800

INTERIM LIFE SAFETY MEASURES (ILSM)

Revised 10-97

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

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

B. Contract Documents: Indicate the work of the Contract and related requirements and conditions that have an impact on the project. Related requirements and conditions that are indicated on the Contract Documents include, but are not necessarily limited to the following:

1. Existing conditions and restrictions on the use of the floor.

2. Requirements for partial Owner occupancy of portions of the work prior to substantial completion of the Contract Work.

1.02 SUMMARY OF LIFE SAFETY MEASURES

A. The work of this section can be summarized as follows:

1. The purpose of this Section is to develop and implement actions required to be taken to compensate for hazards posed by Life Safety Code (LSC) deficiencies whenever they occur during construction, alteration, and/or demolition activities.

2. Exits shall be maintained to provide free and unobstructed egress at all times. If alternative exits must be designated, all construction personnel in adjoining areas shall receive training foregress. Such training shall be provided and documented by the Contractor, and conducted in the presence of the MMC Project Manager. MMC staff shall receive training for egress from MMC staff.

3. Means of egress in construction areas shall be inspected weekly by the Contractor and a weekly log of these inspections shall be kept by the Contractor.

4. Emergency departments (fire, rescue, security, etc.) shall be provided with free and unobstructed access for emergency services.

5. All fire alarm, detection, and suppression systems shall not be impaired without prior approval by the MMC Project Manager. Temporary systems shall be provided by the Contractor if a fire system is impaired for more than twenty four (24) hours. Any temporary systems shall be inspected and tested monthly by the Contractor; all inspections and tests shall be fully documented. Temporary systems shall be approved by the MMC Project Manager.

6. All temporary construction partitions that compromise a fire or smoke barrier shall be maintained smoke-tight and constructed of non-combustible or limited-combustible materials that not contribute to the development or spread of a fire. All seams and joints shall be

taped.

7. The Contractor shall provide additional fire-fighting equipment and use training for construction personnel.

8. Smoking, including the use of any tobacco products, is prohibited at all times on any Maine Medical Center property, including buildings, grounds, and parking garages.

9. The Contractor shall develop and enforce house-keeping, storage, and debris-removal policies that reduce the flammable and combustible fire load of the building to the lowest level necessary for daily operations.

10. The Contractor shall train construction personnel in alternative fire safety procedures when structural or compartmentation features of fire safety are compromised. The Owner shall train hospital staff in these same procedures. The Owner shall also instruct the Contractor as to MMC normal fire response procedures. All training shall be documented.

11. The Owner shall conduct organization-wide safety education programs to ensure awareness of any Life Safety Code deficiencies, construction hazards, and Interim Life Safety Measures. These programs shall be documented.

12. The Owner shall conduct and keep documentation of at least two fire drills per shift, per quarter in areas where existing deficiencies and/or construction activities reduce the level of fire safety required by the Life Safety Code. The Owner shall give the Fire Drill Coordinator a copy of the construction schedule so that the supervisor may implement these fire drills.

13. Construction areas shall be maintained in a secure condition at all times. Doors to temporary partitions shall remain locked at all times.

14. The Owner shall increase hazard surveillance of construction areas as necessary and shall document such surveillance on field report forms.

B. Documentation of all inspection, testing, training, monitoring, surveillance, and evaluation of Interim Life Safety Measures shall be provided by the Contractor and/or the Owner according to their separate responsibilities as defined in this Section.

1.03 MISCELLANEOUS PROVISIONS

A. Temporary Fire Protection

1. Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of the type needed to protect against reasonable, 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".

2. 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 of NFPA recommended classes for exposures.

3. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stair.

Store flammable materials in metal containers in fire-safe locations.

5. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairs, and other access routes for fighting fires.

6. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition. Comply with MMC open flame procedure.

7. Collect waste from construction areas daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris, enforcing requirements strictly. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of all waste materials in a lawful manner.

B. Observation: Regular observation of the construction site will be done by the MMC Project Manager. Documentation of deficiencies in life safety and the use of hazardous materials will be completed and sent to the Contractor and the MMC Safety Committee.

PART 2 - PRODUCTS (Not applicable).

PART 3 - EXECUTION (Reserved).

END OF SECTION 01800

SECTION 01820 - DEMONSTRATION AND TRAINING

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 instructing Owner's personnel, including the following:

1. Demonstration of operation of systems, subsystems, and equipment.
2. Training in operation and maintenance of systems, subsystems, and equipment.

B. Related Sections include the following:

1. Division 1 Section "Allowances" for administrative and procedural requirements for demonstration and training allowances.
2. Division 1 Section "Project Management and Coordination" for requirements for pre-instruction conferences.
3. Division 1 Section "Photographic Documentation" for preparing and submitting demonstration and training videotapes.

C. Allowances: Furnish demonstration and training instruction time under the Demonstration and Training Allowance as specified in Division 1 Section "Allowances."

D. Unit Price for Instruction Time: Length of instruction time will be measured by actual time spent performing demonstration and training in required location. No payment will be made for time spent assembling educational materials, setting up, or cleaning up.

1.3 SUBMITTALS

A. Instruction Program: Submit three (3) copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. At completion of training, submit three (3) complete training manuals for Owner's use.

B. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

C. Attendance Record: For each training module, submit list of participants and length of instruction time.

D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

E. Demonstration and Training Videotape: Submit three] (3) copies at end of each training module.

1.4 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 1 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

C. Pre-instruction Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:

1. Inspect and discuss locations and other facilities required for instruction.
2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
3. Review required content of instruction.
4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.5 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:

1. Motorized doors, including; overhead coiling doors overhead coiling grilles and automatic entrance doors.
2. Equipment, including; stage equipment, projection screens, loading dock equipment, waste compactors, food-service equipment, residential appliances and laboratory fume hood.
3. Fire-protection systems, including fire alarm, fire pumps and fire-extinguishing systems.
4. Intrusion detection systems.
5. Conveying systems, including elevators, wheelchair lifts, escalators, and cranes.
6. Medical equipment, including medical gas equipment and piping.

7. Laboratory equipment, including air and vacuum equipment and piping.
8. Heat generation, including; boilers feedwater equipment, pumps, steam distribution piping and water distribution piping.
9. Refrigeration systems, including chillers, cooling towers, condensers, pumps and distribution piping.
10. HVAC systems, including air-handling equipment, air distribution systems and terminal equipment and devices.
11. HVAC instrumentation and controls.
12. Electrical service and distribution, including; transformers, switchboards, panelboards, uninterruptible power supplies and motor controls.
13. Packaged engine generators, including transfer switches.
14. Lighting equipment and controls.
15. Communication systems, including intercommunication surveillance clocks and programming voice and data and television equipment.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

    a. System, subsystem, and equipment descriptions.
    b. Performance and design criteria if Contractor is delegated design responsibility.
    c. Operating standards.
    d. Regulatory requirements.
    e. Equipment function.
    f. Operating characteristics.
    g. Limiting conditions.
    h. Performance curves.

2. Documentation: Review the following items in detail:

    a. Emergency manuals.
    b. Operations manuals.
    c. Maintenance manuals.
    d. Project Record Documents.
    e. Identification systems.
    f. Warranties and bonds.
    g. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:

    a. Instructions on meaning of warnings, trouble indications, and error messages.
    b. Instructions on stopping.
    c. Shutdown instructions for each type of emergency.
    d. Operating instructions for conditions outside of normal operating limits.
    e. Sequences for electric or electronic systems.
    f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

    a. Startup procedures.
    b. Equipment or system break-in procedures.
    c. Routine and normal operating instructions.
    d. Regulation and control procedures.

e. Control sequences.
f. Safety procedures.
g. Instructions on stopping.
h. Normal shutdown instructions.
i. Operating procedures for emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:

a. Alignments.
b. Checking adjustments.
c. Noise and vibration adjustments.
d. Economy and efficiency adjustments.
e. Effective energy utilization.

6. Troubleshooting: Include the following:

a. Diagnostic instructions.
b. Test and inspection procedures.

7. Maintenance: Include the following:

a. Inspection procedures.
b. Types of cleaning agents to be used and methods of cleaning.
c. List of cleaning agents and methods of cleaning detrimental to product.
d. Procedures for routine cleaning
e. Procedures for preventive maintenance.
f. Procedures for routine maintenance.
g. Instruction on use of special tools.

8. Repairs: Include the following:

a. Diagnosis instructions.
b. Repair instructions.
c. Disassembly; component removal, repair, and replacement; and re-assembly instructions.
d. Instructions for identifying parts and components.
e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.

B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
2. Owner will furnish an instructor to describe Owner's operational philosophy.
3. Owner will furnish Contractor with names and positions of participants.

C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner, through Architect, through Construction Manager, with at least seven (7) days' advance notice.

D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of an oral, a written, or a demonstration performance-based test.

E. Demonstration and Training Videotape: Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.

1. Comply with requirements in Division 1 Section "Photographic Documentation."
2. At beginning of each training module, record each chart containing learning objective and lesson outline.

F. Cleanup: Collect used and leftover educational materials and remove from Project. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

END OF SECTION 01820

SECTION 01850 DUST CONTROL MEASURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

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

B. Contract Documents: Indicate the work of the Contract and related requirements and conditions that have an impact on the project. Related requirements and conditions that are indicated on the Contract Documents include, but are not necessarily limited to the following:

1. Existing conditions and restrictions on the use of the floor.

2. Requirements for partial Owner occupancy of portions of the work prior to substantial completion of the Contract Work.

1.02 SUMMARY OF DUST CONTROL MEASURES

A. The work of this section can be summarized as follows:

1. The purpose of this Section is to develop and implement actions required to be taken to compensate for hazards posed by aspergillus (fungi in dust which may be dislodged during construction).

2. All temporary construction partitions shall be extended from the floor through the suspended ceiling, to the underside of the floor deck above. In areas where the presence of asbestos above the ceiling system prohibits the temporary partitions to be extended to the deck, the temporary partition shall be constructed to the ceiling system, and shall be taped against the ceiling system for a complete seal.

3. The construction area shall be vacuumed prior to beginning construction, using a vacuum cleaner equipped with a HEPA filtering system.

4. All penetrations into the construction area shall be sealed, windows closed, and all supply, exhaust / return air ducts capped when possible. Coordinate this work with the MMC Project Manager.

5. Temporary partitions to isolate the construction site shall have gasketed doors with self-closing latching hardware and dampened walk-off mats both inside and outside the construction area.

6. Negative pressure shall be maintained within the construction site at all times by the use of negative air fans fitted with high-efficiency particulate air (HEPA) filters. Route ductwork from the negative-air fans to the exterior of the building, filtering the air in the duct prior to being discharged, by means of a standard furnace air filter.

7. Audible and/or visual alarms shall be installed so that any loss of negative pressure in the construction site can be known immediately to those outside the site. Submit suggested alarm type to the MMC Project Manager for approval prior to installation.

8. Provide and install a magnehehelic diaphram-activated negative pressure gauge equal to Dwyer model 2000-0, with a water range of 0-.5", in each negative pressure construction

area. Install the negative pressure gauge adjacent to the access door. Route a piece of plastic tubing from the gauge to a space not under construction, and not more than 20' away.

9. Debris removal from the construction site shall be completed by a predetermined route at times when patients are in their rooms with their doors closed. Debris shall be transported in clean containers with tight-fitting covers.

10. Any dust tracked out of the construction site shall be removed immediately. Cleaning in patient-occupied areas shall be with HEPA-filtered vacuum cleaners.

11. All air-handling ducts shall be shut down or covered whenever possible during demolition activities. **This covering or shut-down of air-handling ducts must and shall be approved by the MMC Project Manager prior to modifying existing conditions.**

12. The negative air pressure system shall be activated prior to the commencement of work each day, and remain operating until one-half hour after the stop of work for each day.

13. All temporary partitions shall remain in place until all cleaning within the work areas has been completed.

PART 2 - PRODUCTS (Not applicable).

PART 3 - EXECUTION (Reserved).

END OF SECTION 01850

SECTION 06100 ROUGH CARPENTRY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 DESCRIPTION OF WORK:

A. Definition: Rough carpentry includes carpentry work not specified as part of other sections and which is generally not exposed, except as otherwise indicated. Type of work in this section include rough carpentry for:

1. Wood grounds, nailers, blocking and sleepers.

B. Finish carpentry is specified in another Division 6 Section.

1.03 REFERENCES:

A. Lumber Standards: Comply with PS 20 and with applicable rules of the respective grading and inspecting agencies for species and products indicated.

B. Plywood Product Standards: Comply with PS 1 (ANSI A 199.1) or, for products not manufactured under PS 1 provisions, with applicable APA Performance Standard for type of panel indicated.

1.04 SUBMITTALS: Not Applicable

1.05 PRODUCT HANDLING:

A. Delivery and Storage: Keep materials dry at all times. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber and plywood, and provide air circulation within stacks, and so as to prevent warping.

1.06 JOB CONDITIONS:

A. Coordination: Fit carpentry work to other work; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds and similar supports to allow proper attachment of other work.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Lumber, General:

1. Factory-mark each piece of lumber with type, grade, mill and grading agency, except omit marking from surfaces to be exposed with transparent finish or without finish.

2. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.

   a. Provide dressed lumber, S4S, unless otherwise indicated.

   b. Provide seasoned lumber with 19% maximum moisture content at time of dressing.

3. Dimension Lumber (2" through 4" thick): Not Applicable.

4. Timber (5" and thicker): Not Applicable

5. Miscellaneous Lumber:

   a. Provide wood for support or attachment of other work including cant strips, bucks, mainers, blocking, furring, grounds, stripping and similar members. Provide lumber of sizes indicated, worked into shapes shown, and as follows:

      1) Moisture content: 15% maximum for lumber items not specified to receive wood preservative treatment.

   b. Grade: No. 2 Dimension Spruce, Pine or Fir.

B. Plywood:

1. Trademark: Identify each plywood panel with appropriate APA trademark.

2. Concealed Performance-Rated Plywood: Where plywood panels will be used for concealed types of applications, provide APA Performance-Rated Panels complying with requirements indicated for grade designation, span rating, exposure durability classification, edge detail (where applicable) and thickness.

   a. Interior wall Sheathing: APA Rated Sheathing.

      1) For concealed application behind wall mounted modular furniture and wall hung shelving.

      2) Span Rating: 24/16 or as required to suit stud spacing indicated.

C. Miscellaneous Materials:

1. Fasteners and Anchorages: Provide size, type, material and finish as indicated and as recommended by applicable standards, complying with applicable Federal Specifications for nails, staples, screws, bolts, nuts, washers and anchoring devices. Provide metal hangers and framing anchors of the size and type recommended by the manufacturer for each use including recommending nails.

a. Where rough carpentry work is exposed to weather, in contact with masonry, or in area of high relative humidity, provide fasteners and anchorages with a hot-dip zinc coating (ASTM A153).

2.02 WOOD TREATMENT: All wood and plywood shall be fire-retardant treated.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. General

1. Discard units of material with defects which might impair quality of work, and units which are too small to fabricate work with minimum joints or optimum joint arrangement.

2. Set carpentry work accurately to required levels and lines, with members plumb and true and accurately cut and fitted.

3. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards. Countersink nail heads on exposed carpentry work and fill holes.

4. Use common wire nails, except as otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; predrill as required.

B. Wood Grounds, Nailers, Blocking and Sleepers:

1. Provide wherever shown and where required for screeding or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved. Provide blocking at all wall-mounted door stops.

2. Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise shown.

3. Provide permanent grounds of dressed, preservative treated, key-beveled lumber not less than 1-1/2" wide and of thickness required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required.

C. Wood Furring:

1. Install plumb and level with closure strips at edges and openings. Shim with wood as required for tolerance of finished work.

2. Furring to Receive Gypsum Drywall: Unless otherwise shown, provide 1" x 2" furring at 16" o.c., vertically.

D. Wood Framing, General: Not Applicable

E. Stud Framing: Not Applicable

F. Joist Framing: Not Applicable

G. Rafter and Ceiling Joist Framing: Not Applicable

H. Timber Framing: Not Applicable

I. Installation of Plywood:

1. General: Comply with applicable recommendations contained in Form No. E 304, "APA Design/Construction Guide - Residential & Commercial," for types of plywood products and applications indicated.

2. Fastening Methods: Fasten panels as indicated below:

a. Sheathing: Nail or screw to framing. (attach sheathing to existing plaster partitions where indicated, with toggle fasteners or expansion anchors).

END OF SECTION

SECTION 06400 ARCHITECTURAL WOODWORK

1. GENERAL

1.01 GENERAL CONDITIONS The General Conditions, Supplementary General Conditions and all Sections of Division 1 shall apply to each and every contract and contractor, person or persons supplying material, labor or entering into the work directly or indirectly.

1.02 SCOPE This section includes all labor, materials, equipment and related services necessary for the fabrication, delivery and installation of the work shown on the drawings and or specified herein, including but not limited to the following:

A. Counters

B. Cabinets and Related Hardware

C. Adjustable and Fixed Shelving

D. Oak Standing and Running Trim

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. Rough Carpentry	06100
B. Interior and Exterior Standing and Running Trim	06200
C. Flush Wood Doors	08200
E. Finishing of Standing and Running Trim	09900

1.04 ALTERNATES: Refer to Section 01035 to determine the extent to which work of this Section will be affected by any Alternates, Allowances or Unit Prices.

1.05 STANDARDS: Except where otherwise noted, all millwork shall conform to, or exceed, the requirements of "Custom Grade" as established by "Quality Standards of the Architectural Woodworking Industry", as published by the American Woodworking Institute. Where conflicts occur between these standards and drawings or specifications, the more stringent requirements shall govern in each case.

1.06 SHOP DRAWINGS: Before fabrication of any millwork, the Contractor shall submit shop drawings for Architect's approval showing dimensions, hardware type and location, materials, details of assembly, relation to fixed construction of the building and any other items of millwork which relate to each other. No fabrication shall commence until shop drawings are approved.

1.07 QUALITY ASSURANCE:

A. General: It shall be the responsibility of the Millwork supplier to assure complete off site assembly of all items specified herein. All items should be ready for installation and should be planned for easy building entry. Where unit size prohibits easy entry, arrangements

should be made with the Contractor so that there will be a minimum number of attachable sections for job reconnection.

B. Finish and Protection: All work should be fine sanded to remove all feather edges, glue smears, pencil and finger markings, and where necessary protected by a non staining paper.

C. Field Dimensions: It shall be the responsibility of the Millwork supplier to verify all dimensions in the field prior to fabrication. Any discrepancies which occur between field dimensions and delivered millwork shall be the responsibility of the Millwork supplier and shall be rectified at no cost to the General Contractor or the Owner.

1.08 PRODUCT HANDLING:

A. All Lumber: Shall be piled in a manner which ensures proper ventilation and drainage. It shall also be covered to protect it from the elements.

B. Millwork: Shall be protected against dampness during and after delivery. It shall be stored in well ventilated buildings and where not exposed to extreme changes in temperature and/or humidity.

2. PRODUCTS

2.01 WOOD TRIM

A. Maple Trim for Natural Finish shall be Select White Hard Maple, plain sawn, for transparent finish and shall be kiln dried to a moisture content not exceeding 12%.

B. Oak Trim for Natural Finish shall be Select Red Oak, quarter sawn, for transparent finish and shall be kiln dried to a moisture content not exceeding 12%.

2.02 PANEL PRODUCTS

A. Plywood for Maple Woodwork shall be clear plain sliced select white birch face veneers. Thickness as indicated.

B. Plywood unless otherwise indicated shall be Douglas Fir plywood having grade A exposed faces, grade B inside cabinets.

C. Prefinished Particle Board shall be low pressure melamine faced by Duraclad or equal.

D. Plastic Laminate shall comply with NEMA LD-3 Grade GP-50, color selected by Architect from manufacturers full line of colors and textures.

2.03 INTERIOR ARCHITECTURAL WOODWORK

A. Plastic Laminate Countertops:

1. Grade: Premium, for all countertops.

2. Plastic Laminate Type: 0.050 in. thick; UL tested and labeled ratings of 25 for flame spread, 25 for fuel contributed and 100 for smoke developed when bonded to wood particle board.

3. Edging and Backsplashes: Self edged (plastic laminate) unless otherwise indicated, same material as face.

4. Core Material: Medium Density Fiberboard for dry areas. Countertops with integral sinks shall have plywood core.

5. Sealant: Type as manufactured or recommended in writing by manufacturer of plastic laminate, color to match plastic laminate.

    a. Silicone Sealant: Mildew resistant type, formulated for pointing of tile, color to match the plastic laminate where feasible; or clear as directed by Architect.

B. Plastic Laminate Casework:

1. Grade: Custom.

2. Construction: Flush overlay or reveal overlay at Option of Installer.

3. Base Construction: Provide separate full ladder design subbase of Exterior Grade Plywood, high PVC molding channel around bottom of base, or snap in base with Exterior Grade Plywood and adjustable leveling legs, to protect against spilled or standing water on floor.

4. Hang Rails and Stiffeners: Provide 3/4" x 3" hardwood handrail top and bottom for wall cabinets, top of cabinet for base cabinets, sufficient stiffeners to support cabinets without backing material.

    a. Designs depending on cabinet backing for support will not be acceptable.

5. Back of Cabinets: 1/2" minimum particleboard.

6. Exposed Portions:

    a. Door and drawer fronts, end panels, divider panels at open cabinets and similar locations: High pressure plastic laminate on particleboard.

    b. Exposed edges: Self edged plastic laminate, same material as face.

    c. Adjustable Shelving: Edge banding at both edges to allow for reversing; and at ends where exposed to view in the finished work.

    d. PVC Edging: 3mm PVC edging, as specified for door and drawer edges will be acceptable in lieu of edging materials specified above.

7. Semi Exposed Surfaces, (Concealed when doors are closed): One of following at option of Installer:

    a. Plastic laminate.

    b. Transparent finish, on plywood (birch acceptable).

    c. Prefinished particleboard, edge banded.

C. Fixed Utility and Adjustable Shelving (non part of casework): Prefinished particleboard with 0.050 plastic laminate edge banding.

1. Thickness: 3/4"

2. For adjustable shelving provide edge banding both edges to allow for reversing, and one on ends where exposed to view in the finished work.

2.04 FINISH FOR ARCHITECTURAL WOODWORK:

A. General: Finish architectural woodwork at shop or factory. Defer only final touch up, cleaning and polishing for time after delivery and installation.

B. Preparations for Finishing: Comply with AWI Quality Standards, Section 1500, for sanding, filling countersunk fasteners, back priming and similar preparations for finishing of architectural woodwork, as applicable to each unit of work.

C. Transparent Finish: Provide transparent except where opaque finish is specifically indicated on Drawings or allowed in these Specifications.

1. General Finish Standard: AWI Finish System No. 3, Premium Grade, closed grain finish.

2. Final Finish: Sanding, followed by 2 coats of clean alkyd conversion varnish, rubbed to satin medium sheen.

2.05 CABINET HARDWARE AND ACCESSORY MATERIALS :

A. General: Provide cabinet hardware and accessory materials associated with architectural woodwork, except for units which are specified as "door hardware" in other Sections of these Specifications.

1. Hardware Standards: Except as otherwise indicated, comply with ANSI A156.9 "American National Standard for Cabinet Hardware", quality level - Type 2 (institutional), unless otherwise indicated.

B. Exposed Hardware Finish: Except where not available, provide exposed hardware with BHMA Code 641 oxidized satin bronze plated finish (US10B); where not available, provide anodized aluminum finish.

3. EXECUTION

3.01 PREPARATION

A. General: Condition woodwork to average prevailing humidity conditions in installation areas prior to installing.

B. Pre-Installation Meeting: Meet at project site prior to delivery of architectural woodwork and review coordination and environmental controls required for proper installation and ambient conditioning in areas to receive work. Include in meeting the Contractor; architect and other Owner Representatives (if any); installers of architectural woodwork, modular laminate casework, wet work such as plastering, other finishes, painting, mechanical work and electrical work; and firms or persons responsible for continued operation (whether temporary or permanent) of HVAC system as required to maintain temperature and humidity conditions.

Proceed with woodwork installation only when everyone concerned agrees that required ambient conditions can be properly maintained.

3.02 INSTALLATION:

A. Install work plumb, level, true and straight with no distortions. Shim as required using concealed shims.

B. Scribe and cut work to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.

C. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure to grounds, strapping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fasteners heads are required, use fine finishing nails for exposed nailing, countersunk and filled flush with woodwork, and matching final finish where transparent finish is indicated.

D. Countertops and other plastic laminate: Anchor securely to base units and other support systems as indicated.

1. Seal joints at internal corners countertops and backsplashes or other construction with sealant matching color of plastic laminate.

2. Scribe countertops without backsplashes to wall; seal with silicone sealant matching color of plastic laminate; or clear if directed by Architect.

E. Casework: Install without distortion so that doors and drawers will fit openings properly and be accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.

3.03 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION:

A. Repair damaged and defective woodwork wherever possible to eliminate defects functionally and visually; where not possible to repair properly, replace woodwork. Adjust joinery for uniform appearance.

B. Clean hardware, lubricate and make final adjustments for proper operation.

C. Clean woodwork on exposed and semi exposed surfaces. Touch up shop applied finishes to restore damaged or soiled areas.

D. Complete finishing work specified as work of this Section, to whatever extent not completed at shop or prior to installation of woodwork.

E. Protection: Installer of architectural woodwork shall advise Contractor of procedures required to protect architectural woodwork during remainder of construction period to ensure that work will be without damage or deterioration at time of acceptance.

END OF SECTION

SECTION 07270 FIRESTOPPING

1. GENERAL

1.01 GENERAL CONDITIONS The General Conditions, Supplementary General Conditions and all Sections of Division 1 shall apply to each and every contract and contractor, person or persons supplying material, labor or entering into the work directly or indirectly.

1.02 SCOPE Installation of firestopping materials at openings and voids in, or at periphery of fire-rated construction.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. Section 07900 - Joint Sealers

B. Section 15000 - Mechanical

C. Section 16000 - Electrical

1.04 REFERENCES

A. ASTM E-814: Fire Tests of Through Penetration Firestops.

B. UL 1479: Fire Tests of Through Penetration Firestops.

C. UL Building Materials Directory: "Through Penetration Firestops Systems (XHEZ), and Fill, Void or Cavity Materials (XHHW).

D. Basic/National Building Code (BOCA).

E. NFPA 101 Life Safety Code.

F. NFPA 70: National Electrical Code.

1.05 DEFINITIONS

A. Firestopping: A material, or combination of materials, to retain the integrity of time rated construction by maintaining an effective barrier against the spread of flame, smoke and gases. It shall be used in specific locations as follows:

1. Duct, cable, conduit and piping penetrations through floor slab and through time rated partitions or fire walls.

2. Openings between floor slabs and curtain walls, including inside hollow curtain walls at the floor slab.

3. Penetrations of vertical service shafts.

4. Openings and penetrations in time rated partitions or fire walls containing fire doors.

5. Locations where specifically shown on the Drawings or where specified in other Sections of the Project Manual.

1.06 QUALITY ASSURANCE

A. Submit manufacturer's product data, letter of certification, or certified laboratory test report that the material or combination of materials meet the requirements specified in ASTM E-814 and are so classified in UL's Building Materials Directory.

B. Materials shall meet and be acceptable for use by all three model building codes, Basic/National Building Code, Uniform Building Code, Standard Building Code Per NER-243.

C. Materials shall meet the requirements of NFPA 101 - Life Safety Code and NFPA 70 - National Electrical Code.

1.07 SUBMITTALS

A. Submit shop drawings, product data, certificates and manufacturer's installation instructions.

B. Submit manufacturer's product data for all materials and prefabricated devices, providing descriptions sufficient for identification at the job site. Include manufacturer's instructions for installation.

C. Submit shop drawings showing proposed material, reinforcement, anchorage, fastenings and method of installation. Construction details shall reflect actual job conditions.

1.08 SEQUENCE/SCHEDULING: Coordinate the work of this Section with work performed under other Sections of the Project Manual.

2. PRODUCTS

2.01 FIRESTOPPING MATERIALS

A. Firestop Caulking

1. Materials shall be the following types of products:
   a. Caulking and putty
   b. Intumescent wrap strips and sheets
   c. Restricting collars

2. Acceptable Manufacturer: 3M Fire Protection Products, St. Paul, MN 55144

B. Mineral Fiber Safing

1. Materials shall be the following products:
   a. Thermafiber Safing Insulation by USG, unfaced, 4" thick.
   b. Firecode Compound by USG.

C. Firestopping material shall be asbestos free and capable of maintaining an effective barrier against flame, smoke and gases in compliance with the requirements of ASTM E-814 and UL 1479.

D. Materials shall be suitable for the firestopping of penetrations made by steel, glass, plastic and insulated pipe.

E. On insulated pipe, the fire rating classification must not require removal of the insulation.

F. The rating of the firestops shall be no less than the rating of the time rated floor or wall assembly.

3. EXECUTION

3.01 PREPARATION: Clean surfaces to receive firestopping materials. Remove dirt, grease, oil, loose materials, rust or other substances that may affect installation or the fire resistance.

3.02 INSTALLATION

A Install firestopping materials as indicated in accordance with manufacturer's instructions.

B. Seal all holes or voids made by penetrations to ensure an effective fire barrier.

C. Install firestopping materials so that void openings 4" or larger will support the required floor load, unless the opening is protected from possible loading or traffic.

3.03 FIELD QUALITY CONTROL

A. Examine firestopped areas to ensure proper installation prior to concealing or enclosing firestopped areas.

B. Areas of work shall remain accessible until inspection {and approval} by the applicable code authorities.

END OF SECTION

SECTION 07900 SEALANTS

1. GENERAL

1.01 GENERAL CONDITIONS The General Conditions, Supplementary General Conditions and all Sections of Division 1 shall apply to each and every contract and contractor, person or persons supplying material, labor or entering into the work directly or indirectly.

1.02 SCOPE This section includes all labor, materials, equipment and related services necessary for the fabrication, delivery and installation of the work shown on the drawings and or specified herein, including but not limited to the following:

A. Exterior Sealants: Intersections between exterior walls with metal frames, wood trim, windows, louvers, access panels, etc., and at all joints and openings where sealing is required to provide complete watertight installation and/or as shown on drawings.

B. Interior Caulking:

1. Joints and recesses at intersections between metal frames and adjacent wall surfaces.

2. Joints around access panels, electric panels, pipes, framing cracks, etc., to insure tight lightproof construction.

3. Caulking at counters, lavatories and other plumbing fixtures.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. Acoustical Sealants 09200

1.04 ALTERNATES: Refer to Section 01035 to determine the extent to which work of this Section will be affected by any Alternates, Allowances or Unit Prices.

1.05 SUBMITTALS:

A. Manufacturer's data.

B. Samples of available color selections.

2. PRODUCTS

2.01 SEALANTS

A. Interior Caulking: Material shall be one part acrylic polymeric sealant equal to:

1. Pecora Chemical Corporation, "60" Unicrylic.
2. Tremco Manufacturing Co. "Mono".
3. Sonneborn Building Products, Inc. "Sonolac"

B. Exterior Caulking: Material for general use shall be one part polyurethane sealant equal to:

1. Pecora Chemical Corporation "Synthacaulk G.D. - 5"

2. Sonneborn Building Products, Inc. "Sonneborn NP-1"
3. Sika Corporation "Sikaflex 1A"

C. Concrete joint sealant shall be two part polurethane equal to:

1. Pecora Chemical Corporation, Urexpan NR-100
2. Tremco Manufacturing Co., THC/900
3. Sonneborn Building Products, Inc. "Sonolastic Paving Joint Sealant"

D. Sealant for lavatories and other plumbing fixtures: Fungicidal one part silicone rubber sealant conforming to FS TT-S0001543 Class A or B, especially made for the specified use.

E. Primers as recommended by sealant manufacturer for sealant and building surfaces where used.

F. Back up material for deep joints shall be closed cell polyurethane or polyethylene tubing 1/3 larger that the width of the space filled.

3. EXECUTION

3.01 INSTALLATION

A. Do all caulking in accordance with the best practices. Start of work shall indicate acceptance of the surfaces by the Caulking Subcontractor.

B. Clean excess mortar and other debris and foreign matter from all joints to be caulked.

C. Fill large joints with backer rod (filler) specified.

D. Apply, tool and finish caulking compound and sealant as required by the manufacturer. Provide finished application that is perfectly smooth, without sags, smears or other defects

E. Apply caulking compound and sealant to joints with a caulking gun equipped with a nozzle of suitable size. Fill void completely and point compactly and neatly, slightly concave. Remove all excess material and carefully clean with an approved cleaner.

F. Use sealant around interior and exterior perimeter of exterior door frames, and window frames on both interior and exterior for concrete construction joints and elsewhere as indicated on the drawings or as specified herein.

3.02 GENERAL: Caulking beads shall be uniform in finish and shall conform to profiles on detail drawings. Extra care shall be taken to avoid overspill on adjacent materials. Where such overspill or discoloring has occurred, this Contractor will be responsible for cleaning, refilling and retooling of all joints until they conform to the profiles shown on the drawings.

END OF SECTION

SECTION 08100 HOLLOW METAL FRAMES

1. GENERAL

1.01 GENERAL CONDITIONS: The General Conditions and Supplementary General Conditions shall apply to each and every contract and contractor, person or persons supplying material, labor or entering into the work, directly or indirectly.

1.02 SCOPE: This Section includes all labor, materials, equipment and related services necessary for the fabrication and delivery to the job site of the items shown on the drawings and/or specified herein, including but not limited to the following:

A. Hollow metal doors and frames.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. Masonry	04100
B. Wood Doors	08200
C. Finish Hardware	08700
D. Glass and Glazing	08800

1.04 ALTERNATES: Refer to Section 01035 to determine the extent to which work of this Section will be affected by any Alternates, Allowances or Unit Prices.

1.05 SHOP DRAWINGS: Before fabrication of doors, frames, thresholds, etc., this Contractor shall submit shop drawings for Architect approval showing dimensions, hardware type and location, materials, and large scale details of principal construction features. No fabrication shall commence until shop drawings are approved.

1.06 QUALITY STANDARD: Except as noted, all work of this section shall meet NAAMM Standard Specification CHM-1-74 for Custom Hollow Metal Doors and Frames.

2. MATERIALS

2.01 HOLLOW METAL FRAMES

A. Frames for exterior and ground level openings shall be fabricated of zinc coated steel, not less than 14 gauge. The steel shall be hot dipped so as to provide a ductile coating, tightly adherent to the base steel. The zinc coating shall be a G60 coating (0.6 oz. of zinc per square foot of steel) in accordance with ASTM specification A525. "Wipe Coat" galvanizing is not acceptable.

B. Frames for interior openings shall be either commercial grade cold rolled steel conforming to ASTM A-366-68 or commercial grade hot rolled and pickled steel conforming to ASTM A-569-66T. Metal thickness for frames shall be not less than 16 gauge. Corners shall be mitered, welded and ground smooth.

C. All finished work shall be strong and rigid, neat in appearance, square, true and free of defects, warp or buckle. Molded members shall be clean cut, straight and of uniform profile throughout their lengths.

D. Jamb depths, trim, profile and backbends shall be as scheduled by the Architect and shown on approved Shop Drawings.

E. Frames for multiple or special openings shall be mullion and/or rail members which are closed tubular shapes having no visible seams or joints all joints between faces of abutting members shall be securely welded and finished smooth.

F. Templates shall be furnished by hardware supplier. All frames shall be reinforced, cut and fitted at the factory to receive hardware. Reinforcements shall be minimum 12 gauge steel except hinge and pivot reinforcement shall be 7 gauge which shall be drilled and tapped for hardware application. Dust cover boxes (or mortar guards) of not thinner than 16 gauge steel shall be provided on all hardware mortises on frames to be set in masonry partitions.

G. Floor Anchors:

1. Floor anchors shall be securely welded inside each jamb, with two holes provided at each jamb for floor anchorage.

2. Where so scheduled or specified, adjustable floor anchors providing not less than 2" height adjustments, shall be provided.

3. Minimum thickness of floor anchors shall be 14 gauge.

H. Jamb Anchors:

1. Provide an anchor at each jamb for each 2'-6" of door height or fraction thereof.

2. Vary anchor types to provide positive fastening to adjacent construction in accordance with manufacturer's recommendation.

I. Frames for installation in masonry wall openings more than 4'-0" in width, shall have an angle or channel stiffener factory welded into the head. Such stiffeners shall be not less than 12 gauge steel and not longer than the opening width, and shall not be used as lintels or load bearing members.

J. All frames shall be provided with a steel spreader temporarily attached to the feet of both jambs to serve as a brace during shipping and handling.

K. Loose glazing stops shall be of cold rolled steel, not less than 18 gauge thickness, butted at corner joints and secured to the frame with countersunk cadmium or zinc plated screws at 12" intervals.

2.02 LABELED DOORS AND FRAMES

A. Labeled doors and frames shall be provided for those openings requiring fire protection ratings as determined and scheduled by the Architect. Such doors and frames shall be constructed as tested and approved by Underwriters' Laboratories or other nationally recognized testing agency having a factory inspection service.

2.03 FINISH

A. After fabrication, all tool marks and surface imperfections shall be dressed, filled and sanded as required to make all faces and vertical edges smooth, level and free of all irregularities. Doors and frames shall then be chemically treated to insure maximum paint adhesion and shall be coated on all exposed surfaces, with a rust inhibitive primer which is fully cured before shipment.

3. EXECUTION

3.01 PROTECTION

A. All doors, frames and accessories shall be transported and neatly stored at the job site so as to avoid undue exposure to moisture, differences in temperature, etc. Materials damaged in delivery, storage, or installation will be replaced at no cost to the Owner.

3.02 INSTALLATION

A. Erect doors and frames plumb and true, with all hardware left in proper working order. Erect in accordance with door manufacturer's instructions.

B. Fill frames located in new or existing masonry walls solid with mortar during erection.

END OF SECTION

SECTION 08200 WOOD DOORS

1. GENERAL

1.01 GENERAL CONDITIONS The General Conditions, Supplementary General Conditions and all Sections of Division 1 shall apply to each and every contract and contractor, person or persons supplying material, labor or entering into the work directly or indirectly.

1.02 SCOPE This section includes all labor, materials, equipment and related services necessary for the fabrication, delivery and installation of the work shown on the drawings and or specified herein, including but not limited to the following:

A. Solid Core Maple Flush Doors

1.03 ALTERNATES: Refer to Section 01035 to determine the extent to which work of this Section will be affected by any Alternates, Allowances or Unit Prices.

1.04 SUBMITTALS: In addition to product data, submit the following:

A. Shop drawings indicating location, size, face materials, core construction, fire ratings (if any), finishes and elevations for each door required.

1. Include size of openings.

2. Coordinate location of hardware with door manufacturer's requirements.

1.05 MANUFACTURER'S STANDARD: All wood doors shall bear the NWMA seal of approval and I.S. 1-73 stamp. Fire rated doors shall also bear the UL or ICBO label for the designated rating.

1.06 WARRANTY: By Manufacturer, Installer and Contractor, agreeing to repair or replace defective doors as defined by referenced standards. Warranty shall be in effect during following periods of time after date of substantial completion.

A. Solid Core Flush Interior Doors: Life of installation.

1.07 PROTECTION

A. Protect all materials of this Section during transit, storage and handling to prevent damage, deterioration and soiling.

B. Package each door at the factory in a heavy paper carton.

C. In the event of damage, immediately make all replacements at no cost to the Owner.

1.08 RELATED WORK SPECIFIED ELSEWHERE

A. Hollow Metal Doors and Frames 08100
B. Finish Hardware 08710

2. MATERIALS

2.01 MANUFACTURERS: Subject to compliance with requirements provide doors manufactured by one of following:

A. Algoma Hardwoods Inc.

B. Eggers Hardwood Products Corp.

C. Marshfield Door Systems, Inc.

2.02 GENERAL WOOD DOOR REQUIREMENTS:

A. Face Panels: Manufacturer's standard 2 or 3 ply face panels, unless otherwise indicated.

B. Exposed Surfaces: Same exposed surface material on both faces and both edges.

C. Glazing Strips: Wood to match face veneer.

D. Louvers: Manufacturer' standard louvers of type, material and size indicated.

E. Fire rated Doors: Labeled and listed with rating required by a testing and inspection organization acceptable to authority having jurisdiction.

2.03 SOLID CORE DOORS FOR NATURAL FINISH

A. Faces: Plain sliced select white maple or red oak as scheduled, slip matched.

1. Grade: Premium

B. Flush Door Core Construction: PC (particleboard core)

1. Comply with requirements of AWI PC-5, with stiles and rails bonded to cores, veneers glued to cores under heat and pressure.

C. Full Glass Flush Door Core Construction: SLC (structural composite lumber core)

1. Comply with requirements of AWI PC-5, with stiles and rails bonded to cores, veneers glued to cores under heat and pressure.

D. Exposed Edges: Solid stock material to match face.

E. Exposed Surfaces for Transparent Finish: Provide manufacturer's standard thickness face veneers of the following quality.

1. Quality: AWI Custom grade face veneers of the species and cut indicated. Sharp contrast not permitted at veneer joints. Provide exposed edges and other exposed solid wood components of any species of wood.

2. Face Panels: Match existing door veneer face grains.

3. Exposed Edges: Solid stock to match face veneer

2.06 SHOP PREPARATION:

A. Fabricate doors to net size, including bevels, at shop or factory.

B. Ship doors in factory installed clear poly film wrapper or other material standard with manufacturer, that allows door to be installed with wrapper in place and remain as temporary protection after installation, easily removable when no longer needed.

2.06 PREFITTING AND PREPARATION FOR HARDWARE:

A. Prefit and premachine wood doors at factory.

B. Comply with tolerance requirements of NWMA for prefitting. Machine doors for hardware requiring cutting of doors. Comply with final hardware schedules and door frame shop drawings and with hardware templates and other essential information required to ensure proper fit of doors and hardware.

1. Take accurate field measurements of hardware mortises in metal frames to verify dimensions and alignment before proceeding with machining in factory.

2. Obtain required data and measurements where existing in place metal frames will be utilized with new doors.

2.07 SHOP FINISH:

A. Prefinish wood doors at factory. Stain color to be selected by Architect.

B. Comply with recommendations of AWI for factory finishing of doors, including final sanding immediately before application of finishing materials.

3. EXECUTION

3.01 INSTALLATION

A. Job Fit Doors: Cut doors to fit frames with uniform clearances and bevels to dimensions indicated in referenced standards. Machine doors for hardware indicated. Seal cut surfaces after fitting and machining.

B. Machine doors to fit finish hardware at field or shop. Coordinate requirements of door and hardware manufacturers for location and tolerances of all hardware cutouts and reinforcement.

C. Fire Rated Doors: Install fire rated doors in corresponding fire rated frames in accordance with requirements of NFPA No. 80.

D. Install doors to comply with recommendations of door and hardware manufacturer.

3.02 ADJUST AND CLEAN

A. Temporary Protection: Just prior to Substantial Completion, or when directed by Architect, remove temporary protection.

B. Operation: Rehang or replace doors which do not swing or operate freely, as directed by Architect.

C. Protection and Completed Work: Advise Contractor of proper procedures required for protection of installed wood doors from damage or deterioration until acceptance of Work.

END OF SECTION

SECTION 08710 FINISH HARDWARE

1. GENERAL

1.01 GENERAL CONDITIONS: The General Conditions and Supplementary General Conditions and all sections of Division 1 shall apply to each and every contract and contractor, person or persons supplying material, labor or entering into the work, directly or indirectly.

1.02 SCOPE: This Section includes all labor, materials, equipment and related services necessary for the fabrication, delivery and installation of the work shown on the drawings and/or specified herein, including but not limited to the following:

A. Furnish and install finish hardware for all doors including:

1. Finish hardware
2. Weatherstripping and thresholds
3. Door bottoms and sound seals
4. Door silencers for all frames

1.03 RELATED WORK:

A. Section 08100 Hollow Metal Doors and Frames
B. Section 08210 Wood Doors
C. Section 08410 Aluminum Doors
D. Section 09900 Painting
E. Section 16000 Electrical

1.04 ALTERNATES: Refer to Section 01035 to determine the extent to which work of this Section will be affected by any Alternates, Allowances or Unit Prices.

1.05 QUALITY ASSURANCE:

A. The hardware supplier shall have in his employ an architectural hardware consultant (AHC) or a person with equivalent number of years required for AHC qualifications. This person shall be recognized as having the ability to be fully responsible for the scheduling, detailing and execution of this section of the specifications and related items. This qualified consultant shall be responsible for processing all submissions, correspondence, technical matters related to the finish hardware and it's application specified in this section.

1.06 REFERENCES:

A. ANSI A115 Standards for door and frame preparation
B. ANSI A156 Standards for finish hardware
C. NFPA 80
D. Other applicable life safety or building codes.

1.07 SUBMITTALS:

A. The hardware supplier shall, if requested, submit for approval one sample of each of the hardware items listed prior to receiving approval of the finish hardware schedule. The approved samples

shall be available for installation as part of the project, if the supplier determines it to be in his best interest to do so.

B. The submission list accompanying samples shall include the following information:

Item	Catalog No.	Manufacturer
Lockset	6666	Lock Company

C. The hardware supplier shall, if requested, submit for approval one sample of each of the hardware items listed prior to receiving approval of the finish hardware schedule. The approved samples shall be available for installation as part of the project.

D. Samples required for use as physical templates by other trades shall be purchased and paid for by the respective trade requiring them.

E. The finish hardware supplier shall submit for approval a complete and detailed finish hardware schedule using a vertical typewritten format. The finish hardware schedule shall contain a listing of the name of each manufacturer and the product listing for the series included in the hardware schedule.

F. It shall be the responsibility of the finish hardware supplier to meet with the Owner or the Owner's Representative, and provide a detailed keying schedule listing the respective key symbol and location for the locksets having the corresponding key symbol. Lockset functions must also be verified with the Owner. This requirement will not be waived. Material shall not be ordered until certification of this meeting has been submitted to the Architect.

G. Provide eight (8) regular copies of the finish hardware schedule for approval.

H. The finish hardware supplier shall make available to the general contractor a detailed list of template numbers and templates required for each of the door manufacturers that require templates.

1.08 DELIVERY, STORAGE AND HANDLING:

A. The finish hardware shall be delivered to the jobsite and received there by the general contractor. The general contractor shall prepare a locked storage room with adequate shelving, for all hardware. The storage room shall be in a dry, secure area, and shall not include storage of other products by other trades.

B. All finish hardware shall have the necessary screws, bolts and other fastenings required for correct installation of each item. The cylinders, locksets, exit devices and door closers shall be clearly marked with the respective individual door or heading number.

C. After the hardware has been installed and prior to the acceptance of the building by the owner, it shall be the general contractors responsibility to properly protect the hardware and the hardware finish from all dents, scratches, defacing that may occur during the construction period. Hardware that is considered damaged or scratched during the construction period shall be replaced by the general contractor at no cost to the owner or hardware supplier. Hardware items with paint on them shall be cleaned and/or replaced by the general contractor at no charge to the owner or hardware supplier.

1.09 WARRANTY:

A. The finish hardware specified for this project shall be guaranteed against defects in material and workmanship for a period of (1) year from date of completion and acceptance of this building. In addition, door closers shall carry a guarantee of ten (10) years from date of completion and acceptance of this building.

B. If an item of hardware is found to be defective by reasons of defects in material and workmanship, it shall be replaced by the hardware supplier at no charge to the owner. The installation of the replacement item shall be the responsibility of the general contractor if within the building guarantee period specified under general conditions, or by the owner if beyond the building guarantee period.

1.10 APPROVAL OF SUBSTITUTIONS:

A. Manufacturers and model numbers listed herein are to establish a standard of quality. If products other than those specifically identified herein are to be considered for use on this project, they must be submitted for approval by the architect at least ten (10) calendar days prior to receipt of bids by the owner.

B. Requests for approval of substitutions shall be submitted in writing, to the architect, and must be accompanied by catalog cuts, technical information and physical samples.

C. Approval of the substitutions will only be valid when issued to all bidders, by the architect, in the form of an addendum to this specification.

2. PRODUCTS

2.01 MATERIAL

A. Hinges

1. All hinges for this project shall be, steel, stainless steel, solid bronze, ball bearing type.

2. The following is a guide for hinge size (height) and type required for this specification.

a.

	MANUFACTURER	EXTERIOR	INTERIOR
1 3/4" Doors up to 3'0" wide	Stanley	FBB191-4 1/2"	FBB179-4 1/2"
	Hager	BB1191-4 1/2"	BB1279-41/2"
	McKinney	TA-TB2314-4 1/2"	TA-TB2714-41/2"
1 3/4" Doors over 3'0" wide	Stanley	FBB199-4 1/2"	FBB168-41/2"
	Hager	BB1199-4 1/2"	BB1168-41/2"
	McKinney	T4A-T4B3386-4 1/2"	T4A-T4B3786-4 1/2"

b. The width of hinges shall be sufficient to clear all trim.

c. Doors in channel iron frames shall have half mortise hinges of a comparable weight as listed for full mortise hinges.

d. Hinges of foreign manufacture shall not be considered acceptable for this project.

3. Two hinges shall be provided for each door leaf up to and including five feet (5'0") in height. An additional hinge shall be required for each additional two and one half feet (2'6") or fraction thereof in height.

4. All outswinging exterior doors, and any interior doors so indicated in hardware sets, shall be furnished with non-removable pins (NRP).

5. Refer to finish section for hinge finish.

B. Heavy Duty Cylindrical Locksets

1. Where indicated by the lock function listings below, locksets shall be heavy duty bored or cylindrical type.

2. The following is a list of manufacturers and designs acceptable for this project:

Schlage	D Line	SPA Design
Sargent	10 Line	LP Design
Corbin/Russwin	CL3300 Series	PZD Design

3. Strikes for metal frames shall conform to ANSI standard A115.2 and shall be 4-7/8" x 1-1/4" with curved lip.

4. All locksets for this project, shall be by the same manufacturer and shall be by a reputable builders hardware manufacturer.

5. Cylinders for lever handle cylindrical locks shall be 6 pin tumbler, solid brass, with nickel silver keys. Two keys shall be supplied with each lock or cylinder.

The following is a list of lock functions as indicated under "hardware sets":

FUNCTION		Sargent	Schlage	Corbin Russwin
1	Storeroom	04	80	57
2	Entrance	05	50	51
3	Passage	15	10	10
4	Classroom	37	70	55
5	Vestibule	16	60	72
6	Privacy	65	40	20

C. Keying:

1. All cylinders and keying shall be provided by the Owner.

D. Door Closers:

1. All door closers for this project shall be the product of one manufacturer and shall have either a die cast aluminum or a cast iron case. The die cast aluminum shall be a special R14 aluminum alloy and shall contain a minimum of 14% silica for hardness to resist wear and minimize porosity of the aluminum case. Provide technical documentation regardless of which closer is proposed in order to verify that the door closer case is a minimum R14 aluminum alloy containing 14% silica for minimum porosity and wear, and designed for high tensile strength, without brittleness.

3. Door closers shall be full rack and pinion type construction, non handed and sized from 1 thru 6 in accordance with ANSI A117.1 handicap code.

4. All closers shall have separate adjustable, non critical key control valves, one each for the following:
   (a) closing speed
   (b) latching speed
   (c) back check positioning valve and/or delayed action

5. Hydraulic fluid shall be of a type requiring no seasonal adjustment for varying temperatures.

6. The pinion shall be heavy duty double heat treated steel construction with a minimum 11/16" diameter.

7. The cylinder bore shall be no less than 1 1/2" diameter to provide maximum oil displacement, and to permit non-critical control of all valves.

8. The following door closer products shall be considered acceptable for this project:

LCN - 4041	(handicap sized)
Sargent - 351	(handicap sized)
Norton - 7500	(handicap sized)
Yale - 4400	(handicap sized)

9. The hardware contractor shall insert in the hardware schedule, beside each door listing, the required degree of opening for each door. If the door swing is over 140 degrees, parallel arm type closers shall be used. Door closers mounted on corner brackets, or top jamb application, shall not be permitted. Where indicated in the hardware set numbers, provide a parallel track arm mounted on the hinge side of the door frame head.

10. Provide hold open arms, where specified, in accordance with the hardware set numbers.

11. Door closers with cush-n-stop arms shall be provided for all exterior, out-swing doors and other openings as specified under hardware sets. They shall have heavy forged steel parallel arms and soffit plates attached to the frame by six (6) screws. The forged steel soffit plate shall have a positive stop bracket with an adjustable tension hold-open feature controlled with a slotted screw or control knob, permitting adjustment from hold-open to no hold-open and full restraint of door movement.

12. Where door closers are noted to require delayed action feature, provide closers as specified herein, but having a separate delayed action valve, to permit adjustment of delayed action cycle. When adjusted, the door closer shall close at a controlled rate of speed, through the delayed action cycle range.

13. The installing contractor shall be responsible for proper installation of door closers in accordance with degree of opening indicated on hardware schedule. The installing contractor shall be responsible for adjustment of the three individual valves, for proper control as follows:
    1- closing speed,
    2- latching speed,
    3- delayed action, or backcheck.

The installing contractor shall be responsible for providing the correct spring power adjustment, from size 1 thru 6, as individually required for each door leaf and as set forth in Part III Execution.

14. Where top rail of door is insufficient in height to mount the closer directly to the rail, drop bracket plates shall be provided.

15. Provide sex nuts and bolts mounting for closers on all wood doors without hardwood internal blocking.

E. Door Stops:

1. It shall be the responsibility of the hardware supplier to provide door stops for all doors in accordance with the following requirements.

2. Wall type bumpers with a concealed type flange shall be used wherever possible and shall be one of the following:
   Ives - 407 1/2
   Hager - 236W
   Rockwood - 409

3. Where wall type bumpers cannot be used, such as on unreinforced partitions or in situations where door comes in contact with material such as glass, or any other obstruction, provide dome type floor stops of the proper height.
   Ives - 436, 438
   Hager - 241F, 243F
   Rockwood - 440, 442

4. Exterior doors striking masonry and other doors specified to have door holders shall have cast bronze wall or floor type door stops holders with hook or staple to engage door and to selectively hold in open position. The following will be acceptable:
   Ives - 452-5
   Hager - 270D

F. Surface Overhead Door Stop & Holder:

1. Exterior doors, except for those requiring door closers, and where specified, shall be provided with a surface mounted, extra heavy duty overhead door holder and shock absorber. Each door holder shall have a case hardened steel engagement and stop plate, placed between the bronze arms at center pivot. The hold-open feature shall engage and release the door automatically by means of a small handle. The shock absorber shall be encased in an extruded bronze door bracket to be applied to the door by no less than four (4) sex bolts.

2. The following products will be acceptable:
   Glynn-Johnson - 90H Series

G. Silencers:

1. Provide rubber silencers for all interior pressed steel (hollow metal) frames. Silencers shall be pneumatic type 1/2" diameter with 1/8" projection.

2. Provide 3 silencers for the strike jamb of metal frames for single doors and two for the head for metal frames for pairs of doors. Provide 4 silencers for the strike jamb for frames for single dutch doors.

H. Push - Kick - Mop Armor Plates:

1. Push plates shall be .050 gauge solid bronze 16" high by 8" wide.
2. Kick plates shall be .050 gauge solid bronze 8" high by 2" less door width.
3. Kick plates shall be applied on the push side of all doors where noted.
4. Armor plates shall be .050 gauge solid bronze 40" high by 2" less door width.

I. FINISH:

1. With the exceptions of hinges, door closers, plates, coordinators, thresholds and weatherstripping, all hardware items shall be furnished in dull chrome finish 26D.

2. Exceptions are as follows:

Door Closers: Sprayed Aluminum

2.02 HARDWARE SET NUMBERS:

A. The Hardware Sets listed below indicate the items of hardware required for each opening. It is the bidders responsibility to accurately furnish the proper quantities, items, sizes, weights and functions as required by the plans and this specification. If an opening has, through error, been omitted from the following hardware set numbers listings, it shall be the bidders responsibility to supply hardware of equivalent quality and quantity, as that which is specified for a comparable opening.

HW 1 Storage Closets

Doors 908A, 908B, 908C, 908D

Hinges
Heavy Duty Cylindrical Lockset Function (1) Storeroom
Medeco Cylinder Furnished by Owner
Overhead Stop/Holder

HW2 Reused Push Button Locks

Doors 106, 118, 145

Hinges
Closer
Salvaged Push Button Lockset
Existing Medeco Cylinder Rekeyed By Owner
Kickplate

Omit hinges at Door 106
Add (2) Acrovyn Armor Plates and (2) Acrovyn Recessed Edge Protectors at Door 145

HW3 Hospital Latchsets

Doors 126, 146

Hinges
Closer
Hospital Latch Sargent 115
(2) Acrovyn armor plates and (2) Acrovyn Recessed Edge Protectors
Stop

HW4 Security Card Access

Doors 116A, 116B

Hinges
Closer
Electric Lockset and Card Reader by Security System Contractor
Medeco Cylinder Furnished by Owner
(2) Acrovyn armor plates and (2) Acrovyn Recessed Edge Protectors
Stop

HW5 Office

Doors 131A, 131B

Heavy Duty Cylindrical Lockset Function (2) Entrance
Medeco Cylinder Furnished by Owner
Balance of hardware existing to remain

At Door 131B Add Hinges and Overhead Stop / Holder

HW6 Passage Set

Door 155

Hinges
Heavy Duty Cylindrical Lockset Function (3) Passage Set
Stop

HW7 Privacy Set

Door 153

Hinges
Closer
Heavy Duty Cylindrical Lockset Function (6) Privacy Set
Kickplate

HW 8 Emergency Access

Door 128

Center Pivot Hinges
Heavy Duty Cylindrical Lockset Function (6) Privacy Set
Emergency Breakout Double Full Lip Strike
Jamb Light Stripping NGP #A635
Stop

HW 9 Environmental Services

Door 128

Hinges
Heavy Duty Cylindrical Lockset Function (1) Storeroom
Medeco Cylinder Furnished by Owner
Overhead Stop / Holder
(2) Acrovyn armor plates and (2) Acrovyn Recessed Edge Protectors

HW 10 Cross Corridor Doors

Door 147

Each Leaf To Have:

Hinges
Pull 1" dia. x 8" Ives 8102-8
(2) Acrovyn armor plates and (2) Acrovyn Recessed Edge Protectors

3. EXECUTION:

3.01 INSPECTION: It shall be the general contractors responsibility to inspect all door openings and doors to determine that each door and door frame has been properly prepared for the required hardware. If errors in dimensions or preparation are encountered, they are to be corrected by the responsible parties prior to the installation of hardware.

3.02 PREPARATION: All doors and frames, requiring field preparation for finish hardware, shall be carefully mortised, drilled for pilot holes, or tapped for machine screws for all items of finish hardware in accordance with the manufacturers templates and instructions.

3.03 INSTALLATION/ADJUSTMENT/LOCATION

A. All materials shall be installed in a workmanlike manner following the manufacturer's recommended instructions.

B. Exit devices shall be carefully installed so as to permit friction free operation of crossbar, touch bar, thumb latch, lever or knob. Latching mechanism shall also operate freely without friction or binding.

C. Door closers shall be installed in accordance with the manufacturer's instructions. Each door closer shall be carefully installed, on each door, at the degree of opening indicated on the hardware schedule. Arm position shall be as shown on the instruction sheets and required by the finish hardware schedule.

D. The adjustments for all door closers shall be the contractor's responsibility and these adjustments shall be made at the time of installation of the door closer. The closing speed and latching speed valves, shall be adjusted individually to provide a smooth, continuous closing action without slamming. The delayed action feature or back check valve shall also be adjusted so as to permit the corrected delayed action cycle or hydraulic back check cushioning of the door in the opening cycle. All valves must be properly adjusted at the time of installation. Each door closer has adjustable spring power capable of being adjusted, in the field, from size 2 thru 6. It shall be the contractors responsibility to adjust the spring power for each door closer in exact accordance with the spring power adjustment chart illustrated in the door closer installation sheet packed with each door closer.

E. Installation of all other hardware, including locksets, push-pull latches, overhead holders, door stops, plates and other items, shall be carefully coordinated with the hardware schedule and the manufacturers instruction sheets.

F. Locations for finish hardware shall be in accordance with dimensions listed in the pamphlet "Recommended locations for Builders' Hardware" published by the Door and Hardware Institute.

G. Install thresholds level plumb and true in a full bed of sealant.

3.04 FIELD QUALITY CONTROL: Upon completion of the installation of the finish hardware, it shall be the responsibility of the finish hardware supplier to visit the project and to examine the hardware for each door on which he has provided hardware and to verify that all hardware is in proper working order. Should he find items of hardware not operating properly, he should make a report, in writing, to the general contractor, advising him of the problem and the measures required to correct the problem.

3.05 PROTECTION: All exposed portions of finish hardware shall be carefully protected, by use of cloth, adhesive backed paper or other materials, immediately after installation of the hardware item on the door. The finish shall remain protected until completion of the project. Prior to acceptance of the project by the architect and owner, the general contractor shall remove the protective material exposing the hardware finish.

3.06 CLEANING: It shall be the responsibility of the general contractor to clean all items of finish hardware and to remove any remaining pieces of protective materials and labels.

END OF SECTION

SECTION 08715 AUTOMATIC DOOR OPERATOR

I. GENERAL

1.01 SUMMARY:

A. Work included: Furnishing and installing factory fabricated and finished electro-mechanical swinging operator.

B. Related Work:

1. Section 08710 - Finish Hardware: Furnishing and installing hardware for swinging entrance doors.
2. Section 16210 - Electrical Supply and Termination: Furnish electrical conduit and wiring for controls and operators.

1.02 REFERENCES:

A. Underwriters Laboratories (UL), 333 Pfingsten Road, Northbrook, IL 60062, 847-272-8800, Fax: 847-272-8129.

B. American National Standards Institute (ANSI), 11 W. 42nd St., 13th Floor, New York, NY 10036, 212-642-4900, Fax: 212-398-0023.

C. Builders' Hardware Manufacturers Association (BHMA), 355 Lexington Ave., New York, NY 10017, 212-661-4261, Fax: 212-370-9047.

D. National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269, 800-344-3555, 617-770-3000, Fax: 617-984-7057.

E. Canadian Standards Association (CSA), 178 Rexdale Blvd., Rexdale, ON, Canada M9W 1R3, 416-747-4000, Fax: 416-747-4149.

F. ICBO Evaluation Services, 5360 Workman Mill Road, Whittier, CA 90601, 562-699-0543, Fax: 562-695-4694.

G. International Standards Organization (ISO).

1.03 SUBMITTALS:

A. Product Data: Provide manufacturer's product and complete installation data for all materials in this specification.

B. Shop drawings: Show profiles, joining method, location of components, anchorage details, adjacent construction interface, and dimensions as well as all necessary wiring and electrical requirements.

C. Samples: Sized to adequately represent material.

D. Contract Closeout: Submit the Manufacturer's warranty and performance certifications [if applicable].

E. Installation Guide: Provide a written installation guide and/or installation recommendations.

1.04 QUALITY ASSURANCE:

A. Swinging door operator shall be CERTIFIED by the manufacturer to meet performance design criteria according to the following test standards: [select, if applicable]:

1. ANSI A156.10.
2. NFPA 101.
3. Underwriter's Laboratories 325 (UL) listed.
4. C-UL Certified (equivalent to CSA certified).
5. ICBO (UBC Standard 10-1).

B. Automatic Swinging Door Operator: Shall be manufactured in an ISO 9001 registered manufacturing facility.

1.05 PRODUCT HANDLING:

A. All materials shall arrive in the manufacturer's original sealed, labeled containers.

B. Store materials in a dry, protected, well-vented area. The contractor shall report damaged material immediately to the delivering carrier and note such damage on the carrier's freight bill of lading.

C. Remove all protective material after installation.

1.06 SUBSTITUTIONS:

A. Proposals for substitution products will be accepted only from bidding contractors a minimum of 10 working days before the bid due date. The proposed substitution shall meet the performance and quality standards of this specification.

1.07 JOB CONDITIONS:

A. Verify that other trades are complete before installing the automatic swinging door operator.

B. Mounting surfaces shall be plumb, straight and secure; substrates shall be of proper dimension and material.

C. Refer to the construction documents, shop drawings and manufacturer's installation instructions.

D. Coordinate installation with the glass, glazing and hardware installation.

E. Observe all appropriate OSHA safety guidelines for this work.

1.08 WARRANTY/GUARANTEE:

A. Manufacturer's Standard Warranty: Warranted materials shall be free of defects in material and workmanship for one year after installation.

2. PRODUCTS

2.01 MANUFACTURER:

A. Stanley Access Technologies
Farmington, CT 06032
http://www.stanleyworks.com

2.02 SWINGING DOOR OPERATOR:

A. Swinging Door Operator: Shall be Stanley Magic-Swing Swinging Door Operator - Concealed Application. The system shall consist of electro-mechanical swinging door operator and electrical controls, aluminum header, connecting hardware, actuating controls, guide rails, and on/off/hold open switch. The system shall be completely engineered, manufactured and assembled by Stanley Access Technologies. All components shall be factory assembled, adjusted and tested. All bearings shall be ball or roller type. No bushings shall be used. Provide 120 VAC, 10 amps minimum to

electrical door operator. Electrical contractor shall provide service to each operator from junction box for multiple operators.

B. Power Open Operation: The operator shall open the door with a 1/8 HP, DC motor through reduction gears, ball screw actuator, forged steel rack and pinion, and linkage. Door opening speed shall not be less than 1.5 seconds from fully closed to back check (0 degrees - 75 degrees) and 1.0 - 1.5 seconds from back check to fully open (75 degrees - 90 degrees). The drive train shall have positive, constant engagement. The operator shall stop the door in the open position by electrically reducing the motor voltage and stalling against an adjustable 90 degree stop.

C. Spring Closing Operation: The operator shall close the door by spring energy. Closing speed shall be controlled by employing the motor as a dynamic brake. Door closing speed shall be 2.5 - 4.0 seconds from fully open to latch check (90 degrees to 10 degrees) and not less than 1.5 seconds from latch check to fully closed (10 degrees to 0 degrees). The closing spring shall be a helical compression spring, pre-loaded for positive closing action at a low material stress level for long spring life.

D. Aluminum Header Extrusions: Shall be a minimum .156" wall thickness.

E. Aluminum Extrusion Finish: Standard anodized finish shall be [select one: AA-M12-C22-A31 Clear, AA-M12-C22-A44 Dark Bronze or Black]. [Special and painted finishes are available upon request. Specify color finish].

F. Header Case: Shall be 5-1/2" wide by 6" high (124 mm wide by 152 mm high) aluminum extrusions with structurally integrated end caps. The operator shall be sealed against dust, dirt, and corrosion within the header case. Access to the operator and electronic control box shall be provided by a full length removable cover, edge rabbetted to the header to ensure a flush fit.

G. Linkage Assembly: Shall provide positive control of door through entire swing; shall permit use of butt hung, center pivot, and offset pivot hung doors.

H. Controls: Include: motion sensor, Sentrex sensors.

I. Emergency Release: For center pivot door(s) - normal in-swing, the operator shall have a built-in emergency release with controlled spring return to the closed position without manual resetting. While the door is in the emergency release mode, a disconnect switch shall prevent powered operation. No header or jamb mounted stops or cams shall be required for emergency function. Not more than 50 pounds at the lock stile shall be required for emergency use per ANSI A156.10.

J. Manual Use: The operator shall function as a manual door closer in the direction of swing with or without electrical power.

K. Entrapment Protection: The door forces and speeds generated during power opening and manual opening in both directions of swing, and spring closing in both directions of swing shall conform to the requirements of ANSI A156.10.

2.03 OPERATING CONDITIONS:

A. Climatic Conditions: The operator shall be fully lubricated to minimize wear and friction of moving parts, and shall operate between -30 degrees F and +130 degrees F in all climatic conditions.

2.04 ELECTRICAL CONTROL:

A. Electrical control shall incorporate the following: An encoder on the motor shaft shall monitor revolutions and send signals to a microprocessor in the controller. Signals from the encoder define door position without using an external magnet and magnetic switch. The door position data is used for: carpet applications, electronic sensor (Sentrex) applications, open check calculation, MAGIC-TOUCH, and reverse-on-obstruction.

B. Learn speed. When power is first applied and an open signal is received, the controller shall open the door at a speed slightly faster than check speed which allows the controller to "learn" safely yet expediently.

C. A "watchdog" LED shall indicate that the controller is functioning properly by remaining lit (when power is on). Additional LED's shall indicate proper operation of the motor encoder when the door moves.

D. The controller shall have program dip switches to allow selection or change at the following parameters: carpet or timer logic, single or dual door, normal operation or 2S logic, bifold sensor logic, normal back check or large back check, "MAGIC-TOUCH" on/off.

E. The MAGIC-TOUCH feature shall allow door activation by manual action without the need for an approach sensor.

F. A "soft-start" "soft-stop" motor driving circuit shall be provided for smooth normal opening and recycling, thus minimizing loosening of doors, pivots, and frames.

G. A one second reverse-on-obstruction feature shall be provided to reverse door motion if an obstruction is met during door opening or closing.

H. A cam actuated emergency breakout switch shall be provided to disconnect power to the motor when an in-swinging door is manually pushed in the emergency out direction. The operator will then automatically reset and power will be resumed.

I. Fully adjustable opening speed and opening check speed. Control circuitry shall include a 0-30 second adjustable time delay.

J. Provide an internal transformer/power supply for SU-050 approach sensor and Sentrex safety sensors.

K. Provide a "safety plus" - 1.5 seconds extension of both operate and safety signals after pressure has been removed from the control mats.

L. A safety carpet check feature shall monitor the safety carpet activation on every open cycle. If a safety carpet shall fail "open", the door shall be held open for 12 seconds as a signal to the owner that there is a problem.

M. Provide optional power-close accessory and provide optional closing speed control.

3. EXECUTION

3.01 INSPECTION:

A. The door installer shall verify that the installation area is dry, clean and free of foreign matter. Check as-built conditions and verify the manufacturer's details for accuracy to fit the wall assembly prior to fabrication. Report in writing to the Contractor any detrimental conditions to the proper functioning of the swinging door operator and correct prior to any installation in accordance to the manufacturer's recommendations.

3.02 INSTALLATION OF SWINGING DOOR OPERATOR:

A. Installation shall be by an installer approved and trained by the manufacturer in strict accordance with the manufacturer's instructions and fire marshall's listing requirements.

B. Comply with the automatic swinging door operator system manufacturer's recommendations and/or installation guide when installing the automatic swing door operator. Set all units plumb, level and true.

C. Provide all fasteners required for installation of the automatic door operator.

D. Adjustment and Cleaning: After repeated operation of the completed installation, re-adjust door operators and controls for optimum operating condition and safety. Clean all metal surfaces promptly after installation.

E. Explain and review the Daily Safety Check Procedure.

END OF SECTION 08715

SECTION 08800 GLASS AND GLAZING

1. GENERAL

1.01 GENERAL CONDITIONS The General Conditions, Supplementary General Conditions and all Sections of Division 1 shall apply to each and every contract and contractor, person or persons supplying material, labor or entering into the work directly or indirectly.

1.02 SCOPE This section includes all labor, materials, equipment and related services necessary for the fabrication, delivery and installation of the work shown on the drawings and or specified herein, including but not limited to the following:

A. Glass and glazing for:
   1. Interior doors and sidelights
   2. Interior windows

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. Aluminum Doors and Frames 08120

1.04 ALTERNATES: Refer to Section 01030 to determine the extent to which work of this Section will be affected by any Alternates, Allowances or Unit Prices.

1.05 STANDARDS: Provisions of this section are specified for general compliance with the following standards, which are applicable except as otherwise indicated:

A. Prime Non-processed Glass: ASTM C 1036

B. Heat Treated Glass: ASTM C 1048

C. Consumer Product Safety Commission (CPSC) Safety Glass: 16 CFR 1201.

D. NFPA 101, Life Safety Code

E. ANSI Safety Glazing: ANSI Z97.1.

F. IBC International Building Code

1.06 SUBMITTALS:

A. Product Data: Submit manufacturer's product specifications and handling/installation/protection instructions for each type of glass and glazing material required.

2. PRODUCTS

2.01 GLASS TYPES AND PRODUCTS:

A. Float / Plate Glass: Quality q3; clear unless a color (tint) is indicated; thickness indicated, 1/4" if not otherwise indicated.

B. Tempered Glass: Clear float glass, heat treated to 4.0 x annealed strength; 1/4" thick except as otherwise indicated.

C. Wire Glass: Fire and impact rated ¼" glass with safety impact rated film meeting the requirements of ANSI Z97.1 and CPSC 16CFR1202 (Category 1 and II):

1. Pattern: ¾" Diamond Clear.
2. Manufacturer: Technical Glass Products, www.fireglass.com

2.02 SEALANT TYPE MATERIALS:

A. General: Provide colors indicated or as selected by Architect, black if not otherwise indicated/selected. Except as otherwise indicated, comply with manufacturer's recommendations for selection of hardnesses and other product variations to meet compatibility requirements and project/installation circumstances.

B. Silicone Sealant: Fed. Spec. TT-S-001543, Class A, acid type; except where one or both bond surfaces are porous, provide non-acid type.

1. Optional Sealant: "Dymeric" by Tremco, Inc.

C. Butyl Rubber Glazing Tape: Partly vulcanized self adhesive, non-staining, 98% solids, elastomeric performance for 35% Compression; passing 3000 hr. Atlas Weatherometer test; plain or pre-shimmed, as required for installation.

D. Acrylic Sealant: Fed. Spec. TT-S-00230, Class B, Type II, solids 95% acrylic, solvent based.

E. Butyl Rubber Sealant: Fed. Spec. TT-S-001657, Type I, solvent based, 75% solids, 24 hr. tack free, paintable, non-staining.

1. Preformed Butyl Rubber Sealant: 95% solids, coiled on release paper; where required for installation, provide with reinforcing string or pre-shim.

2.03 MISCELLANEOUS GLAZING ACCESSORIES:

A. Vinyl Foam Tape: ASTM D 1667; flexible, closed cell, self adhesive, non-extruding.

B. Setting Blocks: 70-90 durometer hardness; neoprene unless otherwise selected for compatibility.

C. Spacers: 40-50 durometer hardness; neoprene unless otherwise selected for compatibility.

D. Filler Rod: Flexible, resilient, closed cell or jacketed foam, compatible with sealants required, 5-10 psi compression for 25% deflection.

E. Joint Cleaners, Primers, Sealers: Type recommended by manufacturer of sealants/gaskets for use on indicated glazing channel surfaces.

F. PVC Gaskets: ASTM D 2287, flexible.

G. Cellular Rubber Gaskets: ASTM C 509, Type II, closed cell neoprene, integral skinned, extruded or molded.

3. EXECUTION

3.01 GENERAL

A. Except as otherwise indicated, comply with glass manufacturer's instructions, glazing materials manufacturer's instructions and "Glazing Manual" by FGMA and other technical publications of recognized authorities in the industry. Install each piece to achieve watertight and airtight performance and to minimize breakage.

B. Clean channel surfaces and prime or seal surfaces where recommended by sealant manufacturer.

C. Cut glass to proper size, except cut processed/fabricated glass units to proper size prior to processing/fabricating; provide for adequate edge clearance and bite on glass.

D. Inspect glass edges at time of setting and discard pieces with significant edge damage.

E. Locate setting blocks, 2 per light, at 25% of glass width, measured from corners. Set in thin bed of sealant if heal or toe bead is required.

F. Install spacers inside and out, all around, where liquid or plastic/mastic compounds are used, except on glass sizes smaller than 50 united inches.

G. Set each piece in each series to match other pieces, with pattern, draw, bow and other characteristics uniformly oriented.

H. Provide glazing sealants, compounds, tapes and gaskets as indicated, making specific product selections in compliance with manufacturer's recommendations. Coordinate materials for compatibility, and do not use solvent release materials for glazing laminated glass, sealant edged insulating glass or glazing plastics.

I. Provide filler rod where sealants are used in head and jamb channels, for glass which is more than 1/2" thick, and for colored, tinted, heat absorbing, coated and laminated glass over 75 united inches in size, and for other glass over 125 inches united in size.

J. Do not leave voids in the glazing channel except as specifically indicated or recommended by glass manufacturer.

K. Force sealants into channels, to eliminate voids and to effectively "wet" bond surfaces. Tool exposed surfaces to provide slight wash away from joint; trim and clean promptly.

L. Where weeps are indicated, including weeps in structural rubber gaskets, clean and avoid closure by compounds.

M. Do not attempt to cut or otherwise work tempered glass after tempering.

N. Provide adequate anchorage of gaskets, particularly driven-in wedge gaskets.

O. Miter cut and bond/weld ends of channel gaskets at corners to provide a continuous gasket.

P. Seal face gaskets at corners with liquid elastomeric sealant to close openings and prevent withdrawal of gaskets from corners.

Q. Set mirror glass in mastic spots or strips as recommended by mirror manufacturer, but with not less than 75% of back surface ventilated and free of mastic. Support mirrors at edges with J-shaped moldings as indicated.

3.02 GLAZING SYSTEMS:

A. Glazing for Interior Windows and Doors:

1. Glaze with clear polished wired glass unless otherwise indicated.

2. Place setting blocks at 1/4 points along bottom rabbet.

3. Apply continuous strip of foam glazing tape around perimeter of glass sheet with adhesive side toward glass. Turn tape turned onto each surface of glass to form a channel around entire perimeter.

4. Set glass in place and attach glazing beads.

5. Tape shall be of thickness as to be compressed to approximately 70% of its original thickness along entire perimeter of glass.

6. Trim off excess tape with razor blade or sharp tool, level with sight line.

7. Where any glass edges are exposed, chamfer to prevent sharp edges.

3.04 CURE, PROTECTION AND CLEANING:

A. Protect exterior glass from breakage immediately upon installation, by use of crossed streamers attached to framing and held away from glass.

B. Do not apply markers to surfaces of glass. Remove nonpermanent labels and clean surfaces. Cure sealants for high early strength and durability.

C. Clean compound smears and stains from adjacent surfaces as the work progresses.

D. Remove all labels excess glazing compounds, stains and spots from glass upon completion of glazing.

E. Acceptance: Immediately prior to time of substantial completion, replace glass which is broken, chipped, cracked or otherwise damaged, and wash and polish inside and out.
1. Include glass broken by natural causes, accident or vandalism.

END OF SECTION

SECTION 09200 GYPSUM DRYWALL

1. GENERAL

1.01 GENERAL CONDITIONS The General Conditions, Supplementary General Conditions and all Sections of Division 1 shall apply to each and every contract and contractor, person or persons supplying material, labor or entering into the work directly or indirectly.

1.02 SCOPE This section includes all labor, materials, equipment and related services necessary for the fabrication, delivery and installation of the work shown on the drawings and or specified herein, including but not limited to the following:

A. Gypsum wallboard walls and ceilings, water resistant and moisture resistant board.

B. Screws, metal trim, tape, joint compound and all other drywall accessories.

C. Non-structural metal stud framing.

D. Runners and other accessories for metal studs.

E. Metal furring channels, clips, etc.

F. Metal ceiling suspension system for drywall ceilings.

G. Acoustical insulation within stud spaces.

H. Acoustical sealant in gypsum drywall system.

1.03 ALTERNATES: Refer to Section 01035 to determine the extent to which work of this Section will be affected by any Alternates, Allowances or Unit Prices.

1.04 QUALITY CONTROL

A. This Contractor shall use only skilled and experienced gypsum drywall installers for laying up gypsum board, fastening, taping and finishing.

B. Helpers and apprentices used for such work shall be under full and constant supervision at all times by thoroughly skilled gypsum drywall installers.

1.05 MANUFACTURER'S RECOMMENDATIONS

A. The manufacturer's recommendations for installation shall be used as the basis for acceptance or rejection of actual installation methods used in the work.

1.06 STANDARDS: Products supplied under this Section shall meet the following requirements:

A.	General Standard	Gypsum Association GA-216, ASTM C-840
B.	Gypsum Wallboard	ASTM C-36, FS-SS-L-30
C.	Water Resistant and Moisture Resistant Board	ASTM C-630
D.	Laminating Adhesives	ASTM C-475

2. PRODUCTS

2.01 GYPSUM WALLBOARD

A. In general, tapered edge Gypsum Board by Gold Bond, U.S. Gypsum or Georgia-Pacific. Lengths shall be as long as possible to eliminate vertical joints (up to 16 feet long). Use 5/8" or 1/2" thick fire rated board where required by code and as scheduled or shown on drawings. Square edged backer board may be used for first layer where 2 layers are scheduled.

B. Use M-R board in bathrooms, toilets, kitchen areas and other potentially damp or wet locations. Use water resistant backer board at all tub and shower enclosures.

2.02 DRYWALL ACCESSORIES

A. Numbers given are by the Beadex Co.. Equal products by U.S. Gypsum or Georgia-Pacific will be acceptable.

1. Standard corner bead for outside corners.
2. B-1 bead for inside corners.
3. B-4 casing bead for exposed edges.
4. Screws: 1" bugle head type. Use larger screws where 2 layers required.

2.03 NON-STRUCTURAL METAL STUDS AND FURRING

A. Non-structural stud framing shall be 25 gauge for interior partitions unless otherwise shown; as manufactured by Gold Bond or U.S.G. for screw attachment of gypsum drywall. Sizes per drawings.

B. Provide top and bottom runner tracks, adjustable shoes and all other necessary accessories.

C. Metal furring channels, Z-furring channels RC-1 resilient channels, as manufactured by U.S. gypsum or equal.

2.06 ACOUSTICAL INSULATION: Shall be mineral fiber without membrane, Type I: 3-1/2" thick unless otherwise noted. Provide "Thermafiber Sound Alteration Blankets" by USG or equal.

2.07 ACOUSTICAL SEALANT: Shall be water based, non-staining type, permanently elastic, "Acoustical Sealant" by Tremco or equal.

3. EXECUTION

3.01 NON-STRUCTURAL METAL STUD FRAMING

A. Align runners accurately at floor and ceiling and securely anchor with suitable fasteners spaced not more than 2' apart. Ceiling channel shall not be fastened to studs to allow a slip joint. Refer to drawings for locations of types and design of partitions and stud layouts.

B. Position studs vertically in the runners spaced no greater than 24" o.c. or as noted on plans (16" o.c. where drywall supports tile finishes). Cut studs 3/4" short to allow for structure deflection. Anchor all studs to floor runner flanges by positive screw engagement, by welding or by clips through each stud flange and runner flange. Use double studs at sides and top of openings, back to back, screwed together. Locate next stud at doors or windows no more than 6" from double studs.

C. Locate studs no more than 2" from all door frame jambs, abutting partitions, partitions, partition corners and other construction. Securely anchor studs to the jamb and bead anchor clips of each door or bottom light frame by bolt or screw attachment. Over openings place a cut-to-length section of runner track horizontally with a web flange bead at each end, and securely screw attach to the adjacent vertical studs. Position a cut-to-length stud at the location of vertical joints over the door frame header extending to the ceiling runner.

D. Reinforce separate rows of studs at pipe chases with channels or studs between the two stud lines, or other equivalent means.

E. For soffit construction, install runners to structure at top and bottom. Attach studs to runners on both sides, top and bottom using sheet metal screws. Brace diagonally at 4' o.c. to structure above.

F. Furnish and install lateral bracing consisting of at least 12 gauge wire, splayed at 45°, in the following locations:

1. At the midpoint of all unsupported partitions exceeding 12 lineal feet.
2. At 12' o.c. each way in all large ceiling areas not restrained by partitions.

3.02 INSTALLATION STANDARDS

A. General:

1. Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 1'-0" in alternate courses of panel.

2. Install ceiling panels in direction and manner which will minimize number of end-butt joints, and which will avoid end joints in the central area of each ceiling. Stagger end joints at least 1'-0".

3. Install exposed 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" open space between panels. Do not force into place.

4. Locate either edge or end joints over supports, except in horizontal applications or where intermediate supports or panel back blocking is provided behind end joints. Position panels so that both tapered edge joints abut, and mill cut or field cut end joints abut. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.

5. Attach panel to continuous framing and blocking as required for additional support at openings and cutouts. Leave no edges unsupported.

6. Cover both faces of stud partition framing with panels in concealed spaces (above ceilings, etc.), except in chase walls or other locations which are properly braced internally.

7. Do not install damaged, damp or otherwise imperfect boards.

B. Fasteners: Space fasteners in boards in accordance with referenced standards and manufacturer's recommendations, except as otherwise indicated.

1. Use only screw type fasteners, for both metal and wood supports. Nails will not be acceptable.

C. Control and Expansion Joints: Form control joints and expansion joints with space between edges of panels, prepared to receive trim accessories. Break gypsum panels behind control joint.

1. Locate control joints at not more than 30 feet on centers for both walls and ceilings unless otherwise indicated on Drawings. In general location along doors or other interruptions in plane of panel where feasible.

a. NOTE: Obtain approval of Architect in advance for general layout of control joints not indicated on Drawings.

2. In ceiling locations break ceiling framing and gypsum panels behind control joints.

3. Isolate perimeter of partitions at structural abutments. Provide 1/4" to 1/2" space and trim edge with J-type semi-finishing edge trim. Seal joints with acoustical sealant. Do not fasten panels directly to stud system runner tracks.

D. Floating Construction: Where feasible, including where recommended by manufacturer, install panels with "floating" internal corner construction, unless isolation of the intersecting panels is indicated, unless control or expansion joints are indicated, or unless fire rating is indicated.

E. Acoustical Treatment:

1. Install acoustical insulation so as to completely fill the stud or other space to receive the insulation, free of voids or gaps. Coordinate work so that there are no straight through paths of sound travel, such as but not limited to installation of electrical boxes back to back. Force installation behind electrical boxes and the like, into spaces between studs and door frames, and otherwise seal all possible sound leaks. Where necessary provide proper support to prevent sagging of insulation.

a. Ascertain that appropriate type of insulation is installed.

2. Acoustical Sealant: Where sound rated work is indicated (acoustical insulation, STC rating, double layer work, work on resilient furring, etc.) seal the work at entire perimeter; including at control and expansion joints, and all openings and penetrations; with a continuous bead of acoustical sealant including a bead at both faces of partitions. Comply with manufacturer's recommendations for

location of beads, and close off sound flanking paths around or through the work, including sealing of partitions above acoustical ceilings.

3.03 GYPSUM BOARD INSTALLATION

A. Preparation

1. Before commencing the work of this Section, this Contractor shall thoroughly inspect the work of other trades and verify that all such work is complete and satisfactory to the point where drywall work can proceed in strict accordance with these specifications. This Contractor shall thoroughly inspect all framing members for straightness prior to hanging any sheetrock panels. Any crooked studs which might cause defects in finished work should be removed and replaced by the General Contractor.

2. Examine and inspect materials to which gypsum board is to be applied. Remedy all defects prior to installation of drywall. Any defects in the finish installation due to misaligned framing or other cause will be the responsibility of the work performed under this Section. Starting of work shall imply the acceptance of the conditions.

B. Storage and Handling

1. Deliver all materials in the original packages, containers or bundles bearing the brand name and the name of the manufacturer or the supplier for whom the product is manufactured.

2. Keep materials dry, preferably by being stored inside the building under the roof.

C. Installation

1. Workmanship shall comply with applicable parts of American Standard Specifications for Gypsum Wallboard Finishes, ASA No. A97.1 or latest updated edition.

2. Gypsum wall sheathing shall be applied with long dimension at right angles to studs. End joints of sheets shall be supported on bearings and shall be staggered with alternate courses in line.

3. Single layer: install gypsum board specified with bugle head screws 12" o.c. for walls and 6" o.c. for ceilings. Long edges of sheets shall be perpendicular to studs. Bottom edges of sheets shall be blocked up 1/2" above finish floor level in kitchen, toilets and shower areas. Nailing will not be permitted.

4. Install all gypsum panels plumb, level and with all vertical joints on bearing.

5. Complete installation, taping and treatment to leave wall surfaces sound, smooth and ready for paint, without imperfection.

D. Cutting Gypsum Panels

1. The use of "score and knockout" method will not be permitted.

2. For cut-outs in panels for pipes, fixtures and other small openings, make holes and cut-outs by sawing or by other methods that will not fracture the core or tear the covering and with such accuracy that plates, escutcheons or trim will completely cover the edges.

3.04 INSTALLATION OF DRYWALL TRIM ACCESSORIES:

A. General: Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports.

B. Install metal corner beads at external corners of drywall work.

C. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed, and except where plastic trim is indicated. Provide type with face flange to receive joint compound except where semi-finishing type is indicated. Install L-type trim where work is tightly abutted to other work, and install special kerf-type where other work is kerfed to receive long leg of L-type trim. Install U-type trim where edge is exposed, revealed, gasketed, or sealant filled (including expansion joints).

D. Install J-type semi-finishing trim where indicated and where gypsum board edges are not covered by applied moldings

E. Install metal control joint (beaded type) where indicated; or as recommended by manufacturer or required to comply with referenced standards.

3.05 DRYWALL FINISHING:

A. Ambient temperature shall be 60° minimum for 48 hours before and for one week after installation.

B. Except as otherwise indicated, apply joint tape and joint compound at joints (both directions) between gypsum boards. Apply compound at accessory flanges, penetrations, fastener heads and surface defects.

C. Apply compound in 3 coats (plus pre-fill of cracks where recommended by manufacturer); sand after last 2 coats.

1. For backer board, apply tape and compound in 2 coats, apply compound at accessory flanges, penetration, fastener heads; trowel smooth, sanding not required.

D. Treat joints and fastener heads in water resistant face and backer boards using water resistant joint compound to comply with water resistant joint compound manufacturer's directions.

E. Patching: after trim has been applied and prior to decoration, correct surface damage and defects as required. Patch and fill around all penetrations in fire rated assemblies to preserve fire and acoustic ratings.

3.06 CLEANING:

A. Remove all spatters and droppings resulting from drywall work immediately as they occur.

B. Remove all surplus materials and rubbish from work areas on a daily basis.

C. Leave floors broom clean at completion of this work.

3.07 PROTECTION OF WORK:

A. Installer shall advise Contractor of required procedures for protecting gypsum drywall and related work from damage and deterioration during remainder of construction period.

END OF SECTION

SECTION 09300 TILE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This section includes the following:
1. Unglazed ceramic mosaic tile.
2. Glazed wall tile.
3. Through body porcelain tile.
4. Waterproofing membrane and flood testing.

1.02 RELATED SECTIONS

A. Section 07900 - Joint Sealers: Mildew-resistant silicone sealant.

B. Section 09200 - Gypsum Board: Cementitious and gypsum backer units specified for tile substrates.

C. Section 10800 - Toilet and Bath Accessories.

D. Section 15400 - Plumbing: Plumbing fixtures.

1.03 SYSTEM DESCRIPTION

A. Ceramic wall tile installed over gypsum backer board using organic adhesive and over concrete block or concrete backer board using Latex-Portland cement mortar, with Latex-Portland cement grouted joints.

B. Ceramic mosaic floor tile installed over cementitious backer board using waterproofing membrane, Latex-Portland cement mortar, with Latex-Portland cement grouted joints.
1. Include waterproofing membrane on wall behind cove base and first course of wall tile.

1.04 SUBMITTALS

A. Submit in accordance with Division 1, manufacturer's technical information for materials required, except bulk materials.

B. Submit 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.

C. Samples for Verification Purposes: Submit the following:
1. Samples for each type of tile and for each color and texture required, not less than 24 inches square on cementitious backer board and grouted.
2. Full size samples for each type of trim, accessory and for each color.
3. Solid plastic surfacing thresholds in 6-inch lengths.
4. Samples of metal edge strip in 6-inch lengths.

D. Certification: Furnish Master Grade Certificates for each shipment and type of tile, signed by manufacturer and Installer.

E. Certified Test Reports: Submit certified test reports from a qualified independent testing laboratory evidencing compliance of tile and tile setting products with requirements specified based on comprehensive testing of current products. Include in reports testing laboratory's interpretation of test results relative to specified requirements.

F. Submit 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, names of Architects and Owners, plus other information specified.

1.05 QUALITY ASSURANCE

A. Single-Source Responsibility for Tile: Obtain each color, grade, finish, type, composition, and variety of 'le 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 waterproofing, Setting and Grouting Materials: Obtain preblended aggregate and cement materials and admixtures of a uniform quality from one manufacturer.

C. Installer Qualifications: Engage an experienced Installer who has successfully completed tile installations similar in material, design, and extent to that indicated for Project.

D. Preinstallation Conference: Conduct conference at project site to comply with requirements of Division 1.

1.06 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.

1.07 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 not less than 50 degrees F in tiled areas during installation and for 7 days after completion, unless higher temperatures are required by referenced installation standard or manufacturer's instructions.

D. Provide a minimum of 40 foot candles of lighting on surfaces to be tiled. Simulate finished lighting conditions for the installation of wall tile.

1.08 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

2.01 MANUFACTURERS

A. Subject to compliance with requirements, provide products by one of the following or equal:
   1. Tile:
      a. American Olean Tile Company., Inc.
      b. Dal-Tile Corporation.
   2. Mortars and Grouts:
      a. Bostik Construction products Division.
      b. Laticrete International Inc.
      c. Mapei Corporation.

2.02 TILE

A. ANSI Standard for Ceramic Tile: Comply with ANSI A137.l "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 grouting.

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 requirements:
   1. Provide selections made by Architect from manufacturer's full range of colors, textures, and patterns for products of type indicated.
   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.

E. Mounting: Where factory-mounted tile is required, provide back- or edge-mounted tile assemblies as standard with manufacturer unless another mounting method is indicated.

2.03 TILE MATERIALS

A. Unglazed Ceramic Mosaic Tile: Standard Grade ceramic mosaic tile conforming to ANSI A137.1. provide colors and patterns as indicated on the Drawings. 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: Abrasive grain with cushion edges.
5. Provide matching coved base.
6. Color Range: Up to (3) colors shall be as selected by Architect from Color Group 3.

B. Glazed Ceramic Wall Tile: Standard Grade, conforming to ANSI A137.l. Provide bright glazed or matte glazed wall tile in colors and patterns indicated on the Drawings. Provide flat tile complying with the following requirements:
1. Nominal Facial Dimensions: 4 inches by 4 inches.
2. Nominal Thickness: 5/16 inch.
3. Face: Plain with cushion edge.
4. Color Range: Up to (2) colors shall be as selected by Architect from Color Group 2.

C. Trim Units: provide tile trim units to match characteristics of adjoining flat tile and to comply with following requirements:
1. Size: As indicated, coordinated with sizes and coursing of adjoining flat tile where applicable.
2. Shapes: As follows, selected from manufacturer's standard shapes:
   a. Base for Thinset Mortar Installations: Coved.
   b. Wainscot Cap for Thinset Mortar Installations: Surface bullnose.
   c. External Corners for Thinset Installations: Surface bulinose.
   d. Internal Corners: Field-butted square corner except use coved base and cap angle pieces designed to member with stretcher shapes.

D. Through Body Porcelain Tile: Provide "Borgo Antico BA02 Monozone Unpolished":
1. Nominal Facial Dimensions: 12 inches by 12 inches.
2. Nominal Thickness: 5/16 inch.
3. Face: Plain with cushion edge.
4. Trim Shapes: Provide manufacturer's standard 3 x 12 wainscot cap.
5. Color Range: One (1) color shall be as selected by Architect from manufacturer's standard range.

2.04 SETTING MATERIALS AND ACCESSORIES

A. Waterproof Membrane: provide membrane meeting ANSI A118.10 - one of the following or equal:
1. "Hydroment Ultra-Set" integral waterproofing membrane by Bostik Construction products Division.
2. "Planicrete W" by Mapei Corporation.
   a. Accessories: Flexible PVC (0.030 inches thick) reinforcing material.
3. "Laticrete 9235" Waterproof Membrane by Laticrete International.

B. Bond coat for tile over cast-in-place concrete, over masonry walls and over cementitious backer board: Latex-Portland cement mortar conforming to ANSI A118.4. Provide one of the following or equal:
1. "Keralastic/Kerabond" by Mapei Corporation.
2. "Hydroment Flex-A-Lastic #447/Tile Mate" by Bostik Construction Products Division.
3. "Laticrete 4237 with 211 Crete Filler Powder" by Laticrete International.

C. Bond Coat over gypsum board: Organic adhesive con forming to ANSI A136.1, Type I. Provide one of the following or equal:
1. "Ultra/Mastic 1" by Mapei Corporation.
2. "Hydroment 7001" Type 1 mastic by Bostik Construction Products Division.
3. "Laticrete 15 Mastic" by Laticrete International.

D. Grout for Ceramic Tile: Latex-Portland cement grout conforming to ANSI A118.6. Color of grout shall be selected by Architect. Provide one of the following or equal:
   1. Plastijoints with Keracolor; by Mapei Corporation.
   2. Hydroment Ceramic Tile Grout with Hydroment 428 Flexible Grout Admixture; by Bostik Construction Products Division.
   3. Laticrete Sanded (500 Series) or Unsanded (600 Series) Grout and Joint Filler with Laticrete 1776 Grout Admix Plus; by Laticrete International.

E. Metal Edge Strips: Zinc alloy or stainless steel terrazzo strips, 1/8 inch wide at top edge with integral provision for anchorage to mortar bed or substrate.

2.05 MIXES

A. Mix mortars and grouts to comply with requirements of referenced standards and manufacturers for accurately proportioning of materials, water or additive content, mixing equipment and mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortars and grouts of uniform quality with optimum performance characteristics for applications indicated.

PART 3 - EXECUTION

3.01 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 jnstalling tile.
   3. Do not proceed with installation until unsatisfactory conditions have been corrected.

B. Maximum variation in surfaces to receive tile shall be as follows:
   1. Prior to jnstalling floor tile, ensure surfaces are level, with maximum surface variation of 1/8 inch in 10 feet.
   2. Prior to installing wall tile, ensure surfaces are plumb and straight, with maximum surface variation of 1/8 inch in 8 feet.

3.02 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.

3.03 INSTALLATION

A. Thinset Methods:
   1. Install ceramic floor tile over the following floor substrates in accordance with ANSI A108.S using Latex portland cement mortar.

a. Cementitious Backer Board: TCA Method F144.
1) Treat joints of cementitious backer board units to comply with manufacturer's instructions.

2. Install ceramic wall tile over gypsum board in accordance with ANSI A108.4 (TCA Method W223) using water-resistant organic adhesives.

3. Mix and proportion bond coat and grout materials in accordance with manufacturer's recommendations.

C. Waterproofing for Ceramic Tile Applications:
1. Install waterproofing in compliance with waterproofing manufacturer's instructions to produce a waterproof membrane of uniform thickness bonded securely to substrate.
2. Do not install tile over waterproofing until waterproofing has cured and has been flood tested over a twelve (12) hour period to determine that it is watertight.

D. Thresholds: Install thresholds at locations indicated; set in same type of setting bed as abutting field tile.

E. Metal Edge Strips: Install at locations indicated or where exposed edge of tile flooring meets carpet, wood or other flooring which finishes flush with top of tile.

F. Center and balance areas of tile, if possible.
1. An excessive amount of cuts shall not be made. Usually, no cuts smaller than half size should be made. Make all cuts on the outer edges of the field.
2. Smooth cut edges. Install tile without jagged or flaked edges.
3. Fit tile closely where edges will be covered by trim, escutcheons or other similar devices.
4. The splitting of tile is expressly prohibited except where no alternative is possible.

G. Maintain the heights of tile work in full courses to the nearest obtainable dimension where the heights are given in feet and inches and are not required to fill vertical spaces exactly.

H. Make corners of all tile flush and level with corners of adjacent tile, with due allowance to tolerances for tile. Form internal wall corners square and external corners bullnosed. Keep all joint lines straight and of even width, including miters.

I. Thoroughly back-up with thin-set bonding material all thin-set trim units, molded or shaped pieces and secure firmly in place.

J. Finish floor and wall areas level and plumb with no variations exceeding 1/8 inch in 8 feet from the required plane.
1. Sound tile after setting. Remove and replace hollow sounding units.

K. Allow tile to set for a minimum of 48 hours prior to grouting.
1. Grout ceramic tiles and ceramic mosaic tiles with Latex-Portland grout in accordance with grout manufacturer's instructions and ANSI A108.10.

3.04 FIELD QUALITY CONTROL

A. Close spaces in which tile is being set to traffic and other work. Keep closed until tile is firmly set.

B. Newly tiled floors shall not be walked on or worked on without using kneeling boards or equivalent protection of the tiled surface.

C. Tile setting materials shall not be applied to surfaces that contain frost. Tile shall not be installed in areas where the temperature is not maintained above 50 degrees F. or where the temperature of the backing is above 100 degrees F.

D. Completed installation shall be free of broken, damaged or faulty tile.

3.05 ADJUSTING

A. Correction of Defective Work: For a period of one year following Substantial Completion, return to the job and correct all defective work. Defective work includes, without limitation, tiles broken in normal use due to deficiencies in the setting bed, loose tile or loose grout and all other defects which may develop as a consequence of poor workmanship or defective materials.

B. Nothing in the above paragraph shall alter or reduce the Contractor's obligation to perform the Work of this Contract fully, or reduce the Owner's rights under law to recover damages during the full statutory period allowed for the Contractor's failure to perform.

3.06 CLEAN-UP

A. Keep work areas clean during progress of tile installation. Remove empty cartons and sweep out excess mortar and other debris daily.

B. Upon completion of setting and grouting, thoroughly sponge, and wash tile. Finally polish glazed tile with clean, dry cloths.

C. At completion of installation work, remove all tools, equipment, containers and debris from job and leave work areas broom clean.

D. Replace or restore work of other trades damaged or soiled by the tile work.

END OF SECTION

SECTION 09500 SUSPENDED ACOUSTICAL CEILINGS

1. GENERAL

1.01 GENERAL CONDITIONS The General Conditions, Supplementary General Conditions and all Sections of Division 1 shall apply to each and every contract and contractor, person or persons supplying material, labor or entering into the work directly or indirectly.

1.02 SCOPE This section includes all labor, materials, equipment and related services necessary for the fabrication, delivery and installation of the work shown on the drawings and or specified herein, including but not limited to the following:

A. Metal suspension systems for acoustical tiles.
B. Acoustical panels for all ceilings, soffits, etc.
C. Extruded aluminum ceiling fascias.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A.	Lighting	16000
B.	Heating and Ventilation	15600
C.	Sprinklers	15500

1.04 ALTERNATES: Refer to Section 01035 to determine the extent to which work of this Section will be affected by any Alternates, Allowances or Unit Prices.

1.05 QUALITY CONTROL: For fabrication and installation of all suspended ceiling systems, this Contractor shall use only personnel who are thoroughly trained and experienced in the fabrication and erection of the selected system.

1.06 STANDARDS: Comply with all pertinent recommendations published by the Ceilings and Interior Systems Contracting Association.

1.07 PROTECTION: This Contractor shall use all means necessary to protect ceiling systems and materials before, during and after installation and to protect the installed work of other trades.

2. PRODUCTS

2.01 ACOUSTICAL CEILING TILE:

A. ACT-1: 2 x 4 Square edge lay-in tile, "Fine Fissured #1728" by Armstrong.
   1. Grid: White with 15/16" face width.

B. ACT-2: 2 x 2 Tegular edge lay-in tile, "Cirrus # 589" by Armstrong.
   1. Grid: White with 9/16" face width.

B. ACT-3: 2 x 2 Tegular edge lay-in tile, "Cirrus # 584" by Armstrong.
   1. Grid: White with 15/16" face width.

C. ACT-4: 2 x 4 Square edge lay-in tile, "Ceramaguard # 608" by Armstrong.
   1. Grid: Aluminum with 15/16" face width.

D. ACT-5: 2 x 4 Square edge lay-in tile, "Clean Room NonPerf #870" by Armstrong.

1. Grid: White with 15/16" face width.

2.02 SUSPENSION GRID: Shall be pre-painted white and shall consist of runners and grid members as recommended to meet the size gauge and UL time rated requirements of the ceiling tile manufacturer.

A. Main Tee - with a double web design and with a rectangular bulb - with 9/16" or 15/16" exposed flange with a rolled cap - with cross tie holes at 6" o.c. - with hanger wire holes at 2" o.c. - with integral reversible splice.

B. Cross Tee - with double web design and with a rectangular bulb - with web extending to or from a positive interlock with main tee - with the lower flange extended and offset.

C. Wall Molding - with a channel or angle shape and with a 9/16" or 7/8" exposed face.

D. Hold Down Clips - as required for fire rating, access system.

2.03 HANGER WIRE: 12 ga. minimum galvanized steel.

2.04 OTHER MATERIALS: All other materials, not specifically described but required for a complete and proper installation of suspended acoustical ceiling, shall be as selected by the Contractor subject to the approval of the Architect.

2.03 EXTRUDED ALUMINUM CEILNG FASCIA: "Axiom" by Armstrong.

3. EXECUTION

3.01 INSPECTION

A. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

B. Verify that suspended acoustical ceiling may be installed in accordance with the original design, all codes and regulations and any approved Shop Drawings.

3.02 DISCREPANCIES: In the event of discrepancy, immediately notify the Architect. Do not proceed with installation in areas of discrepancy until all such discrepancies have been full resolved.

3.03 INSTALLATION OF SUSPENSION GRID

A. Space main runners and hanger wires at 48" o.c. maximum in accordance with reflected ceiling plan.

B. The suspension system shall support the ceiling assembly shown on the drawings with a maximum deflection of 1/360 of span.

3.04 TOLERANCES: All suspension members shall be leveled within a tolerance of 1/8" in 12'.

3.05 LATERAL BRACING

A. Furnish and install lateral bracing consisting of at least 12 gauge wire, splayed at 45°, in the following locations:

1. At the midpoint of all ceilings not exceeding 12 lineal feet.
2. At 12' o.c. each way in all large ceiling areas not restrained by partitions.

B. Secure all lateral bracing to structural deck at right angles to the direction of partitions.

3.06 CLEANING UP: Completely remove all finger prints and traces of soil from the surfaces of grid and acoustical ceiling tiles, using only those cleaning materials specifically recommended for the purpose by the manufacturers of the materials cleaned.

END OF SECTION

SECTION 09660 RESILIENT FLOORING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK: Extent of resilient flooring and accessories is shown on drawings and in schedules. Work shall include:

Sheet Rubber Flooring
Sheet Vinyl Flooring
Vinyl Composition Tile Flooring
Flooring Transition Moldings
Vinyl Base
Mock-Up Installations of Flooring Transitions

1.03 QUALITY ASSURANCE:

A. Manufacturer: Provide each type of resilient flooring and accessories as produced by a single manufacturer, including recommended primers, adhesives, sealants, and leveling compounds.

1. Wherever possible, provide required resilient flooring and accessories produced by a single manufacturer.

B. Fire Test Performance: Unless otherwise indicated, provide resilient flooring having the following classifications or properties when tested in accordance with the standard fire tests referenced below:

1. Flame Spread: Not more than 75 as per ASTM E 84.
2. Smoke Developed: Not more than 450 as per ASTM E 84.
3. Smoke Density: Not more than 450 as per NFPA 258.

1.04 SUBMITTALS:

A. Product Data: Submit manufacturer's technical data and installation instructions for each type of resilient flooring and accessory.

B. Samples: Submit samples of each type, color, and pattern of resilient flooring, including accessories, required, indicating full range of color and pattern variation.

C. Certification for Fire Test Performance: Submit manufacturer's certification that resilient flooring furnished for areas indicated complies with required fire test performance and has been tested and meets indicted requirements.

D. Maintenance Instructions: Submit manufacturer's recommended maintenance practices for each type of resilient flooring and accessory required.

1.05 JOB CONDITIONS:

A. Maintain minimum temperature of 65 deg. F (18 deg. C) in spaces to receive resilient flooring for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. Store resilient flooring materials in spaces where they will be installed for at least 48 hours before beginning installation. Subsequently, maintain minimum temperature of 55 deg. F (13 deg. C) in areas where work is completed.

B. Install resilient flooring and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter have been cured and are sufficiently dry to achieve bond with adhesive as determined by manufacturer's recommended bond and moisture test.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Colors and Patterns: As shown or scheduled, or as selected by Architect from manufacturer's full range of standard and custom colors and patterns.

B. Tile Flooring:

1. Vinyl Composition Tile: "Imperial Texture Standard Excelon" by Armstrong. Provide 12" x 12" x 1/8" material.

C. Sheet Rubber Flooring: Heat welded rubber with 1.6 mm solid rubber wear layer and 2.4 mm integral rubber cushion backing. Total thickness of 4 mm.

1. Product: "Noraplan Envirocare Acoustic" by Nora Systems Inc. Color as selected by Architect from standard colors available.
2. Provide heat welded seams. Welding rod color as selected by Architect from standard colors available.

D. Sheet Vinyl Flooring: Heat welded reinforced vinyl with wood grain pattern wear layer.

1. Product: "Mature Wood Collection #761" by Toli Internationsl.
2. Provide heat welded seams. Welding rod color as selected by Architect from standard colors available.

E. Accessories:

1. Wall Base: Provide rubber base, with matching end stops, color as selected by the Architect.
   a. Height: 4".
   b. Thickness: 1/8".
   c. Style: Standard top-set cove.
   d. Finish: Matte.
   e. Length: 120 foot rolls. (cartons of 4' long sections will not be acceptable)
3. Resilient Edge Strips: Homogeneous vinyl or rubber composition, tapered or bullnose edge, color to match flooring, or as selected by Architect from standard colors available; not less than 1" wide.
4. Adhesives (Cements): Waterproof, stabilized type as recommended by flooring manufacturer to suit material and substrate conditions.

5. Concrete Slab Primer: Non-staining type as recommended by flooring manufacturer.
6. Leveling Compound: Latex type as recommended by flooring manufacturer.

PART 3 - EXECUTION

3.01 PREPARATION:

A. For the removal of existing resilient flooring and reinstallation of VCT flooring, follow the recommendations of the manufacturer. In the event the manufacturer has no literature regarding this issue, follow the current edition of the Armstrong World Industries Installation and Removal Recommendation.

B. Remove existing tile adhesive as required to permit proper installation of new flooring.

C. Broom clean or vacuum surfaces to be covered, and inspect subfloor. Start of flooring installation indicates acceptance of subfloor conditions and full responsibility for completed work.

1. Use leveling compound as recommended by flooring manufacturer for filling small cracks and depressions in subfloors.
2. Perform bond and moisture tests on concrete slabs to determine that concrete surfaces are sufficiently cured, dried and ready to receive flooring.
3. Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's directions.

3.02 INSTALLATION:

A. General:

1. Install flooring using method indicated in strict compliance with manufacturer's recommendations. Extend flooring into toe spaces, door reveals, and into closets and similar openings.
2. Maintain reference markers, holes, or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other non-permanent marking device.
3. Install flooring on covers for telephone and electrical ducts, and other such items as occur within finished floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers. Tightly cement edges to perimeter of floor around covers and to covers.
4. Tightly cement flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections. Hand roll flooring at perimeter of each covered area to assure adhesion.

B. Tile Floors:

1. Lay tile from center marks established with principal walls, discounting minor offsets, so that tile at opposite edges of room area are of equal width. Adjust as necessary to avoid use of cut widths less than 1/2 tile at room perimeters. Lay tile square to room axis, unless otherwise shown.

2. Match tiles for color and pattern by using tile from cartons in same sequence as manufactured and packaged if so numbered. Cut tile neatly around all fixtures. Broken, cracked, chipped, or deformed tiles are not acceptable.
   a. Lay tile in "checkerboard" fashion with grain reversed in adjacent tiles.
3. Adhere tile flooring to substrates using full spread of adhesive applied in compliance with flooring manufacturer's directions.

C. Sheet Flooring:

1. Lay flooring to provide minimum number of seams. Avoid cross seams, filler pieces, and strips. Match edges for color shading and pattern at seams in compliance with manufacturer's recommendations.
2. Install flooring with adhesives, tools, and procedures in strict accordance with manufacturer's written instructions.
3. Adhesive Application: Apply adhesive(s) following flooring manufacturer's instructions. Observe the recommended trowel notching, spread rates, and open times.
4. Prepare heat-welded seams with special routing tool supplied for this purpose and heat weld with vinyl welding bead in seams. Use methods and sequence of work in conformance with written instructions of flooring manufacturer.

D. Accessories:

1. Apply wall base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in lengths as long as practicable, with corners fabricated from base materials and with mitered or coped inside corners. Tightly bond base to substrate throughout length of each piece, with continuous contact at horizontal and vertical surfaces.
2. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed.

3.03 CLEANING AND PROTECTION:

A. Remove any excess adhesive or other surface blemishes, using neutral type cleaners as recommended by flooring manufacturer. Protect installed flooring with heavy Kraft paper or other covering.

B. Finishing: After completion of project and just prior to final inspection of work, thoroughly clean floors and accessories.

C. Do not apply any polish or wax to resilient flooring.

END OF SECTION

SECTION 09680 CARPETING

1. GENERAL

1.01 GENERAL CONDITIONS The General Conditions, Supplementary General Conditions and all Sections of Division 1 shall apply to each and every contract and contractor, person or persons supplying material, labor or entering into the work directly or indirectly.

1.02 SCOPE This section includes all labor, materials, equipment and related services necessary for the fabrication, delivery and installation of the work shown on the drawings and or specified herein, including but not limited to the following:

A. Carpeting as scheduled.
B. Carpet adhesives, seaming, anchorage edge treatment and other accessories.

1.03 ALTERNATES: Refer to Section 01035 to determine the extent to which work of this Section will be affected by any Alternates, Allowances or Unit Prices.

1.04 SUBMITTALS:

A. Prior to installation submit to the Architect two copies of the manufacturer's current recommendations for installation of the materials specified.

B. Also prior to installation, submit to the Architect a sketch showing location of all seams proposed to be made in the carpeting.

C. Prior to ordering carpet submit a full range of samples for color selection.

D. Laboratory test reports as required.

1.05 QUALITY ASSURANCE

A. For cutting, laying and trimming of carpeting, use only thoroughly trained and experienced carpet installers who are completely familiar with the materials specified, the manufacturer's recommended methods of installation, and the requirements of this work.

B. The manufacturer's recommended methods of installation shall be the basis for acceptance or rejection of methods of installation used in this work.

2. PRODUCTS

2.01 CARPET:

A. Carpet Type 1: "First Impressions" by Crossley, no exceptions.

2.02 ACCESSORIES

A. General: Installation materials shall conform with the quality, function, and substance of the products listed below. Architect will be the sole judge of the quality of materials to be used on the project.

B. Edging: No. 12-1812 universal molding by Roberts Consolidated Industries, Inc., or approved equal. Color of vinyl insert shall be as selected by Architect.

C. Installation Adhesive: Provide adhesive recommended by carpet manufacturer for adequate adhesion and water resistance at each application, but which will allow removal of carpet/cushion with minimum damage to carpeting materials and substrate, and which complies with requirements for overall flammability rating (if any) for carpeting installation.

D. Seaming Cement: Hot melt seaming adhesive of type recommended by the carpet manufacturer for taping seams and buttering cut edges of carpet backing (and bottom of face pile) at seams, to form secure seams and eliminate pile loss at seams.

E. Concrete Sealer: 35% solution of 42° Baume sodium silicate and a non-acid penetrating agent, compatible with adhesive.

F. Floor Filler: Levelastic or equal.

3. EXECUTION

3.01 PRE-INSTALLATION REQUIREMENTS: Installer must examine substrates and conditions which carpeting is to be installed and notify Contractor in writing of conditions detrimental to proper completion of the work. Do not proceed with installation of carpeting until unsatisfactory conditions have been corrected in a manner acceptable to Installer and carpet manufacturer.

3.02 CARPET TYPE 1 Shall be direct cement installation. Adhesive shall be non-toxic, waterproof and latex base formulated particularly for installing carpet and approved or recommended by the carpet manufacturer. This Contractor shall coordinate and verify with General Contractor to insure compatibility of floor topping and curing compound materials with adhesive employed.

3.03 INSTALLATION

A. General:

1. Comply with manufacturer's instructions and recommendations. Place seams in directions indicated, and as accepted on shop drawings, if any. Maintain direction of pattern and texture, including lay of pile. Do not seam weft to warp, except as specifically indicated for a direction change.
2. Extend carpet under open bottomed and raised bottom obstructions, and under removable flanges of obstructions. Extend carpet into closets and alcoves of rooms indicated for such spaces. Extend carpet under movable furniture and equipment, unless otherwise indicated.
3. Provide cutouts as indicated for removable access devices in substrate. Bind edges as neatly as possible and secure both sides of cuts to the substrate. Use double faced tape on carpet cutouts which must be lifted from substrate to gain access to devices, unless otherwise indicated. Cut only 3 sides where feasible to provide carpet flap in lieu of fully removable cutout.
4. Install carpet edge guard at locations where edge of carpet is exposed to traffic, except where another device, such as expansion joint cover system or threshold, is indicated with integral carpet binder bar or edge guard. Anchor edge guard to substrate.
5. Doors: Where seams relate to doors, center seams under door thickness. Do not place carpet seams in traffic direction in doorways.

6. Expansion Joints: Provide special carpeting treatment as indicated at expansion joints in substrate or, if none is indicate, install carpeting with provisions to accommodate movement without damaging carpet installation.

B. Glue-Down Installation:

1. Treat concrete surfaces with sealer specified. Remove excess sealer promptly. Existing floors shall be clean, wax free and sound.

2. Install a test sample to demonstrate effectiveness of adhesive. With Owner's personnel present, remove sample, demonstrating procedure to minimize damage to carpet. Apply primer to entire substrate where necessary for adequate bond of carpet.

3. Fit sections of carpet into each room or space prior to application of adhesive. Trim off mill edges unless carpet has been pre-trimmed. Maintain straight seams, true with lines of building.

4. Apply seaming cement on cut edges of carpet at seams, without being in evidence on face of carpet but securing base of pile at cut.

5. Apply adhesive uniformly to substrate in accordance with manufacturer's instructions. Butt carpet edges tightly together to form seams without gaps. Roll lightly to eliminate air pockets and ensure uniform total area bond of carpet to substrate. Remove adhesive (if any appears) promptly from face of installed carpet.

6. Coordinate with installation of base materials. Unless otherwise indicated or instructed by Architect, apply glue-down carpet before installation of resilient or wood base materials.

3.04 CLEANING, PROTECTION, FOLLOW-UP SERVICE

A. Remove debris from installation, carefully sorting pieces to be saved from scraps to be disposed of.

B. Vacuum carpet with a commercial machine, with rotating agitator or beater in nozzle. Remove spots and replace carpet where spots cannot be removed.

C. Advise Contractor of areas which should be protected during remainder of construction period, so that carpet will be in undamaged and unsoiled condition at time of acceptance. Recommend type of non-staining cover material that should be used for protective cover.

D. Follow-up Service: Return to installation at mutually agreeable time(s), within 6 months following substantial completion of Project (or portion thereof), unless otherwise directed or approved by Owner.

END OF SECTION

SECTION 09900 PAINTING

1. GENERAL

1.01 GENERAL CONDITIONS The General Conditions, Supplementary General Conditions and all Sections of Division 1 shall apply to each and every contract and contractor, person or persons supplying material, labor or entering into the work directly or indirectly.

1.02 SCOPE This section includes all labor, materials, equipment and related services necessary for the fabrication, delivery and installation of the work shown on the drawings and or specified herein, including but not limited to the following:

A. Painting and finishing of all interior and exterior exposed items, except as indicated otherwise.

B. "Paint" as used herein means all coating systems materials, including primers, emulsions, enamels, sealers and fillers, and other applied materials whether used as prime, intermediate or finish coats.

C. Paint all exposed surfaces whether or not colors are designated in "Schedules", except where the natural finish of the material is specifically noted as a surface not to be painted and ceiling surfaces. Where items or surfaces are not specifically mentioned, paint these the same as adjacent similar materials or areas. If color or finish is not designated, the Architect will select these from standard colors available for the materials systems specified.

D. Include painting of metal glazing stops, metal louvers and other metal accessories under trim color.

1.03 ALTERNATES: Refer to Section 01035 to determine the extent to which work of this Section will be affected by any Alternates, Allowances or Unit Prices.

1.04 PAINTING NOT INCLUDED: The following categories of work are not included as part of the field applied finish work.

A. Pre-finished Items: Unless otherwise indicated, do not include painting of finished mechanical and electrical equipment including light fixtures, plastic laminate, acoustic materials and ceramic tile.

1. Refer to Drawings and Specifications for all work under this Contract to determine extent of pre-finished items.

2. Include field painting of following items:

Metal and wood trim pieces which are already painted.

Exterior surfaces of fire extinguisher cabinets.

Metal handrails.

Metal louvers.

3. Do not paint following items:
Existing wood doors and wood trim with transparent finish.

B. Facebrick and tile floors.

C. Unfinished Spaces: Painting is not required on wall surfaces scheduled as unpainted.

1. Painting will be required for all ferrous metal items on such walls or in such spaces, including but not limited to doors, frames and handrails.

D. Finish Hardware: Not to be field painted.

E. Operating Parts and Labels: Moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sensing devices, motor and fan shafts will not require finish painting, unless otherwise indicated.

1. Do not paint over any code required labels, such as Underwriter's Laboratories and Factory Mutual, or any equipment identification, performance rating, name or nomenclature plates.

1.05 QUALITY ASSURANCE; SUBMITTALS:

A. Special Coating Applicator: For special coating materials (seamless wall covering), use only applicator trained and approved in writing by product manufacturer.

1. If necessary, sub-subcontract this work to approved applicator.

2. Submit list of completed installations by applicator, whether by painter or sub-subcontractor, and evidence of approval by manufacturer, before commencing such work.

B. Manufacturer's Instructions: All instructions and/or recommendations of the painting materials manufacturer(s) regarding storage, handling, mixing, thinning, surface preparation, application, thicknesses, curing, protection and all other aspects of painting work, apply and shall be followed explicitly unless otherwise specified.

C. Manufacturer's Data: For information only, (no action required by Architect unless requested in writing) submit 2 copies of manufacturer's technical information including paint label analysis and application instructions for each material proposed for use. Transmit a copy of each manufacturer's instructions to the paint applicator.

D. Maintenance Material: Furnish to Owner surplus paint for maintenance purposes in original sealed containers, clearly marked as to contents and color.

1. Quantity: 1% of each type of paint product and color used on Project.

1.06 FIELD SAMPLE AREAS:

A. For each separate type of paint finish provide small test area to indicate color, texture and sheen to be expected.

1. Test areas shall be at least 10 sq. ft. of surface area, with permanent lighting facilities in place.

2. Provide at interior walls as directed.

3. Include for special coatings (seamless wall covering material and epoxy) on each different wall material (gypsum drywall, CMU, concrete).

B. Notify Architect minimum of 48 hours in advance of sample area preparation. Architect may order repeat of sample areas, with various combinations of paint materials and/or application methods, until the color, texture and sheen as desired by the Architect is obtained.

C. Test areas shall be full coat finish samples, with all under coating materials included.

D. After approval, test areas shall remain as standard of quality for painting of similar surfaces in Project.

1.07 DELIVERY AND STORAGE

A. Deliver all paint materials to the job site in their original, new and unopened packages and containers bearing manufacturer's name and label, and the following information:

1. Name or title of material.
2. Fed. spec. number or other reference standard, if applicable.
3. Manufacturer's stock number and date of manufacture.
4. Manufacturer's name.
5. Contents by volume, for major pigment and vehicle constituents.
6. Thinning instructions.
7. Applications instructions.
8. Color name and number.

B. Store all materials, supplies and equipment in a safe, convenient central location as approved by the Architect and Owner. Mix and dispense all materials within such area. Keep all areas accessible, clean and free from oily rags, waste and other debris. Store oily rags only in approved metal containers with covers.

C. Provide suitable protection to prevent damage to floors, walls ceilings and other surfaces in such areas.

D. Comply with all governing regulations, including but not limited to those of the local fire department and Owner's insurance underwriters.

E. Dispose of surplus paint products and other materials off site only in lawful manner. DO NOT dispose of any paint products by pouring in any plumbing fixtures or on the ground, or elsewhere on site in any manner.

1.08 JOB CONDITIONS:

A. Apply water base paints only when the temperature of surfaces to be painted and the surrounding air temperatures are between 50°F and 90°F unless otherwise permitted by the paint manufacturer's printed instructions.

B. Apply solvent thinned paints only when the temperature of surfaces to be painted and the surrounding air temperatures are between 45°F and 95°F unless otherwise permitted by the paint manufacturer's printed instructions.

C. Do not apply paint in snow, rain, fog or mist; or when the relative humidity exceeds 80%; or to damp or wet surfaces; unless otherwise permitted by the paint manufacturer's printed instructions.

D. Painting may be continued during inclement weather only if the areas and surfaces to be painted are enclosed and heated within the temperature limits specified by the paint manufacturer during application and drying periods.

1.09 COLORS AND SAMPLES: Color schedule as selected by Architect and as indicated on drawings.

2. PRODUCTS

2.01 GENERAL

A. Colors and Pigments: Provide pure, non-fading, lime proof colors and pigments applicable types of suit substrates and service indicated.

1. Provide only paints certified as lead free in compliance with applicable environmental laws and regulations.

B. Paint Coordination: Provide finish coats which are compatible with substrate coatings. Provide barrier coats over incompatible substrates or remove and reprime as required. Notify the Architect in writing of any anticipated problems using specified coating systems with existing substrates.

2.02 PAINT MANUFACTURER AND QUALITY:

A. Acceptable Manufacturers: Provide only products as made by the following manufacturers:

1. Sherwin Williams
2. Pratt and Lambert
3. Benjamin Moore

B. Provide undercoat paint produced by the same manufacturer as the finish coats. Use only thinners approved by the paint manufacturer and use only within recommended limits.

2.03 FIRE SPREAD RATINGS, EPOXY AND OTHER SPECIAL COATING SYSTEMS:

A. Materials shall have a "Class A" fire rating when applied as a system, and shall meet or exceed the following requirements when tested under ASTM E84:

1. Flame Spread: 0-25
2. Fuel Contributed: 0-15
3. Smoke Developed: 0-25 (smoke shall be non-toxic)

B. Submit test reports for above requirement.

3. EXECUTION

3.01 INSPECTION

A. Applicator must examine the areas and conditions under which painting work is to be applied and notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Applicator.

B. Starting of painting work will be construed as the Applicator's acceptance of the surfaces and conditions within any particular area.

C. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces or conditions otherwise detrimental to the formation of a durable paint film.

3.02 PREPARATION OF SURFACES

A. General:

1. Perform preparation and cleaning procedures in strict accordance with the paint manufacturer's instructions and as herein specified, for each particular substrate condition.

2. Remove all hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish painted, or provide surface applied protection prior to surface preparation and painting operations. Remove, if necessary, for the complete painting of the items and adjacent surfaces. Following completion of painting of each space or area, reinstall the removed items by workmen skilled in the trades involved.

3. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Program the cleaning and painting so that contaminants from the cleaning process will not fall onto wet, newly painted surfaces.

B. Cementitious Materials, General: Determine the alkalinity and moisture content of the surfaces to be painted by performing appropriate tests. If the surfaces are found to be sufficiently alkaline to cause blistering and burning of the finish paint, correct this condition before application of paint. Do not paint over surfaces where the moisture content exceeds that permitted in the manufacturer printed directions.

C. Ferrous Metals:

1. Clean ferrous surfaces of peeling paint, oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning.

D. Masonry:

1. Dry brush CMU where existing paint is peeling. Thoroughly clean surfaces of oil, grease, dirt and other foreign substances by solvent or mechanical cleaning.

3.03 MATERIALS PREPARATION

A. Mix and prepare painting materials in accordance with manufacturer directions.

B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.

C. Stir materials before application to produce a mixture of uniform density and stir as required during the application of the materials. Do not stir surface film into the material before using.

3.04 APPLICATION

A. General:

1. Apply paint in accordance with the manufacturer's directions. Use applicators and techniques best suited for the substrate and type of material being applied.

2. Apply additional coats when undercoats, stains, or other conditions show through the final coat of paint, until the paint film is of uniform finish, color and appearance. Give special attention to insure that all surfaces, including edges, corners, crevices, welds and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.

3. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only before final installation of equipment.

4. NOTE WELL: Finish exterior doors on tops, bottoms and side edges the same s the exterior faces, unless otherwise indicated. Final coat may be omitted on top and bottom surfaces on interior work.

B. Scheduling of painting:

1. Apply first coat material to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practical after preparation and before subsequent surface deterioration.

2. Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform of feel sticky under moderate thumb pressure, and the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

C. Minimum Coating Thickness: Apply each material at not less than the manufacturer's recommended spreading rate, to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer.

1. Where applicable apply to minimum coating thicknesses specified.

D. Prime Coats: Apply a prime coat where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn through or other defects due to insufficient sealing.

E. Pigmented (Opaque) Finishes: Completely cover to provide an opaque smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be acceptable.

F. Completed Work: Match approved samples for color, texture and coverage. Remove, refinish or repaint work not in compliance with specified requirements.

3.05 CLEAN UP AND PROTECTION:

A. Clean Up:

1. During progress of work, remove from the site all discarded paint materials, rubbish, cans and rags at the end of each work day.

2. Upon completion of painting work, clean window glass and other paint spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

B. Protection:

1. Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing and repainting, as acceptable to the Architect.

2. Provide "Wet Paint" signs as required to protect newly painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.

3. At the completion of work of other trades, touch up and restore all damaged or defaced painted surfaces.

3.06 PAINTING SCHEDULE:

A. General:

1. Following schedule shall not be considered as entirely inclusive, but shall be construed as general guide for complete painting.

2. Where items or surfaces are not specifically mentioned, paint these the same as adjacent or similar materials or areas.

3. Number of coats scheduled are minimum acceptable. Apply additional coats when substrate, undercoats, stains, or other conditions shown through the final coat of paint (including dark colored substrate materials) until the finished coat is of uniform finish, color and texture.

C. Interior Surfaces:

1. Gypsum Board Walls — Latex Eggshell

   1 Coat Primer
   2 Coats Finish: SW ProMar 200 Interior Latex Low Sheen ES
   (Provide semi gloss at bathroom and janitor closet.)
   (1 Coat finish only at existing GWB and plaster walls.)

2. Gypsum Board Ceilings — Latex Flat

   1 Coat Primer
   1 Coat Finish: SW ProMar 200 Interior Latex Flat
   (1 Coat finish only at existing GWB and plaster ceilings.)

3. Wood Trim for Paint Finish — Latex Semi-Gloss

   1 Coat Primer
   2 Coats Finish: SW ProMar 200 Interior Latex Semi-Gloss
   (1 Coat finish only at existing trim.)

4. Wood Trim for Transparent Finish — Satin Clear

   3 Coats SW Wood Classics Waterborne Polyurethane

5. Metal Doors, Frames and Misc. Metals — Latex Semi-Gloss

   1 Coat Shop Primer
   2 Coats Finish: SW ProMar 200 Interior Latex Semi-Gloss
   (2 Coats finish also at existing metal.)

END OF SECTION

SECTION 09960 WALLCOVERINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 DESCRIPTION OF WORK:

A. Extent of wallcovering work is indicated on drawings and in schedules.

B. Types of wallcovering required include the following:

1. Vinyl-coated fabric wallcovering.

1.03 QUALITY ASSURANCE:

A. Manufacturer: Provide each type of wallcovering as produced by a single manufacturer, including recommended primers, adhesives, and sealants.

B. Installer: A firm specializing in wallcovering work with not less than three years of experience in installing wallcoverings similar to those required for this project.

C. Fire Hazard Classification: Provide materials bearing UL label and marking, indicating fire hazard classification of wallcovering, as determined by ASTM E 84.

1. Provide materials with the following fire hazard classifications.

a. Flame spread not more than 25.
b. Smoke developed not more than 50.

D. Test Panels: Install 3 test panels of full usable width, including one corner, in areas designated by Architect. Replace test panels which are not acceptable to Architect until satisfactory installation is achieved.

1.04 SUBMITTALS:

A. Product Data: Submit manufacturer's technical data and installation instructions for each type of wall covering and installation materials.

B. Samples: Submit full width samples of each type of wallcovering, illustrating range of color and pattern variation; submit sets of sample moldings.

C. Certification: Submit manufacturer's certification that materials furnished comply with requirements specified.

D. Maintenance Instructions: Submit manufacturer's printed instructions for maintenance of installed work, including precautions for use of cleaning materials which could damage wallcovering.

E. Replacement Materials: After completion of work, deliver to project site not less than 6 linear yards of each type, color, and pattern of wall covering installed. Furnish replacement materials from same production run as materials installed.

1.05 DELIVERY AND STORAGE:

A. General: Comply with instructions and recommendations of manufacturer and as herein specified.

B. Deliver materials to project site in original packages or containers clearly labeled to identify manufacturer, brand name, quality or grade, and fire hazard classification.

C. Store materials in original undamaged packages or containers. Do not store rolled goods in upright position. maintain temperature in storage area above 40 deg. F (4 deg. C).

1.06 JOB CONDITIONS:

A. Maintain constant minimum temperature of 60 deg. F (16 deg. C) at areas of installation for at least 72 hours before and 48 hours after application of materials.

B. Illuminate areas of installation using building's permanent lighting system; temporary lighting alone will not be acceptable.

PART 2 - PRODUCTS

2.01 VINYL WALL COVERING:

A. General: Comply with FS CCC-W-408 for types required, and comply with requirements specified herein. Provide vinyl wallcovering material with suitable backing which has been treated with mildew and germicidal additives.

B. Stain Resistant: Type II, with delustered clear poly-vinyl fluoride film not less than 0.0005" (1/2 mil) thick as top coating complying with FS L-P-1040, Type I, Grade B, Class 2 (DuPont "Tedlar"). Do not include weight of stain-resistant coating as part of required vinyl coating weight or total fabric weight.

1. Color/Pattern/Texture: Match Architect's samples.

2.02 ACCESSORY ITEMS:

A. Adhesives: Provide manufacturer's recommended adhesive, primer, and sealer, produced expressly for use with selected wallcovering on substrate as shown on drawings. Provide materials which are mildew-resistant and nonstaining to wallcovering.

B. Release Coat: Oil base sealer or enamel undercoater for virgin drywall substrates as recommended by wallcovering manufacturer.

C. Lining Paper: Provide paper lining material expressly designed for protection of wallcovering and recommended by manufacturer for application indicated.

PART 3 - EXECUTION

3.01 PREPARATION:

A. Acclimatize wall covering materials by removing from packaging in area of installation not less than 24 hours before application.

B. Remove switchplates, wall plates, and surface-mounted fixtures in areas where wallcovering is to be applied.

C. Prime and seal substrates in accordance with wallcovering manufacturer's recommendations for type of substrate. Apply surface sealer to gypsum drywall which will permit subsequent removal of wallcovering without damage to paper facing.

D. Test substrate with electronic moisture water to verify that surfaces to be covered do not exceed 4% moisture content.

3.02 VINYL WALL COVERING INSTALLATION:

A. Use vinyl coated fabric rolls in consecutive numerical sequence of manufacture.

B. Place fabric panels consecutively in exact order they are cut from the roll including filling all spaces above or below windows, doors or similar penetrations.

C. Hang fabric by reversing alternate strips except on matched patterns.

D. Trim deeply textured strip matched patterns on a work table with a metal straight edge and an industrial razor blade.

E. Trim additional selvage where required to achieve a color and pattern match at seams.

F. Follow the manufacturer's printed instructions for mixing adhesives.

G. Apply adhesive to fabric back using a roller or paste brush.

H. Hang unmatched patterns by overlapping the edges and double cutting through both thicknesses.

I. Wrap fabric 6" beyond inside and outside corners. No cutting of corners will be permitted.

J. No horizontal seams will be permitted.

K. Use stiff bristled brush or flexible broad knife to eliminate air pockets and to secure fabric to substrate surface.

L. With a damp sponge remove excess adhesive from each seam as it is made and wipe clean and dry with a cloth towel.

M. The installed fabric shall be secure, smooth and clean without wrinkles gaps or overlaps.

3.03 ADJUST AND CLEAN:

A. Replace removed plates and fixtures; verify cut edges of wall coverings are completely concealed.

B. Remove surplus materials, rubbish, and debris resulting from wall covering installation upon completion of work, and leave areas of installation in neat, clean condition.

END OF SECTION

SECTION 10190 CUBICLES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This section includes the following:
   1. Cubicle curtain tracks and carriers.

1.02 RELATED SECTIONS

A. Section 06100 - Rough Carpentry: Requirements for blocking for mounting tracks, curtain tiebacks, wall brackets, and other items requiring anchorage.

1.03 SUBMITTALS

A. Submit in accordance with Section 01300, product data.

B. Shop Drawings: Submit shop drawings showing layout and types of cubicles, size of curtains, number of carriers, anchorage details, and conditions requiring accessories. Indicate dimensions taken from field measurements.

C. Coordination Drawings for reflected ceiling plans drawn accurately to scale and coordinating penetrations and ceiling mounted items. Show the following:
   1. Ceiling suspension assembly members.
   2. Method of attaching cubicle curtain track hangers to building structure.
   3. Ceiling mounted items including light fixtures, diffusers, grilles, speakers, sprinklers, and access panels.

D. Submit samples for verification of the following products, showing the full range of color, texture, and pattern variations expected.
   1. Cubicle Curtain Track: Manufacturer's standard size unit, not less than 4 inches long.
   2. Curtain Carrier: Manufacturer's full-size unit.

E. Schedule of cubicles using same room designations indicated on Drawings.

F. Product certificates signed by manufacturers of cubicle tracks and curtains certifying that their products comply with specified requirements.

G. Maintenance data for cubicle tracks and curtains to include in the operation and maintenance manual specified in Division 1.

1.04 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions by field measurements. Verify that tracks and curtains may be installed to comply with the original design and referenced standard.

B. Space Enclosure and Environmental Limitations: Do not install tracks and curtains until space is enclosed and weatherproof, wet work in space is completed and nominally dry, and work above ceilings is complete.

1.05 EXTRA MATERIALS

A. Furnish extra materials described below, before construction begins, that match products installed, are packaged with protective covering for storage, and are identified with labels clearly describing contents.
   1. Curtain Carriers and Track End Caps: Before installation begins, furnish quantity of full-size units equal to 3 percent of amount installed.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with requirements, provide Cubi-Trac Model No. 110-C, Ceiling Mounted cubicle track by ADC Hospital Equipment, Allentown, PA, no exceptions.

2.02 CUBICLE TRACK

A. Track: Anodized, extruded aluminum.
   1. Curved Track: Factory fabricated, not less than 12 inch (300 mm) radius bends.
   2. Splicing Clamp: Of same material and finish as track.

B. Track Mounting: Ceiling mounted; mechanically fastened with screw and tube spacer to furring through suspended ceiling.

C. Track Accessories: Provide end caps, connectors, end stops, coupling sleeves, wall brackets, and other accessories as required for secure and operational installation. Provide a quantity of carriers for 6 inch (150 mm) spacing the full length of the curtain plus 1 additional carrier.
   1. Carriers: One-piece nylon glide with chrome plated steel hook.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine ceilings for suitable conditions where cubicle track is to be installed.

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

3.02 INSTALLATION

A. Install cubicle curtain track level and plumb, according to manufacturer's written instructions and original design.

B. Install ceiling mounted tracks at intervals of not less than 24 inches.

C. Center fastener in track to insure unencumbered carrier operation.

END OF SECTION

SECTION 10265 WALL SURFACE PROTECTION SYSTEMS

PART 1 - GENERAL

1.01 GENERAL CONDITIONS The General Conditions, Supplementary General Conditions and all Sections of Division 1 shall apply to each and every contract and contractor, person or persons supplying material, labor or entering into the work directly or indirectly.

1.02 SCOPE This section includes all labor, materials, equipment and related services necessary for the fabrication, delivery and installation of the work shown on the drawings and or specified herein, including but not limited to the following:

A. Corner guards.

B. Rigid sheet wall covering panels.

1.03 RELATED SECTIONS

A. Section 06100 — Rough Carpentry: Wood blocking and grounds for surface-mounted wall guards, corner guards, and handrails.

1.04 SUBMITTALS

A. Submit in accordance with Section 01300, manufacturer's product data for each wall surface protection system component and installation accessory required, including installation methods for each type of substrate. provide written data on each required component including physical characteristics, such as durability, resistance to fading, and flame resistance.

B. Submit shop drawings showing locations, extent, and installation details of wall and corner guards, and other protection systems. Show methods of attachment to adjoining construction.

C. Samples for Initial Selection: For initial selection of color, pattern and surface texture, provide the manufacturer's standard color chips consisting of actual sections of each vinyl plastic material required showing the full range of materials, colors, and textures available.

D. Samples for Verification Purposes: Submit the following samples, prepared from the same material to be used in the Work, for verification of color, pattern, and texture selected and for compliance with requirements indicated:

1. Submit two 12 inch long samples of each type of corner guard required. Include examples of joinery, corners, and field splices.
2. Submit two 6 inch by 6 inch square samples of each rigid sheet or panel type wall surface protection material required.

E. Submit product test reports from a qualified independent testing laboratory showing compliance of wall surface protection system components with requirements indicated based on tests performed by the laboratory within the past five years.

F. Submit maintenance data for wall surface protection system components for inclusion in the Operating and Maintenance Manuals specified in Section 01730.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has previously installed wall surface protection systems similar in material, design, and extent to the systems indicated for this Project.

B. Manufacturer Qualifications: Firm experienced in manufacturing wall surface protection system components that are similar to those required for this Project and that have a record of successful in—service performance.

C. Fire Performance Characteristics: Provide wall surface protection system components that are identical to those tested in accordance with ASTM E84 for the fire performance characteristics indicated below. Identify wall surface protection system components with appropriate markings from the testing and inspection organization.

1. Flame Spread: 25 or less.
2. Smoke Developed: 450 or less.

D. Impact Strength: Provide wall surface protection system components with a minimum impact resistance of 25.4 ft. lbs per sq. ft. when tested in accordance with ASTM4 D256 (Izod impact, ft. lbs per inch notch).

E. Single Source Responsibility: Obtain each color, grade, finish, and type of wall surface protection system component from a single source with resources to provided products of consistent quality in appearance and physical properties without delaying progress of the Work.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original factory wrappings and containers, clearly labeled with identification of manufacturer, brand name, quality or grade, and fire hazard classification.

B. Store wall surface protection materials in original undamaged packages and containers inside a well ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.
1. Maintain room temperature within the storage area at not less than 70 degrees F (21 degrees C) during the period plastic materials are stored. Keep sheet material out of direct sunlight to avoid surface distortion.
2. Store rigid plastic corner guard covers in a vertical position, and rigid plastic wall guard and handrail covers in a horizontal position for a minimum of 72 hours, or until the plastic material attains the minimum room temperature of 70 degrees F (21 degrees C)

1.06 PROJECT CONDITIONS

A. Environmental Conditions: Do not install wall surface protection system components until the space is enclosed and weatherproof and until the ambient temperature within the building is maintained at not less than 70 degrees F (21 degrees C) for not less than 72 hours prior to beginning of the installation. Do not install rigid plastic wall surface protection systems until that temperature has been attained and is stabilized.

1.07 MAINTENANCE

A. Maintenance Instructions: provide the manufacturer's instructions for maintenance of installed work. Include recommended methods and frequency for maintaining optimum condition under anticipated traffic and use conditions. Include precautions against cleaning materials and methods that may be detrimental to finishes and performance.

B. Replacement Materials: After completion of work, deliver not less than 2 percent of each type, color, and pattern of wall surface protection materials and components. Include accessory components as required. Replacement materials shall be from the same production run as materials installed. Package

replacement materials with protective covering, identified with appropriate labels.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with requirements, provide products by one of the following or equal:

1. Construction Specialties, Inc.
2. IPC (Institutional Products Corporation).
3. Pawling Corporation.

2.02 MATERIALS

A. Rigid Plastic Material: Extruded, textured, chemical- and stain-resistant, high-impact, polyvinyl chloride (PVC) or acrylic modified vinyl plastic, thickness as indicated. Comply with specified requirements of ASTM D256 for impact resistance and ASTM E84 for flame spread and smoke developed characteristics.

1. Colors and Textures of Plastic Material: Provide extruded plastic material that matches colors and textures indicated by reference to the manufacturer's standard color and texture designations.

B. Plastic Sheet Wall Covering Material: Textured, chemical- and stain-resistant, high-impact, polyvinyl chloride (PVC) or acrylic modified vinyl plastic sheets, thickness as indicated. Comply with specified requirements of ASTM D256 for impact resistance and ASTM E84 for flame spread and smoke developed characteristics.

1. Colors and Textures of Plastic Material: Provide extruded plastic material that matches colors and textures indicated by reference to the manufacturer's standard color and texture designations.

C. Aluminum Extrusions: Provide alloy and temper recommended by the manufacturer for the type of use and finish indicated, but with not less than the strength and durability properties specified in ASTM B221 for 6063-T5.

D. Fasteners: Provide aluminum, non-magnetic stainless steel, or other non-corrosive metal screws, bolts, and other fasteners compatible with aluminum components, hardware, anchors, and other items being fastened. Use theft-proof fasteners where exposed to view.

2.03 CORNER GUARDS

A. Flush-Mounted, Resilient Plastic Corner Guards: Provide full-wall- height, flush-mounted, resilient plastic corner guard assembly consisting of a snap-on type plastic cover installed over a continuous aluminum retainer.

1. Cover shall be rigid, impact-resistant plastic, minimum 0.078 inch thick, in dimensions and profiles indicated.
   a. Corner Radius: 1/4 inch.
2. Retainer: Manufacturer's standard continuous, one-piece, extruded aluminum retainer, minimum 0.062 inch thick.
3. Accessories: Provide aluminum base with concealed splices, cushions, mounting hardware, and other accessories as required.
4. Product and Manufacturer: Model FS-20 Series Flush Mount Corner Guard by Construction Specialties C/S Group.
5. Drawing Designation: **CG -1**

B. Fire-Rated, Flush-Mounted, Resilient Plastic Corner Guards: Provide full wall height, resilient plastic corner guard assembly consisting of a snap-on-type plastic cover installed over a continuous aluminum retainer and a continuous galvanized or stainless steel covered intumescent fire barrier.

1. Fire Rating: Underwriters Laboratories rated 2-hour assembly.
2. Cover shall be rigid, impact-resistant plastic, minimum 0.078 inch thick, in dimensions and profiles indicated.
   a. Corner Radius: 1/4 inch.
3. Retainer: Manufacturer's standard continuous, one-piece, extruded aluminum retainer, minimum 0.062 inch thick, attached to a galvanized steel cover over the manufacturer's standard intumescent fire barrier.
4. Accessories: Provide aluminum base with concealed splices, cushions, mounting hardware, and other accessories as required.
5. Product and Manufacturer: Model FS-20R by Construction Specialties C/S Group.
6. Drawing Designation: **CG – 1FR**

C. Flush-Mounted, Resilient Plastic End Wall Guards: Provide full-wall-height, flush-mounted, resilient plastic end wall guard/protector assembly consisting of a snap-on-type plastic cover installed over a continuous aluminum retainer.

1. Cover shall be rigid, impact-resistant plastic, minimum 0.078 inch thick, in dimensions and profiles indicated.
   a. Corner Radius: 1/4 inch.
   b. Wall Thickness: As indicated on Drawings.
2. Retainer: Manufacturer's standard continuous, one-piece, extruded aluminum retainer, minimum 0.062 inch thick.
3. Accessories: Provide aluminum base with concealed splices, cushions, mounting hardware, and other accessories as required.
4. Product and Manufacturer: Model FSC-25 Series Flush Mount End Wall Protector by by Construction Specialties C/S Group.
5. Drawing Designation: **CG - 2**

2.04 IMPACT-RESISTANT WALL COVERINGS

A. Semirigid Sheet Wall Covering: Provide manufacturer's standard semirigid, embossed, fiber-backed, impact— resistant plastic sheets. Sheets shall comply with fire performance characteristics specified and be chemical- and stain-resistant. Provide manufacturer's standard matching moldings and trim as required.

1. Sheet Size: As indicated.
2. Sheet Thickness: 0.060 inch thick.

2.05 DOOR PROTECTION ARMOR PLATES

A. Semirigid Sheet Armor Plates: Provide manufacturer's standard semirigid, embossed, fiber-backed, impact— resistant plastic sheets. Sheets shall comply with fire performance characteristics specified and be chemical- and stain-resistant.

1. Sheet Size: As indicated.
2. Sheet Thickness: 0.040 inch thick.

2.06 FABRICATION

A. Fabricate wall and door protection systems to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thicknesses of components.

B. Preassemble components in the shop to the greatest extent possible to minimize field assembly. Disassemble only as necessary for shipping and handling.

C. Fabricate components with tight seams and joints with exposed edges rolled. Provide surfaces free of evidence of wrinkling, chipping, uneven coloration, dents, and other imperfections. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.

D. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors for interconnection of members to other construction.

E. Provide inserts and other anchorage devices for connecting components to concrete or masonry. Fabricate anchoring devices to be capable of withstanding imposed loads. Coordinate anchoring devices with the supporting structure.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions in which wall surface protection components and wall protection systems will be installed.

1. Complete all finishing operations, including painting, before beginning installation of wall surface protection system materials.

B. Impact-Resistant Wall Covering Materials: Wall surfaces to receive impact-resistant wall covering materials shall be dry and free from dirt, grease, loose paint, and scale.

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

3.02 PREPARATION

A. Prior to installation, clean substrate to remove dust, debris, and loose particles.

3.03 INSTALLATION

A. Install wall surface protection units plumb, level, and true to line without distortions.

1. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished work.

B. Install aluminum retainers, mounting brackets, and other accessories in strict accordance with the manufacturer's instructions.

1. Where splices occur in horizontal runs of over 20 feet, splice aluminum retainer and plastic cover at different locations along the run.

3.04 CLEANING

A. Immediately upon completion of installation, clean plastic covers and accessories using a standard ammonia based household cleaning agent. Clean metal components in accordance with the manufacturer's recommendations.

B. Remove excess adhesive using methods and materials recommended by manufacturer.

C. Remove surplus materials, rubbish, and debris resulting from installation upon completion of work and leave areas of installation in neat, clean condition.

END OF SECTION

SECTION 10800 METAL TOILET ACCESSORIES

1. GENERAL

1.01 GENERAL CONDITIONS The General Conditions, Supplementary General Conditions and all Sections of Division 1 shall apply to each and every contract and contractor, person or persons supplying material, labor or entering into the work directly or indirectly.

1.02 SCOPE This section includes all labor, materials, equipment and related services necessary for the fabrication, delivery and installation of the work shown on the drawings and or specified herein, including but not limited to the following:

A. Grab Bars and Toilet Accessories.

B. Environmental Services Closet Accessories

1.03 SUBMITTALS:

A. Manufacturer's Data: For information only, submit 2 copies of manufacturer's technical data and installation instructions for each toilet accessory. Transmit copies of installation instructions to the Installer.

1.06 PROTECTION: This Contractor shall use all means necessary to protect these materials before, during and after installation and to protect the work of all other trades. In the event of damage, immediately make all repairs and/or replacements necessary at no additional cost to the Owner.

2. PRODUCTS

2.01 TOILET ACCESSORIES: Shall be manufactured by Bobrick, or equal as scheduled.

Metal Framed Mirror	B-290 1836
Surface Mounted Paper Towel Dispenser	Furnished By Owner
Surface Mounted Toilet Paper Dispenser	Furnished By Owner
Surface Mounted Sanitary Napkin Disposal	B-4353
Hook	B-211
Surface Mounted Soap Dispenser	Furnished By Owner
Grab Bar	B-6206 1 1/2" Dia.
Environmental Services Closet Shelves	B-298 – 24 (8"D x 24"W)

3. EXECUTION

3.01 INSPECTION:

A. Installer must examine the areas and conditions under which toilet accessories are to be installed and notify the Contractor in writing of conditions detrimental to the proper and

timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

3.02 INSTALLATION

A. Use stainless steel Torx security fasteners.

B. Provide anchors, bolts and other necessary anchorages, and attach accessories securely to walls and partitions in locations as shown or directed.

E. Provide theft resistant fasteners for all accessory mountings.

F. Secure toilet room accessories in accordance with the manufacturer's instructions for each item and each type of substrate construction.

END OF SECTION

SECTION 10900 MISCELLANEOUS BUILDING SPECIALTIES

1. GENERAL

1.01 GENERAL CONDITIONS The General Conditions, Supplementary General Conditions and all Sections of Division 1 shall apply to each and every contract and contractor, person or persons supplying material, labor or entering into the work directly or indirectly.

1.02 SCOPE This section includes all labor, materials, equipment and related services necessary for the fabrication, delivery and installation of the work shown on the drawings and or specified herein, including but not limited to the following:

A. Stainless steel wall overlay.

B. Stainless steel base.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. Finish Hardware 08710

1.04 ALTERNATES: Refer to Section 01035 to determine the extent to which work of this Section will be affected by any Alternates, Allowances or Unit Prices.

1.05 SUBMITTALS: Submit manufacturer's technical product data for each item specified in this section. Include installation instructions and color samples of all items. Submit detailed drawings of all fabricated items.

1.06 PROTECTION: This Contractor shall use all means necessary to protect specialties before, during and after installation and to protect the work of all other trades. In the event of damage, immediately make all repairs and/or replacements necessary at no additional cost to the Owner.

2. PRODUCTS

2.01 STAINLESS STEEEL WALL OVERLAY: Provide 25 gauge Type 314 stainless steel mop receptor wall protection panels. Hem all edges and set in continuous silicone sealant.

2.0 STAINLESS STEEL BASE: Provide 25 gauge Type 304 gauge stainless steel base fabricated to profile shown. Hem all edges and set in continuous construction adhesive.

1. Finish: #4 polished.

3. EXECUTION

3.01 INSTALL all specialty items in accordance with manufacturer's recommendations.

END OF SECTION

SECTION 12200 HORIZONTAL BLINDS

PART 1 - GENERAL

1.1 GENERAL CONDITIONS The General Conditions, Supplementary General Conditions and all Sections of Division 1 shall apply to each and every contract and contractor, person or persons supplying material, labor or entering into the work directly or indirectly.

1.2 SCOPE This section includes all labor, materials, equipment and related services necessary for the fabrication, delivery and installation of the work shown on the drawings and or specified herein, including but not limited to the following:

A. Metal horizontal louver blinds as scheduled herein.

1.3 QUALITY ASSURANCE; SUBMITTALS:

A. Comply with requirements of SECTION 01330 – SUBMITTAL PROCEDURES.

B. Code Compliance: Provide flame proof shades complying with NFPA 101.

C. Quality Assurance: Provide complete assemblies produced by one manufacturer for each type required including hardware, accessory items, mounting brackets, and fastenings.

D. Submittals: In addition to manufacturer's product data and installation instructions, submit following:
1. Product data, including catalog cuts and ratings.
2. Shop drawings for installations not fully detailed in product data.

PART 2 - PRODUCTS

2.1 GENERAL:

A. Fabrication: fabricate units to completely fill the openings as indicated, from head to sill and jamb to jamb. For continuous window wall installations, fabricate units so that ends occur only over mullions or other defined vertical separations, unless otherwise indicated.

B. Colors: As shown or as selected by Architect from manufacturer's standards.

2.2 HORIZONTAL BLINDS

A. General: Provide manufacturer's standard vertical lifting and horizontal tilting unit complete with headrail, bottom rail, slats and accessories.

B. Product: Levelor Lorentzen Riviera Blinds, modified as specified; or approved equal by one of following:
1. Hunter Douglas, Inc.
2. Marathon Carey-McFall Div., Marathon Mfg. Co.

C. Headrail: Formed from sheet steel, minimum, 0.025" thick, into channel shaped sections housing tilting mechanism; with top and end braces, top cradles, cord lock and required accessories; finished to match slats.

D. Bottom Rail: Formed from steel sheet into tubular shape, with end caps, finished to match slats.

E. Aluminum Slats: Formed from spring tempered aluminum 0.10" thick, with manufacturer's standard baked enamel finish, as follows:

1. Slat Width: 1" narrow slats, with other components sized to suit.
2. Slat Type: Non-perforated.

F. Ladders: Braided polyester cord design with integrally braided ladder rungs.

G. Tilting mechanism to hold tilting rod, slats and bottom rail at any set angle, wand operated.
1. Provide wands of clear or neutral color to harmonize with blinds.
2. Provide wands at high windows to extend to approximately 10' above finish floor, with special end to accommodate operation by wand extension handle.
   a. Provide standard length wands, with special end, for windows above folding bleachers.
   b. Furnish to Owner, and obtain signed receipt therefore, extension handles to suit each high window condition.

H. Lifting Mechanism: Provide crash proof cord locks with cord separators, braided polyester or nylon lift cords, and cord equalizers.
1. Adjust cords of high windows so that bottoms are approximately 10 feet above finish floor, except for low windows above bleachers.

I. Installation Brackets: Provide mounting hardware as recommended by manufacturer for installation indicated.

J. Operation to provide full tilting slats rotating approximately 180° with operating controls on left side; full height raising with lifting cord locks and cords on right hand side of units unless otherwise indicated.

K. Finish: Manufacturer's standard baked on synthetic enamel finish.

2.4 FABRICATION AND OPERATION:

A. Prior to fabrication, verify actual opening dimensions by accurate site measurements. Adjust dimensions for proper fit at openings. Cooperate with other trades for securing tracks to substrates and other finished surfaces.

B. Fabricate window treatment components from non-corrosive, non-staining, non-fading materials which are completely compatible with each other, and which do not require lubrication during normal expected life.

C. Fabricate blind units to completely fill the openings as shown, from head-to-sill and jamb-to jamb.

D. For continuous window wall installation, fabricate blinds so that ends occur only over mullions or other defined vertical separation, unless otherwise indicated.

1. Provide multiple blinds for multiple windows, i.e. 2 windows, 2 blinds; 3 windows, 3 blinds, etc.

E. Space slats to provide overlap for light exclusion when in fully closed position.

F. Equip vertical blind units, unless otherwise indicated for the following operation:

1. Full-tilting operation with slat rotating approximately 180 degrees. Place tilt operating controls on left- hand side of blind units, unless otherwise indicated.

2. Full-width sliding, to manufacturer's minimum stacking dimension, with sliding cord locks for stopping blind at any point of travel. Place pull cords on right-hand side of blind units, unless otherwise indicated.

PART 3 - EXECUTION

3.1 SITE VERIFICATION: Verify opening dimensions and conditions in field.

3.2 INSTALLATION: Install units to comply with manufacturer's instructions for the type of mountings and operations required. Position units plumb and true, securely anchored in place with recommended hardware and accessories to provide smooth, easy operation.

A. Install window treatment units in manner indicated to comply with manufacturer's instructions. Position units level, plumb, secure, at proper height and location relative to adjoining window units and other related work. Securely anchor units with proper clips, brackets, anchorages, suited to type of mounting indicated.

B. Provide adequate clearance between sash and blind to permit unencumbered operation of sash hardware.

C. Divisions between blinds are permitted only at mullions by continuous windows or openings where more than one blind for one opening occurs, unless otherwise indicated.

D. Isolate metal parts from concrete and mortar to prevent galvanic action. Use tape or thick coating or other means recommended by manufacturer to effect separation.

E. Protect installed units to ensure their being in operating condition, without damage, blemishes, or indication of use at completion of project. Repair or replace damaged units as directed by Architect.

3.3 CLEAN/ADJUST:

A. Remove dirt, finger marks and other defacement from shades, blinds and accessories.

END OF SECTION

SECTION 12523 CHAIN AND SPROCKET ROLLER SHADES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This section includes the following:
   1. Chain and sprocket type roller shades (solar control shades).
   2. Chain and sprocket double roller shades (both light filtering and blackout shades).

B. Refer to Section 01035 Alternates for work to be provided under itemized alternates.

1.02 RELATED SECTIONS

A. Section 06100 - Rough Carpentry: Wood blocking and grounds.
B. Section 09510 - Acoustical Ceilings
D. Section 09520 - Gypsum Board.

1.03 SUBMITTALS

A. Submit in accordance with Section 01300, manufacturer's specifications and installation instructions for each type of window shade unit required. Include methods of installation for each type of opening and supporting structure.

B. Samples: Submit samples for verification purposes in manufacturer's standard size1 showing full range of color, texture, and pattern variations. Prepare samples from same materials to be used for the Work. Submit the following:
   1. Three 18 inch square samples of each shade material.
   2. Three 6 inch square samples of each valance finish.
   3. One operating unit for each type of shade.

C. Maintenance Data: Include data in Maintenance Manual specified in Division 1.

1.04 QUALITY ASSURANCE

A. Provide window shade units which are complete assemblies produced by one manufacturer for each type required, including hardware, accessory items, mounting brackets, and fastenings.

B. Provide materials in colors and patterns (if any) as selected by Architect from manufacturer's standard colors/patterns.

C. Surface-Burning Characteristics: Provide products 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 products with appropriate markings of applicable testing and inspecting organization.
   1. Test Method: E 84.
   2. Flame Spread: 25 or less.
   3. Smoke Developed: 450 or less.

1.05 PROJECT CONDITIONS

A. Field Measurements: verify shade dimensions by field measurements. verify shades can be installed in compliance with the original design.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Subject to compliance with requirements, provide product of the following (no substitutions):
1. MechoShade Systems, Inc.

2.02 FABRICATION

A. Prior to fabrication, verify actual opening dimensions by accurate site measurements. Adjust shade sizes for proper fit at each window.

B. Cut shade material to suit window size, hemmed at bottom and top, of proper width to provide clearance for brackets indicated or required.

C. Furnish shade material in lengths not less than 12 inches longer than actual window dimensions to permit shade to be operated full length without tearing from roller.

D. The shade and the fabric shall hang flat without buckling or distortion. The edge, when trimmed, shall hang straight without curling or ravelling. An unguided roller shadecloth shall roll true and straight, without shifting sideways more than i 1/8 inch in either direction due to warp distortion or weave design. Fabricate all shades to the manufacturer's specifications to assure a properly installed window shading system.

2.03 MATERIALS AND FABRICATION

A. Shade System: Smooth operating chain and sprocket operated roller shade system which incorporates an adjustable slip clutch to control the rate of fall, from free running zero friction factor to a factor of 100 percent. The shade may be adjusted to stop and hold at an infinite number of positions, or adjustable at any percentage of friction to control the fall rate of the shade as required. The shade position when set as a free fall system shall be mechanical, by use of a chain retainer. At either setting the highest and lowest shade position shall have an automatic stop to prevent over winding or unrolling. The window shade mechanism shall have sufficient latitude to accommodate small lightweight shades, as well as large heavy shades compatible with glass sizes in the building.

B. Shade Mounting Brackets: Provide 1/8 inch thick sheet steel and 7/16 inch welded steel shaft which shall be the axis for the entire sprocket and spring clutch assembly; reversible for left hand or right hand operation; wall, jamb, or ceiling mounted as required. Brackets shall be permanently installed with the mechanism concealed from view when fully assembled. provide Derlin cover plate mechanically attached to sheet steel. Provide injection molded delrin cover plate for each of the brackets to conceal the metal brackets from view. Provide means of attaching a fabric without exposed hardware, and guide and retain the chain gear assembly. Brackets shall act as protective retainer for tube and shade assembly preventing accidental dislocation of tube and shade by vibration, rough usage. The bracket assembly shall be permanently mounted to the building; shade tube and fascia shall be removable.

C. SnapLoc Tube: Extruded 6063-XT6 aluminum, 1-1/2 inch outside diameter, either end of tube to engage drive system through internal extruded keyway. Tube shall be extruded with two fabric mounting channels which shall provide anti-deflection support for wide span shades. All tubes shall be removable, interchangeable without removing the drive assembly, block resetting, or readjusting the pre-set stops. Shade tube shall be self aligning and self leveling.

D. SnapLoc Fabric Mounting Spline: Provide fabric mounting spline of extruded vinyl with symmetrical insertion locking channels and embossed fabric guide. Provide spline of sufficient capacity to hold heavy shades when spline is snapped and locked into the tube. Fabric shade shall be readily removable without removing the tube from the retainer brackets, or removing the brackets from the wall.

E. Fabric-Guide End Cap: Provide Delrin end caps with steel pin which permits up to 5/16 inch lateral adjustment in tube width. Provide end cap with 2-1/4 inch outside diameter fabric-guide tapered disc feature to assure alignment and protection of the shade cloth.

F. Shade Housings:
   1. Provide SnapLoc Fascia and End Caps for all shades.
      a. Provide blackout side channels for blackout shades.

G. Finishes: Provide an anodized finish on all exposed aluminum parts. Steel parts shall be bonderized prior to painting with a baked enamel finish. Color to match Architects sample.

H. Shade Fabric:
   1. Double shade: 0700 Blackout Series for exterior shade.
      a. North Facing Interior Shades: Phiffer PW4160 Series, 10% Openness.
      b. South Facing Interior Shades: Phiffer PW4460 Series, 3% Openness.
      c. Color: As selected by Architect

   2. Single shade: 0700 Blackout Series, color as selected by Architect.

2.04 HARDWARE AND ACCESSORIES

A. Shade Roller: Extruded aluminum tube, 6063-5T6 alloy, 2.55 inch o.d. with internal keyway to receive tubular motor. The tube shall be extruded with two fabric- mounting channels designed so that the shadecloth does not disengage from the tube itself. Two inch and three inch o.d. tubes are required.

B. Mounting Spline: Extruded vinyl with asymmetrical locking channels and embossed fabric guide for use with 2.55 inch o.d. tube. Spline shall have sufficient capacity to hold shade and additional weight without disengaging from the tube.

C. End Brackets: Consist of 1/8 inch thick sheet steel. Wall, jamb, or ceiling mounted as required, and permanently installed.

D. Center Support Brackets: Supplied to meet span or weight requirements; ceiling or wall mounted.

E. Weights: Mill-finished aluminum, flat bars, single lengths for each shade panel.

G. Fascias: Extruded aluminum, 6063-TS alloy, PPG baked enamel finish in standard colors specified or custom colors to be selected, may be used for surface mounted ElectroShade

installation. Fascia shall snap on with concealed fastenings that hide the bracket assembly, and appear as a continuous unit when mounted side to side.

H. Pocket with Bottom Closure, MechoShade 4113:
Manufactured from extruded aluminum, 6063-T5 alloy, PPG baked enamel finish in standard white or custom colors to be selected. Recessed housing is specifically designed for acoustical or plaster ceilings with removable closure plate for access to the recessed and concealed roller system.

I. Finishes: All exposed aluminum parts shall have an anodized finish which, under normal conditions, prohibits deterioration of the aluminum. Steel parts shall be either cadmium plated, satin finished or have been bonderized prior to painting with a baked enamel finish.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install window shade units in manner indicated to comply with manufacturer's instructions. Position units level, plumb, secure, at proper height and location relative to adjoining window units and other related work. Securely anchor units with proper clips, brackets, anchorages, suited to type of mounting indicated.

B. Protect installed units to ensure their being in operating condition, without damage, blemishes, or indication of use at completion of project. Repair or replace damaged units as directed by Architect.

END OF SECTION

SECTION 15400
PLUMBING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

Drawings, Addenda, General Provisions of Contract, including Division 1 General and Supplementary conditions and General Requirements apply to work specified in this Section.

1.02 ALTERNATES

There are no alternates that apply to this section of the project.

1.03 DEFINITIONS

A. ADA: Designed to meet the requirements of the Americans with Disabilities Act.

B. Concealed: Shall mean in walls, in chases, above ceilings, within enclosed cabinets, otherwise enclosed.

C. Equal: Shall mean essentially the same as that product specified, but a model of a different manufacturer

C. Exposed: Shall mean in finished spaces, in closets, under counters, behind and/or under equipment and/or otherwise visible.

D. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawl spaces, and tunnels.

E. Others: Shall mean provided by sections other than this section. If not purposely assumed by another section, shall be provided by the General Contractor.

F. Materials: Shall mean any product used in the construction, including but not limited to: fixtures, equipment, piping and supplies.

G. Piping: Shall mean pipe, fittings, hangers and valves.

H. Provide: Shall mean the furnishing and installing of materials.

J. Reviewed equal: Shall mean that the Architect or a designated Consultant, not the contractor, shall make final determination whether materials are an equal to that which is specified.

K. Substitution: Shall mean materials of significantly different physical, structural or electrical requirements, performance, dimensions, function, maintenance, quality or cost, than that specified.

1.04 DESCRIPTION OF WORK

A. Work Included

1. Furnish all labor, materials, equipment, transportation, and perform all operations required to install complete alterations to the plumbing systems in the building, in accordance with these specifications and applicable drawings.

2. Provide the following:

a. Sanitary, waste and vent system
b. Domestic hot and cold water systems
c. Medical gas and vacuum systems
d. Pipe, valve and fittings
e. Water specialties
f. Drainage specialties
g. Pumps
g. Plumbing fixtures and accessories
h. Insulation
i. Installation and/or connections to fixtures/equipment provided by others

3. Specifications and accompanying drawings do not indicate every detail of pipe, valves, fittings, hangers, fixtures and equipment necessary for complete installation; but are provided to show general arrangement and extent of work to be performed.

4. Before submitting proposal, This Contractor shall be familiar with all conditions. Failure to do so does not relieve This Contractor of responsibility regarding satisfactory installation of the system.

B. Related Work Described Elsewhere

1. Cutting and patching – Division 1 and others.
2. Temporary Water, Light and Power - Division 1
3. Water and Fire Services - Division 2
4. Concrete Bases - Division 3
5. Setting of sleeves in masonry (sleeves provided by This Contractor) - Division 3
6. Carpentry Work - Division 6
7. Firestopping except as specified in this section, Division 7.
8. Flashing of Vents and Roof Drains - Division 7
9. Furnishing of Toilet Room Accessories - Division 8
10. Installation of Access Panels - Division 8
11. Finished Painting - Division 9, except as specified in this section.
12. Electrical conduit and wiring, except as noted within - Division 16

1.05 PERMITS

A. This Contractor shall be responsible for providing and filing all Plans, Specifications and other documents, pay all requisite fees and secure all permits, inspections and approvals necessary for the legal installation and operation of the systems and/or equipment furnished under this Section of the Specifications.

B. The Contractor shall frame under glass/ clear plastic all permits, secured by him, adjacent to the respective system and/or equipment and required to be displayed by Code, law or ordinance. Those permits secured but not required to be displayed shall be laminated in plastic and included in the Owner's maintenance manual.

1.06 CODES AND ORDINANCES

A. All work performed under this Section of the Specifications shall be done in accordance with applicable Maine State Laws, Uniform Plumbing Code, Subsurface Wastewater Disposal Rules, and local plumbing codes, and ordinances. The following standards are also to be followed when applicable:

ADA	Americans With Disabilities Act
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASTM	American Society for Testing and Materials
BOCA	Building Officials & Code Administrators International, Inc.
NFPA	National Fire Protection Association (a.k.a. NFC, National Fire code)
NEMA	National Electrical Manufacturer's Association
OSHA	Occupational Safety and Health Act
UL	Underwriter's Laboratories

B. If an obsolete code section or standard is specified, the latest replacement issue of each Code or standard for the application, in effect at the time of bidding, shall be used. Code requirements are the minimum quality and/or performance acceptable. Where the Specifications and/or Drawings indicate more stringent requirements, these requirements shall govern.

1.07 QUALITY ASSURANCE

A. Use sufficient qualified workmen and competent supervisors in execution of this portion of the work to ensure proper and adequate installation of the system throughout. Work performed shall conform to manufacturers recommendations, good standard practice and industry standards.

B. Any work deemed unacceptable by the Engineer, Architect or Clerk of the Works shall be redone correctly, at no additional cost to the owner.

1.08 MATERIALS AND SUBSTITUTIONS

All materials and equipment shall be new and of the latest design of respective manufacturers. **All materials and equipment of the same classification shall be the product of the same manufacturer**, unless specified otherwise.

A. Any proposal for substitution of Plumbing equipment shall be made in writing PRIOR TO OPENING OF BIDS, see Division 1. Submit full details for consideration and obtain written approval of the Architect. The phrase "or approved equal" shall be intended to mean that the Architect, not the contractor, shall make final determination whether or not substitute materials are an equal to that which is specified. The contractor shall be responsible to certify within his submittals that any equipment to be considered as an "approved equal"

meets or exceeds the requirements of this specification in all aspects and will physically fit within the space provided and still provide adequate space adjacent to the equipment for service. If requested by the Architect the contractor shall provide said certification in the form of scale drawings before review will be made. Architect will not be responsible to provide drawings for substituted materials unless the substitution is agreed upon prior to opening of bids. Architect's decision on acceptability of substitute materials shall be final.

B. Approval by Architect for such substitution shall not relieve the Plumbing Contractor from responsibility for a satisfactory installation and shall not affect his guarantee covering all parts of work

C. Any material or equipment submitted for approval which are arranged differently or is/are of different physical size from that shown or specified shall be accompanied by shop drawings indicating different arrangements of size and method of making the various connections to equipment. Final results will be compatible with system as designed.

D. Materials and equipment determined as an "approved equal" and /or substitutions must meet the same construction standards, capacities, code compliances, etc. as the equipment (i.e. manufacturer, model, etc.) specified.

E. Any additional cost resulting from the substitution of equipment shall be paid by this Contractor.

F. All materials not specified otherwise shall be manufactured within the United States and supplied locally (within the State of Maine) when available. It is preferable to obtain materials that are manufactured within 500 miles of the work site when practical.

1.09 ELECTRONIC DRAWINGS AND FILE SHARING

Plans and specifications may be made available in electronic format on request. Plans may be provided in either Adobe (.pdf) or CAD (.dwg or .dxf) formats and will be compressed using WinZip (.zip format). Recipient is responsible to obtain the necessary software to open the files. Note: CAD drawings will be made available to successful bidders only after a contract is awarded.

CAD drawings are produced with AutoCAD 2006 and may be provided in either the 2000 or 2004 file formats. Upon request for CAD files a release form will be provided which must be signed and returned to the Engineer prior to transmission of electronic files. Physical mailing address, telephone numbers and e-mail address for this office are indicated on each drawing. A signed release will not be required for Adobe based files.

All contract documents are copyrighted material. No portion of materials may be reproduced or duplicated except as indicated in the release form. Where release forms are not required (Adobe based files), materials may be printed for use by the intended recipient only and may not be reproduced or copied in any other manner unless written permission is obtained.

1.10 PLANS AND SPECIFICATIONS FOR SUPPLIERS

This Contractor shall provide his suppliers and any subcontractors with a photocopy of the specification pages and floor plans, details and schedules that pertain to the equipment to be supplied.

1.11 SHOP DRAWINGS & SUBMITTALS

A. As soon as possible after award of Contract (but not longer than 21 calendar days), before any material or equipment is purchased, Plumbing Contractor shall submit to the Architect no less than ten (10) copies of shop drawings for approval. If shop drawings are not submitted within the allotted time frame all substitutions included the late shop drawings will be invalid and the equipment specified must be provided. Any costs resulting from delays in the project schedule due to failure to submit shop drawings related to this section in a timely manner shall be the responsibility of the Plumbing Contractor. Shop drawings shall be properly identified and shall describe in detail the material and equipment to be provided, including all dimensional data, performance data, pump curves, computer selection print-outs, etc. Capacities indicated are minimums. Equipment submitted with capacities below specified parameters will be refused.

B. Corrections or comments made on the shop drawings do not relieve the contractor from compliance with requirements of the drawings and specifications. Shop drawing review is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction; coordinating his work with that of all other trades and performing his work in a safe and satisfactory manner.

C. All related items shall be submitted as a package. Partial submission shall not be reviewed until the package is complete, as itemized in paragraph "H" below.

D. Should any materials or products be purchased and/or installed without prior review and comment the contractor shall be required to remove or replace those products and/or materials if directed by the Architect at his own expense. If the materials are not removed (or replaced) or if the project is delayed as a result the Architect reserves the right to order the withholding of payment until the situation is resolved in a manner satisfactory to the Architect.

E. Plumbing shop drawings shall be separate from Mechanical shop drawings. All submittals shall have a clear area on the front no less than 4inches x 3inches to be reserved exclusively for the Engineers' shop drawing stamp or they will be refused for re-submittal.

F. Submittals must be original documents or good quality photocopies of original documents (photocopies of color samples are not acceptable). Faxed copies of submittal sheets will be refused.

G. Review must be obtained on all items specified in Section 2 or shown on the drawing, and any significant items implied or otherwise required but not specified, including:

1. Plumbing Fixtures and accessories

    a. Plumbing fixtures
    b. Faucets
    c. Seats

2. Piping, valves and Accessories

   a. Pipe, fittings, unions and flanges
   b. Shut-off, check & balancing valves

3. Water specialties

   a. Shock absorbers
   b. Relief valves
   c. Pipe hangers & seismic supports
   d. Pipe flexible connectors
   e. Equipment, pipe and valve identification
   f. Pipe sleeve wall closure devices
   g. Mixing valves

4. Drainage specialties

   a. Floor drains
   b. Cleanouts
   c. Traps

6. Insulation

   a. Pipe & fittings
   b. Equipment Insulation

H. Format

1. Related items shall be stapled or Bound together as a package. The number of copies of each package shall be as listed above. Examples of packages of related items include:

   a. Hangers and Supports
   b. Identification
   c. Insulation
   d. Valves
   e. Piping
   f. Plumbing Fixtures with accessories
   g. Drainage Specialties
   h. Water Specialties

1.12 PRODUCT HANDLING

Use all means necessary to protect materials before, during and after installation, and to protect the installed work and materials of all other trades. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

1.13 AS-BUILT DRAWINGS

Keep in good condition at the job, apart from all other prints used in actual construction, one complete set of all blueprints furnished for this job. On this special set of blueprints, record

completely and accurately all differences between the work as actually installed and the design as shown on the drawings. These record prints must be kept up to date by recording all changes within one week of the time that the changes are authorized. At the completion of the work, this set of drawings shall be delivered to the Architect for the Owner electronically in the form of CAD drawings. If a complete record of changes is not made and electronic CAD drawings not provided by the Plumbing Contractor, a record shall be made by the Engineers, and *the cost of the record shall be paid by the Plumbing Contractor.* Copies of the plumbing CAD drawings may be made available electronically to the Contractor if desired. Drawings shall be dated accordingly and clearly identified as "AS-BUILT". Contact the Architect directly or the Engineer via e-mail at mechsyst@maine.rr.com. Specify required CAD format when requesting the files. CAD drawings were generated using AutoCAD 2006 and utilize both paper space and model space with external references to various other drawings. Files will be compressed and will require "WinZip" (http://www.winzip.com) for extraction. A release form will be provided which must be signed and returned to the Engineer prior to transfer of files.

1.14 MAINTENANCE MANUAL

On completion of this portion of the work, and as a condition of its acceptance, submit for review two copies of a manual describing the system. Plumbing equipment manuals shall be separate from mechanical manuals. All manuals shall be original copies, not photocopies, or they will be refused for resubmittal. Prepare manuals in durable 3-ring binders approximately 8.1/2" by 11" in size with at least the following:

A. Project name on the spine and front cover, and identification on the front cover stating the project name, general nature of the manual, and name, address and telephone number of the General and Plumbing Contractors.

B. Neatly typewritten index.

C. Complete instructions regarding operation and maintenance of all equipment involved.

D. Complete nomenclature of all frequently replaceable parts and supplies, their part numbers, and name, address and telephone number of the vendor.

E. Copy of all guarantees and warranties issued, and dates of expiration.

F. Shop drawings and equipment/fixtures manufacturer's catalog pages. Clearly indicate the precise item included in this installation and delete, cross out or otherwise clearly indicate, all manufacturers' data with which this installation is not concerned.

1.15 OBJECTIONABLE NOISE AND VIBRATION

All equipment shall operate without objectionable noise and vibration. Should objectionable noise or vibration be transmitted to any occupied part of the building by apparatus, piping or ducts, as determined by the Architect, the necessary changes eliminating the noise or vibration shall be made by this Contractor at no extra cost to the Owner.

1.16 GUARANTEE

This Contractor shall guarantee all materials and workmanship furnished by him or his sub-contractors to be free from all defects for a period of no less than one (1) year from date of final

acceptance of completed system and shall make good, repair or replace any defective work which may develop within that time at his own expense and without expense to the Owner. Any additional costs required to extend manufacturer's guarantee and warranty for the period specified, shall be included in Contractor's base bid.

1.17 DEVIATIONS, DISCREPANCIES AND OMISSIONS

A. The drawings are intended to indicate only diagrammatically the intent, extent, general character and approximate locations of plumbing work. Work indicated, but having details obviously omitted, shall be furnished complete to perform the functions intended without additional cost to the Owner. This shall include but not limited to:

1. All items that are required to meet all applicable codes and referenced standards.

2. Piping for cold and hot water supply, drain, vent, gas etc to each plumbing fixture/equipment shown on the floor plans or scheduled.

3. Shut-off valves on lines feeding individual fixtures without integral stops.

4. Minor single phase electrical or control wiring between plumbing provided items that require it, unless indicated on the Division 16 Electrical Drawings.

5. Plumbing related items indicated on the drawings of other trades.

6. Items indicated on one plumbing drawing but not shown on a corresponding drawing.

7. Items implied on the plumbing drawings but not shown.

8. All plumbing related items clearly shown in dark print on the Plumbing drawings but not included in the specification (See paragraph 2.01), unless it is noted as being provided by the owner or other contractor or unless other sections assume the responsibility.

B. The drawings and specifications are complimentary to each other and what is called for in one, shall be as binding as if called for by both. In the event of conflicting information on the drawings, or in the specifications, or between drawings and specifications, or between trades, that which is better, best or most stringent shall govern.

1.18 WORKPLACE SAFETY

A. The Trade Contractor alone shall be responsible for the safety, efficiency and adequacy of his plant, appliances and methods, and for any damage, which may result from their failure of their improper construction, maintenance, or operation.

B. All Trade Subcontractors shall notify the General Contractor of any flammable, combustible and/or toxic materials intended for use on the project and shall furnish the General Contractor literature pertinent to the use and control of such materials.

1.19 CHANGE ORDERS

A. No change shall be made from the work, equipment, or materials under this section except as directed in writing by the Architect or Engineer of record.

B. All requests for change in contract price and scope shall be accompanied by a breakdown list of materials with unit and extended prices and labor hours with unit and extended price, plus markups that have been applied.

1.20 REQUESTS FOR INFORMATION

Requests for Information (RFI) or other correspondences which are submitted electronically must be in an open format, meaning files must not be locked and comments may be added without altering the original content, or have interactive fields intended specifically for commenting. Locked files will not be accepted.

PART 2 - PRODUCTS

2.01 GENERAL

A. Unless otherwise indicated, the materials to be furnished under this contract shall be new and the standard products of manufacturers regularly engaged in the production of such equipment, and shall be the manufacturer's latest standard design that complies with the specification requirements. All materials and equipment of the same classification shall be the product of the same manufacturer, unless specified otherwise.

B. All products shall be manufactured within the United States, unless specified otherwise, and supplied locally (within the State) wherever possible. It is preferable to obtain materials that are manufactured within 500 miles of the work site when practical.

2.02 UNSPECIFIED ITEMS

Products required, implied or indicated, but not specified, shall be by the same manufacturer and level of quality and as similar items specified or existing, whenever possible. When no similarity exists, the Contractor shall submit for review an appropriate commercial/institutional quality item, complete to perform the functions intended, using his best discretion. The Architect or a designated Consultant, not the contractor, shall make final determination whether materials are of suitable quality and perform the functions intended.

2.03 HANGERS AND SUPPORTS

A. General

1. All hangers and supports shall be especially manufactured for that purpose and shall be the pattern, design and capacity required for the location of use.

2. Piping specified herein shall not be supported from piping of other trades.

3. All steel hangers shall be factory painted.

4. Hangers shall be heavy-duty steel adjustable clevis type, plain for steel, cast iron and plastic pipe, and copper plated for piping in direct contact with copper tubing (i.e. copper hot water piping) shall be equal to Carpenter & Paterson Inc., Fig. 100 (Fig. 100CT copper plated).

5. Hangers shall go outside of insulation for cold water piping. Each hanger shall be furnished with metal shield; Fig. 100 SH.

6. Exposed vertical risers ¾ inch and smaller shall be supported at 6 foot intervals between floor and ceiling with split ring type hangers; copper plated for piping in direct contact with copper tubing equal to Carpenter & Paterson Inc., Fig.81 (Fig. 81CT copper plated). ALL PIPING DROPS TO FIXTURES SHALL BE ANCHORED SOLID TO WALL WITH A STEEL SUPPORT BRACKET WITH ADJUSTABLE CLIP, ESPECIALLY PIPING TO FLUSH VALVES

7. Piping suspended from walls and partitions shall be supported by steel support bracket with adjustable clips equal to Carpenter & Paterson Inc., Fig. 69. All

attachments to bar joists shall be from top chord.

B. Hanger Rods & Attachments

1. Hanger rods shall be galvanized all thread rod. Rod size shall be as follows:

Pipe Size	Rod Size
3/8" to 2"	3/8"
2.1/2" to 3.1/2"	1/2"
4" to 5"	5/8"
6"	3/4"

2. All nuts for hanger rods and hangers to be galvanized steel.

3. Provide lag points with rod couplings for fastening to wood, toggle bolts in concrete blocks and compound anchor shields and bolts in poured concrete.

4. Provide toggle bolts with rod couplings for fastening in the pre-cast concrete plank decks.

5. Provide and install angle iron supports for pipe hangers in locations as required. Angle iron supports shall be adequate size for span and piping or equipment.

6. Hot and cold water piping at each fixture shall be securely fastened in wall with split ring type hanger fastened to studs within wall.

2.04 SEISMIC RESTRAINT AND MOVEMENT

All piping and equipment shall be braced in accordance with the International Building Code. Note: Piping suspended by individual hangers 12 inches or less in length, need not be braced.

2.05 IDENTIFICATION

A. Identify all new water and drain piping with "Set Mark" snap-around pipe markers by Seton Name Plate Corporation or reviewed equal. Markers shall include both identification and arrows indicating direction of flow. Markers shall be placed on pipe segments 5 feet and longer, and spaced no less than 10 feet apart. Heating hot water piping shall be labeled differently from Domestic hot water piping. On parallel runs of piping, plumbing markers shall be grouped together, and grouped with heating markers whenever practical.

B. Identify all medical gas and vacuum piping with the same system as existing or with a system acceptable to the Owner.

C. Tag all new valves using same system as existing valves. Do not duplicate existing numbers. Use numbering system acceptable to the Owner Fixture stops, control valves or valves adjacent to equipment, the use of which is obvious, are not to be tagged.

D. Provide valve charts identifying valve number, valve identification and service. Provide additional copies for maintenance manuals.

2.06 INSULATION

A. Insulation shall be provided for water piping, except immediate connections to fixtures. Insulation systems shall have a flame spread rating of 25 or less, and a smoke developed rating of 50 or less.

B. Cold Water

1. Insulate all cold water piping above grade with 1/2" inch (minimum) thick fiberglass heavy density sectional pipe insulation system and a 450 degree temperature rating with all service ASJ jacket. Insulation jacket to have pressure sealing lap adhesive. For any ½" PEX run outs to individual fixtures indicated, ½" minimum Armaflex insulation may be used to facilitate bending.

2. Shields of 28 gauge metal approximately 8 inches long and forming an arc of approximately 120 degrees to fit insulation shall be provided at each hanger for all cold water piping to prevent points of condensation. Shields to be provided by this Contractor. Hangers shall be provided large enough to be outside the covering.

C. Hot Water

1. Insulate all domestic hot water piping with 1-1/2" inch thick fiberglass heavy density sectional pipe insulation system and a 450 degree temperature rating with all service ASJ jacket. Insulation jacket to have pressure sealing lap adhesive. Emergency tempered water systems (80 to 85 degrees) do not require insulation.

2. Shields of 28 gauge metal approximately 8 inches long and forming an arc of approximately 120 degrees to fit insulation shall be provided at each hanger for hot water piping lines to minimize heat loss. Shields to be provided by this Contractor. Hangers shall be provided large enough to be outside the covering.

D. Fittings

1. All fittings and valves shall be covered with a one piece PVC insulated fitting cover secured.

2. The ends of insulation on exposed pipes at valves, flanges, unions, etc., shall be finished neatly with covering to match jacket and secure with mastic.

3. Valves, flanges and unions on hot water piping shall not be insulated.

E. Installation

All insulation work shall be executed by skilled insulation workmen regularly in the trade.

2.07 VALVES

A. General

1. Valves shall be provided as shown and as required to make the installation and its apparatus complete in operation; locate to permit easy operation, replacement and

repair.

2. All valves must be so constructed that they may be repacked under pressure while open.

3. Globe valves shall be installed in all lines where regulation is required.

4. Check valves shall be installed in all lines where flow may reverse from intended direction.

5. Valves shall have name and/or trademark of manufacturer as well as working pressure stamped or cast on valve body.

6. Valves shall comply with Manufacturer's Standards Society (MSS) specifications and be so listed.

B. Types and Manufacturers

All valves shall be of one manufacturer and by one of the manufacturers listed. The following list is provided as a means of identifying the quality and type required.

1. Globe Valves 2 inches in size and smaller

Shall have bronze bodies, union bonnet, renewable composition disc for service intended, rated for 150# WSP, 300# WOG:

	Soldered Ends	Screwed Ends
Milwaukee	1590-T	590-T
Stockham	B-24-T	B-22-T
NIBCO	S-235-Y	T-235-Y
Hammond	IB423	IB413T

2. Ball valves 1¼ inches in size and smaller

Shall have bronze bodies, Type 316 stainless steel stems and balls, reinforced Teflon seats and seals, blowout proof stems and adjustable stem gland. Shall be equipped with suitable packing for service intended. Ports shall be "full port". Rated for 400# WOG and 350°F:

	Soldered Ends	Screwed Ends
Milwaukee	BA-350S	BA-300S
Apollo	82-200	82-100
Watts	B-6081	B-6080
NIBCO	------	------
Hammond	8614	8604

3. Ball valves 1½ inches in size and larger

Shall have bronze bodies, Type 316 stainless steel stems and balls, reinforced Teflon seats and seals, blowout proof stems and adjustable stem gland. Shall be equipped with suitable packing for service intended. Ports shall be "conventional port".

Rated for 400# WOG and 350°F:

	Soldered Ends	Screwed Ends
Apollo	70-200	70-300
Watts	B-6000-SS	B-6001-SS
NIBCO	S-585-66	T-585-66
Hammond	8514	8503

4. Check Valves 2 inches in size and smaller

Shall be horizontal swing type with bronze body, Teflon disc. Rated for 125# WSP, 200# WOG:

	Soldered Ends	Screwed Ends
Milwaukee	1509-T	509-T
Stockham	B-310-T	B-320-T
NIBCO	S-413-Y	T-413-Y
Hammond	IB945	IB904

5. Drain Valves

Shall be conventional ball valves and provided with hose nipples and threaded metal cap on chain. Watts B-6001-CC or reviewed equal.

6. Locking ball valves

Shall be full port ball valves, same as specified above except also provide locking option. Provide brass padlock for each valve, all keyed the same. Give a copy of the key to Maintenance Supervisor and place an appropriately labeled one in the Maintenance Manual Binder. Lock valves in the open position unless noted otherwise.

2.08 DOMESTIC WATER PIPING

A. Interior

1. All exposed hot and cold water piping (not buried) shall be hard-drawn type "L" copper tube with cast or wrought fittings and made up with Silvabrite 100 lead-free solder.

2. All buried water and trap primer piping shall be type "K" soft copper tubing. No joints below slab.

3. All exposed, uninsulated water piping in finished areas shall be chromium plated I.P.S. copper or red brass pipe or tubing and fittings. Valves shall also be chrome plated brass or bronze. Any chrome trim with wrench marks shall be removed and new trim installed.

4. Type of tubing shall be stamped or printed on each length by Manufacturer.

2.09 SANITARY WASTE AND VENT PIPING

A. All waste piping 1.1/4" size and smaller, not buried, shall be type "L" hard drawn copper tubing with drainage fittings made up with 95-5 solder. All exposed piping or tubing in finished areas shall be chrome plated copper or brass. All chrome trim with wrench marks shall be removed and new trim installed.

B. Except for fixture connections, unless otherwise indicated, all pipe and fittings shall be standard weight cast-iron coated conforming to Commercial Standards CS188-66. No hub, Cispi Standard 301-72. Fittings shall be cast-iron, no-hub ASA Group 022 pipe, complete with neoprene elastomer, corrosion-resistant stainless steel shield and clamping assemblies conforming strictly to ASME Standard C654 and requirements of CISPI Standard 310.

2.10 MEDICAL GAS AND VACUUM SYSTEMS

A. Total isolation between new systems and existing system shall be maintained until all new piping is tested for leaks and cross connections. Once this is accomplished, the entire affected systems shall be purged in accordance with NFPA 99.

B. Piping shall be Type L copper tubing, hard drawn or Schedule 40 brass pipe. Fittings for copper tubing shall be cast bronze. Brazing shall be of the type suitable for oxygen system.

C. Piping systems shall be tested as described in NFPA 99. At completion of the installation and before system is to be used by the patients, submit a certified report confirming that these systems have been pressure tested, no cross connections exist, and final testing, purging and analyzing is complete. The cross connection testing and purging shall be done by an independent agency. This includes verifying valves and alarms are connected and controlling the areas prescribed. This independent agency report shall be certified and this cost shall be included in this work.

2.11 PIPE SLEEVES AND ESCUTCHEONS

A. Sleeves

1. Contractor shall set sleeves for all piping penetrating walls and floors. Sleeves through masonry shall be steel pipe sleeves two sizes larger than pipe. Piping passing through walls other than masonry shall be provided with # 24 gauge galvanized steel tubes with wired or hemmed edges.

2. Sleeves set in concrete floors shall finish flush with underside, but extend minimum of 1 inch above finish floor. Weld clips to sleeves for support in concrete pre-cast planks of a size that will be covered by concrete topping. Sleeves set in partitions shall finish flush with each side.

3. Space between sleeves and pipes shall be sealed to make smoke and water tight with 3M Brand Fire Barrier Caulk CP25 or Putty 303.

4. Masonry sleeves shall be Schedule 40 steel pipe.

5. This Contractor has the option to use the Pro-set system on lieu of the above.

B. Exterior Sleeves

Where piping passes through exterior walls, provide and install a complete pipe sleeve/hydrostatic wall closure system.

1. Wall sleeve shall be schedule 40 steel pipe, two pipe sizes larger than carrier pipe. Sleeve shall be the same length as the thickness of the wall served.

2. The hydrostatic closure device shall consist of identical interlocking links of solid synthetic rubber compounded to resist ozone, water, chemicals and extreme temperature variations. Each link shall be connected by corrosion resistant bolts and nuts to form a belt that is to fit snugly around the pipe. Under each bolt and nut there shall be a metal pressure plate so that when each nut is tightened the rubber links will expand between the pipe and sleeve to form a continuous, air tight and water tight seal.

3. Units to be Link-Seal system Model LS wall seal by Thunderline Corp. or reviewed equal.

C. Escutcheons

Where piping passes through finish walls, floors, ceilings and partitions, provide and set two piece nickel plated steel floor and ceiling plates.

2.12 PLUMBING FIXTURES

A. CS-1 Clinic Sink, wall

1. American Standard 9512.013 clinic service sink, vitreous china, white, wall hung, flushing rim, blow out action, top spud.

2. American Standard 8335.100 wall mounted faucet with wrist blade handles.

3. Three (3) American Standard 7832.017 11" stainless steel rim guards.

4. Sloan Royal 117H flushometer for service sinks, top spud, handle on front.

5. Zurn Z-1218 service sink carrier or approved equal.

6. Chicago Faucets 809-777-21K wall mounted bed pan with slow compression valve, cross handle, separate valve on handle.

B. IM-1 Ice Maker, existing, reinstalled

1. Reinstall existing icemaker, provide new standpipe under counter, and new supply stop.

C. LV-1 Lavatory, Wall - ADA

1. A/S 0124.131 Comrade, 4" center faucet holes, white vitreous china lavatory, rear

overflow; wall mounted, concealed arm support, 20"x18-1/4". Or approved equal. Mount rim 34" above finished floor

2. Chicago Faucets 895-317GN2FC deck mounted, ridged / swing gooseneck, aerator, wrist blade handles, Quaturn operating cartridges, 1.6 GPM flow control. Or approved equal.

3. Provide pre-insulated McGuire ProWrap PW2125 supply and drain kit. McGuire Chrome plated angle supplies, loose key stops, wrought escutcheons. Or approved equal.

D. LV-2 Lavatory, Wall - ADA

1. Reuse existing sink and trim. Thoroughly clean, and replace any broken components. Provide new carrier and mount with rim at 34"

2. Provide pre-insulated McGuire ProWrap PW2125 supply and drain kit. McGuire Chrome plated angle supplies, loose key stops, wrought escutcheons. Or approved equal.

E. MB-1 Mop Basin

1. The mop basin shall be Fiat MSB-2424, molded stone or reviewed equal. The molding shall be done in matched metal dies under heat and pressure resulting in a one-piece homogeneous product. Size of unit shall be 24"x24"x10" high.

The drain body shall be cast brass, chrome plated, complete with cast brass lock nut and gaskets. A combination dome strainer and lint basket made from #302, 16 gauge stainless steel attached with tamper proof screws shall be included. The drain body shall provide for a lead caulked joint to be 3" I.P.S.

Provide the following accessories:

a. Stainless steel wall guard, MSG-2424
b. Service faucet with vacuum breaker; integral stops and wall brace plate #830-AA.
c. 30" Hose with ¾" coupling at one end; Plate #832-AA.
d. Mop Hanger, stainless steel, 24" long with (3) holders, Plate #889-CC.
e. Silicone sealant #833-AA.
f. Vinyl bumper guard #-77-AA.

F. SH-1 Shower, built-in – ADA

Symmons Temptrol 25-500-B30-X, pressure balanced, anti-scald, adjustable safety stop screw, single lever blade handle, integral service stops, diverter, fixed and hand held shower, ADA compliant, chrome. Set safety stop screw so shower temperature will not exceed 110 deg. F. Or approved equal.

G. SK-1 Sink, Single Bowl - ADA

1. Elkay LRAD-2222-65-3, single bowl, self-rimming, 18 gauge stainless steel, 19"x16" x 6-1/2" deep with 3 hole drilling. LK-35 Standard Strainer. Or reviewed

equal.

2. Chicago Faucets model 786-GN8AE3, deck mounted, chrome, 12" high gooseneck, two handle, wrist blades, aerator. Or reviewed equal.

3. Provide pre-insulated McGuire ProWrap PW2150 supply and drain kit. McGuire Chrome plated angle supplies, loose key stops, wrought escutcheons. Or reviewed equal.

4. Handicapped insulation kit for trap and supplies by McGuire, or reviewed equal.

H. SK-2 Sink, Single Bowl, kitchen - ADA

1. Elkay LRAD-2522-65-3 single bowl stainless steel sink, 21" x 16" x 6-1/2" bowl, 18 gauge, type 302 SS, self-rim, satin finish, sound guard undercoating, 3 hole drilling, rear drain. LK-35 Standard strainer. Or reviewed equal.

2. Chicago Faucets model 2304-CP, deck mounted, chrome, 12" high gooseneck, single lever side valve, aerator, spray. Or reviewed equal.

3. Provide pre-insulated McGuire ProWrap PW2150 supply and drain kit. McGuire Chrome plated angle supplies, loose key stops, wrought escutcheons. Or reviewed equal..

I. SK-3 Sink, Single Bowl Utility - ADA

1. Elkay LRAD-2522-65-3 single bowl stainless steel sink, 21" x 16" x 6-1/2" bowl, 18 gauge, type 302 SS, self-rim, satin finish, sound guard undercoating, 3 hole drilling, rear drain. LK-35 Standard strainer. Or reviewed equal.

2. Chicago Faucets model 2304-CP, deck mounted, chrome, 12" high gooseneck, single lever side valve, aerator, spray. Or reviewed equal.

3. Provide pre-insulated McGuire ProWrap PW2150 supply and drain kit. McGuire Chrome plated angle supplies, loose key stops, wrought escutcheons. Or reviewed equal.

4. Guardian model G5022BP-HG, deck mounted eye wash / drench hose unit with backflow preventer, with two heads and stay open ball valve, hose guide bracket.

5. See mixing valve section for associated emergency mixing valve MV-1.

J. SK-4 Solid Surface Counter w/ Integral Sink - ADA

1. Counter with Sink by General Contractor. Provide chrome grid drain.

2. Sloan model ETF-770-C-2-B-MIX-25-A-2 sensor operated electronic gooseneck hand washing faucet, back checks, hard wire box transformer, mixing valve, 8" trim plate Or reviewed equal.

3. Guardian model G5022BP-HG, deck mounted eye wash / drench hose unit with

backflow preventer, with two heads and stay open ball valve, hose guide bracket.

4. See mixing valve section for associated emergency mixing valve MV-1.

5. Provide pre-insulated McGuire ProWrap supply and drain kit. McGuire Chrome plated angle supplies, loose key stops, wrought escutcheons. Or reviewed equal.

K. WC-1 Water Closet, Floor – ADA

1. AMERICAN STANDARD Afwall 3351.160 elongated 1.6 GPF ,wall mounted, white, vitreous china, Everclean finish, 1.1/2" top spud, siphon jet action, bolt caps, tested to 1000 lb tested load, mount with rim 17" above finished floor. Or reviewed equal.

2. Sloan Royal 111-YO-BG, chrome, quiet exposed flush valve for 1.6 gallon service with cast wall flange with set screw, 1" screwdriver angle check stop, with cap vacuum breaker, spud coupling flange and chrome plated nipple through wall, ADA handle with Bio-Guard, or equal by Zurn. Install with handle on right hand side (water supply on left).

3. Church 3155SSC white, elongated, extra heavy duty, solid plastic open front seat with self-sustaining external checks, antimicrobial, stainless steel posts and hardware. Or reviewed equal extra heavy duty seat by Beneke or American Standard.

4. Zurn Z1204-N-XB Bariatric 1000 lb vertical carrier, or reviewed equal.

L. WD-1 Water Dispenser, Hot

1. Insinkerator model H770-SS instant hot water dispenser, 2/3 gallon stainless steel tank, 120 V, 750 W, plug-in, 3 year warranty.

2.13 PLUMBING FIXTURES BY OTHERS

Equipment and fixtures by other sections will be provided and set in place by those sections. This contractor will connect domestic water, drain, waste and vent as required.

2.14 PLUMBING SPECIALTIES, DRAINAGE

A. Carriers

1. Wall hung fixtures including urinals, wall lavatories, lav-decks and drinking fountains shall be supported with adjustable floor mounted carriers to fit building conditions, piping system, and fixtures specified. Each carrier shall be provided with a wall finishing frame. All carriers shall be secured to the floor with tie down lugs.

2. Carriers shall be as manufactured by Zurn or reviewed equal.

B. Traps

1. Traps of material and design as approved by the State and shall be furnished and installed at all fixtures and appliances. Trap each fixture separately, keeping all trap screws below water line; vent each trap. Make offsets in vent piping with 45-degree angle fittings when possible. Pitch horizontal vents toward waste lines, group vents and take through roof as shown. All traps, at fixtures and appliances shall be provided with accessible clean outs.

2. All exposed traps under sinks and lavatories, and all piping and fittings shall be chrome-plated. All concealed traps and fittings may be rough brass or copper.

C. Cleanouts

Provide cleanouts for soil and waste where shown on the drawings and as required by code.

D. Floor Drains (FD)

1. All floor drains above grade shall be complete and each provided with flashing flange, flange device, and 24"x24", Chloraloy® 240 thermoplastic elastomeric sheet membrane for concealed waterproofing, or other approved flashing material, lock into drain clamping collar.

2. Traps for floor drains shall be deep seal traps. Those without trap seal primers shall be topped-off with 12 oz. of mineral oil to retard evaporation. Those in poorly heated areas, such as loading docks and penthouses, shall be filled with an undiluted non-toxic, non-corrosive antifreeze effective to at least -20 deg F.

a. Type "1" General. Round

Cast iron body, flashing collar, nickel bronze, 6" adjustable strainer head, inside caulk, trap primer connection. Zurn ZN-415-6B-P or equal by Josam, Wade or Smith.

3. Traps for floor drains shall be deep seal traps.

2.15 PLUMBING SPECIALTIES, WATER

A. Shock Absorbers (SA)

Shock protection shall be provided where shown on drawings and at all quick closing devices. Devices shall be stainless steel shell, welded expansion bellows surrounded by on-toxic mineral oil or gas, pressurized compression chamber charged and factory sealed, all, in-line design, threaded nipple and PDI reviewed.

1. Type "1", 'A' P.D.I. units

Zurn Z-1700, #100. Or reviewed equal by Watts, Sioux Chief, Zurn, Smith, Josam or Wade.

B. Mixing Valves (MV)

1. Type "1" Emergency Mixing Valve

Leonard model TA-300-STSTL-REC-VIEW cabinet Assembly for Eye/Face Wash thermostatic mixing valve in recessed stainless steel cabinet with cylinder lock. And window. Or reviewed equal.

2. Type "2" Local Mixer

Symmons Thermixer 5-120-CK thermostatic mixing valve, inlet size ½", for exposed piping, solid bi-metal thermostat scale hot to cold, rough bronze, checks, set at 120°F. Or reviewed equal.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

A. Inspection

1. Prior to all work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

2. Verify that plumbing may be installed in strict accordance with all pertinent codes and regulations and the reviewed Shop Drawings.

B. Discrepancies

1. In the event of discrepancy, immediately notify the Architect. Do not proceed with installation in areas of discrepancy until such discrepancies have been fully resolved.

3.02 DEMOLITION

A. Remove existing plumbing fixtures, equipment, piping etc., as shown on the drawing or as required to prepare for new work. Provide special care during removal for items designated to be re-used, and store them in a safe location.

B. All accessible piping not to remain in use shall be removed back to active mains and capped or plugged.

C. All inaccessible sanitary, vent and roof drain piping shall be plugged air and water tight and then abandoned. All inaccessible domestic water or gas piping shall be capped air and water tight both at termination points, and disconnected and capped at the main, and the disconnected segment then abandoned. Abandon piping far enough in walls or under slabs to allow for new finishes. All abandoned piping shall be indicated on the as-builts.

D. All fixtures, equipment and significant items removed, and not designated for re-use, shall remain the property of the owner until such time as the owner has formally reviewed these. The owner will designate where the contactor is to store those items that are to be retained, and the remaining items shall become the property of this contractor and removed from the premises.

E. Coordinate with the General Contractor who shall, as required, demo, cut, patch and refinish surfaces affected by the plumbing work to match existing surfaces or meet architectural specifications.

3.03 COORDINATION WITH OTHER TRADES

A. Before installation, participate in a coordination meeting with the Clerk of the Works, General Contactor, Mechanical/HVAC, Fire Protection and Electrical trades. Establish and resolve areas of conflict and congestion, especially those indicated on the drawings. Priority to be given to HVAC equipment and large ductwork, then gravity piping, then small ductwork, then piping based on descending order of size. Special consideration given to allow access to valves, dampers etc. Mutually develop coordination sketches documenting

space allocation and provide copies to all effected trades.

B. Failure to coordinate will result in this contractor removing and relocating his piping at no additional expense to the owner.

3.04 INSTALLATION OF PIPING AND EQUIPMENT

A. General

1. Install all piping promptly, making pipe generally level and plumb, free from traps, and in a manner to conserve space for other work.

2. Provide uniform pitch of at least ¼ inch per foot for all horizontal waste and soil piping 3" or less. For piping 4" and above, slope at 1/8" minimum per foot

3. Inspect each piece of pipe, tubing, fittings, and equipment for defects and obstructions; promptly remove all defective material from the jobs site.

4. Install pipes to clear all beams and obstructions. Do not cut into or reduce the size of load carrying members without the approval of the Architect.

5. Plumbing vents

a. Back vent all plumbing fixtures.
b. Pitch all vents at 1/32" per foot minimum toward waste lines for proper drainage to prevent unintended traps.
c. Install vent piping with each bend 45 degrees minimum from the horizontal, wherever structural conditions will permit.
d. Group plumbing vents and take through roof as shown.
e. Increase vents 3" and smaller one size before going thru roof. Make size transition a minimum of 12" below the surface of flat roofs and 72" (or as structure permits) below sloped roofs.
f. Terminate 24" above roof.
g. If installing in locations other than as shown on the drawings, line up with other plumbing vents for a neat appearance.
h. Do not install vents within 10 feet of an operable window or door or within 25 feet of a ventilation air intake.

6. All risers and off-sets shall be substantially supported.

7. Pipe hangers shall be placed on center as follows:

MATERIAL	HORIZONTAL	VERTICAL
Cast-iron	At joints not to exceed 10'	15' or at each story whichever is less, and stacks at the base
Copper 1-1/4" & less	6'	6'
1-1/2"	6'	10'
2" & up 10'	10'	
PVC, DWV	4'	4'
Steel	10'	10'

8. Arrange all piping to maintain required grade and pitch to lines to prevent vibration. Expansion loops to anchors shall be provided where shown on drawings.

9. Make all changes in pipe size with reducing fittings.

10. All low points in water piping shall be drained with ½" gate valve with hose nipple and metal cap.

11. No piping shall be installed in such a manner to permit back-siphonage or flow of any liquid in water piping under any conditions.

12. No water piping shall be installed outside of building or in an exterior wall unless adequate provisions are made to protect such pipe from freezing.

13. All piping and drain openings left unattended will be capped, plugged or securely covered to prevent accidental entry of foreign matter. Roof drains in use will be provided with domes.

B. Joints and Connections

1. Smoothly ream all cut pipe; cut all threads straight and true; apply best quality Teflon tape to all male pipe threads but not to inside the fittings; use graphite on all clean out plugs. DO NOT use Teflon tape on gas piping.

2. Smoothly ream all cut P.V.C. pipe. Clean and use solvent for fitting connection and in strict accordance with the manufacturer's recommendations.

3. Make all joints in copper water tube with solder applied in strict accordance with the manufacturer's recommendations.

C. Coordinate with the General Contractor to depress the finished floor where indicated on drawings. Install floor drains at low points of surface areas to be drained. Set grates of drains 1/32" below finished floor, unless otherwise indicated. Square top floor drains must line up with floor finish, coordinate final orientation with Flooring Installer. Finished floor shall be depressed according to the following drainage area radii:

1. Radius, 30 Inches or Less: Equivalent to 1 percent slope, but not less than 1/4-inch total depression.

2. Radius, 30 to 60 Inches: Equivalent to 1 percent slope.

3.05 STERILIZATION AND FLUSHING OF PIPES

A. After preliminary purging of the system, chlorinate the new potable water system in accordance with the current recommendations of the American Water Works Association, and in accordance with all pertinent codes and regulations. Chlorinate only when the building is unoccupied.

B. Upon completion of the sterilization, thoroughly flush the entire potable water system.

C. After sterilization and flushing are complete, a sample shall be collected from the end of the

longest main, or at any other location selected by the Architect, and a water analysis test provided. The test must prove the water acceptable or additional disinfecting of system performed. A copy of the test report shall be submitted to the Architect.

3.06 CLOSING IN UNINSPECTED WORK

A. Do not cover up or enclose work until it has been properly and completely inspected and approved.

B. Should any of the work be covered up or enclosed prior to all required inspections and approvals, uncover the work as required and after it has been completely inspected and approved, make all repairs and replacements with such materials as are necessary to the approval of the Architect and at no additional cost to the Owner.

3.07 TESTING OF PIPING

Tests shall be applied to the plumbing installation as required by codes and where as directed by the Architect, and in all cases before work is covered by earth fill or pipe covering.

A. Sanitary piping shall be tested when all underground work is complete (before covering) and again, after all piping is installed, but before it is further closed in. Sanitary systems shall be securely stopped, except at the highest point, and the entire system filled with water to the point of overflow for 24 hours. All leaks shall be repaired. Cracked pipes and fitting shall be removed and replaced. No doping of soil pipe or fittings will be allowed. Plan testing around expected weather and temperature conditions or provide protection so that pipes do not freeze.

B. New domestic water piping shall be filled and subjected to a hydrostatic pressure test of 150 psi for 8 hours with no leaks. If leaks are detected they shall be repaired and the test repeated until work is tight. NOTE: Testing with compressed air only is NOT ACCEPTABLE.

3.08 CLEANING

Prior to acceptance of the buildings, thoroughly clean all exposed portions of the this installation, removing all labels and all traces of foreign substance, using only a cleaning solution approved by the manufacturer of the plumbing item, being careful to avoid all damage to finished surfaces. Additional attention may be required to thoroughly clean any used, re-used or owner provided fixtures. Clean out all strainers and aerators and adjust or replace washers, cartridges, etc

3.09 INSTRUCTIONS

On completion of the job, this Contractor shall provide a competent technician to thoroughly instruct the Owner's Representative in the care and operation of the system. The time of instruction shall be arranged with the Owner.

3.10 RECYCLING

Discarded materials, both new and removed, shall be recycled whenever practical through metal salvage dealers (piping, etc.), paper salvage (cardboard shipping containers, etc.), wood products, etc. The Mechanical Contractor shall retain the salvage value of discarded materials and may use this

value to offset his project bid price if so desired. Toxic materials such as adhesives, coolants, etc. SHALL be disposed of in a manner acceptable to the State of Maine Department of Environmental Protection.

3.11 HAZARDOUS MATERIALS

Mercury or any other material deemed by the Federal Environmental Protection Agency or the State Department of Environmental Protection to be hazardous shall not be used in any components of the plumbing systems.

END OF SECTION 15400

SECTION 15600
MECHANICAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

General Provisions of Contract, including General and Supplementary conditions and General Requirements (if any) apply to work specified in this Section.

1.02 ALTERNATES

There are no alternates that apply to this section of the project.

1.03 DEFINITIONS

ATC Automatic Temperature Control
EC Electrical Contractor (Division 16)
GC General Contractor
HC Heating (mechanical) Contractor
PC Plumbing Contractor

1.04 DESCRIPTION OF WORK

A. Work Included

1. Furnish all labor, materials, equipment, transportation and perform all operations required to install a complete heating, ventilating and air conditioning system in the building, in accordance with these specifications and applicable drawings.

2. All temperatures are expressed in degrees Fahrenheit.

3. Perform demolition and removal as required.

4. Work to be performed shall include, but is not limited to, the following:

   a. Provide and install forced air heating, cooling and ventilating systems in building areas indicated on drawings.
   b. Pipe, valve and fittings
   c. Hot water specialties
   d. Insulation
   e. Sheetmetal
   f. Automatic Temperature Control (ATC)
   g. Tests and balance

5. Specifications and accompanying drawings do not indicate every detail of pipe, valves, fittings, hangers, ductwork and equipment necessary for complete installation; but are provided to show general arrangement and extent of work to be performed.

6. Before submitting proposal, Mechanical Contractor shall be familiar with all conditions. Failure to do so does not relieve Mechanical Contractor of responsibility regarding satisfactory installation of the system.

7. Mechanical contractor shall be responsible for rigging to hoist his own (and his sub-contractors') materials and equipment into place.

8. Mechanical contractor and his sub-contractors shall be responsible for start-up of all equipment provided under this section.

B. Related Work Described Elsewhere

1. Cutting and patching
2. Firestopping between building construction and pipe sleeves and between building construction and ductwork, Section 07900.
3. Electrical conduit and wiring, except as noted below
4. Door louvers
5. All finish work

C. Mechanical Electrical Work

1. Provide and erect all motors, temperature controls, limit switches as specified.

2. Power supply to switches, fused switches, outlets, line terminals of equipment, and all related wiring and fuses to properly connect and operate all electrical equipment specified shall be furnished and installed under Division 16, "ELECTRICAL" (Division 16). Division 16 shall not mount electrical equipment to indoor mechanical equipment without the consent of Division 15. Division 16 shall not drill wiring holes in equipment casings but shall make use of factory wiring knockouts when present. Coordinate all wiring between Mechanical and Electrical to provide a complete and operating system.

3. All wiring provided under this section shall be in accordance with the latest rules and regulations of the National Fire Underwriters, National Electric code, Local Codes and Division 16. Install all wiring under the supervision of the Division 16. Any wiring that is not installed according to these standards, and which does not match wiring installed by Division 16 in type, quality and appearance shall be corrected by Division 16 at the expense of this section.

4. Automatic Temperature Control (ATC) Systems

   Electric wiring shall be furnished and installed by ATC Contractor under supervision of Division 16. Any wiring that is not installed according to these standards, and which does not match wiring installed by Division 16 in type, quality and appearance shall be corrected by Division 16 at the expense of this section.

   Low voltage control wiring must be plenum rated and adequately supported with no sags or "droops". Low voltage wiring need not be installed in conduit unless required by local code.

1.05 PERMITS

A. This Contractor shall be responsible for providing and filing all Plans, Specifications and other documents, pay all requisite fees and secure all permits, inspections and approvals necessary for the legal installation and operation of the systems and/or equipment furnished under this Section of the Specifications.

B. The Contractor shall frame under glass/ clear plastic all permits, secured by him, adjacent to the respective system and/or equipment and required to be displayed by Code, law or ordinance. Those permits secured but not required to be displayed shall be laminated in plastic and included in the Owner's maintenance manual.

1.06 CODES, ORDINANCES AND PERMITS

A. All work performed under this Section of the Specifications shall be done in accordance with applicable National, State and local Codes, Laws and Ordinances. The following abbreviations are used for reference to standards which are to be followed:

AABC	Associated Air Balance Council
ADA	Americans With Disabilities Act
AMCA	Air Movement & Control Association
ANSI	American National Standards Institute
ARI	Air Conditioning and Refrigeration Institute
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
BOCA	Building Officials and Code Administrators
NEC	National Electrical Code
NFPA	National Fire Protection Association
NEMA	National Electrical Manufacturer's Association
OSHA	Occupational Safety and Health Act
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
UL	Underwriter's Laboratories

B. The latest issue of each Code in effect at the time of bidding shall be used. Code requirements are the minimum quality and/or performance acceptable. Where the Specifications and/or Drawings indicate more stringent requirements, these requirements shall govern.

1.07 QUALITY ASSURANCE

A. Qualification of Workpersons

Use sufficient qualified workpersons and competent supervisors in execution of this portion of the work to ensure proper and adequate installation of system throughout.

B. Work performed shall conform with all Local and State Rules and Regulations, as well as those of the National Fire Protection Association (N.F.P.A.).

C. Piping design shall conform to ANSI, ASME B31.9 and AWS D10.9 codes.

1.08 MATERIALS AND SUBSTITUTIONS

All materials and equipment shall be new and of the latest design of respective manufacturers. **All materials and equipment of the same classification shall be the product of the same manufacturer**, unless specified otherwise.

A. Any proposal for substitution of Mechanical equipment, materials or vendors shall be made in writing PRIOR TO OPENING OF BIDS, see Division 1. Submit full details for consideration and obtain written approval of the Architect. The phrase "or approved equal" shall be defined to mean that the Architect, not the contractor, shall make final determination whether or not substitute materials are an equal to that which is specified. The contractor shall be responsible to certify within his submittals that any equipment to be considered as an "approved equal" meets or exceeds the requirements of this specification in all aspects and will physically fit within the space provided and still provide adequate space adjacent to the equipment for service. If requested by the Architect the contractor shall provide said certification in the form of scale drawings before review will be made. Architect will not be responsible to provide drawings for substituted materials unless the substitution is agreed upon prior to opening of bids. Architect's decision on acceptability of substitute materials shall be final.

B. Approval by Architect for such substitution shall not relieve Mechanical Contractor from responsibility for a satisfactory installation and shall not affect his guarantee covering all parts of work

C. Any material or equipment submitted for approval which are arranged differently or is/are of different physical size from that shown or specified shall be accompanied by shop drawings indicating different arrangements of size and method of making the various connections to equipment. Final results will be compatible with system as designed.

D. Materials and equipment determined as an “approved equal” and/or substitutions must meet the same construction standards, capacities, code compliances, etc. as the equipment (i.e. Manufacturer, model, etc.) specified.

E. Any additional cost(s) resulting from the substitution of equipment, regardless of acceptance by the Architect or Engineer, shall be paid by this Contractor. Additional costs may include, but not be limited to, electrical and/or structural alterations from the contract documents. Contractor shall be solely responsible to verify that substitutes will fit within the designated spaces provide while permitting adequate clearances for servicing of equipment as required by the manufacturers. Contractor shall, upon request from the Architect or Engineer of record, provide such verification of ample space and clearances in the form of drawings or any other manner requested.

F. All materials not specified otherwise shall be manufactured within the United States and supplied locally (within the State of Maine) when available. It is preferable to obtain materials that are manufactured within 500 miles of the work site when practical.

1.09 PLANS AND SPECIFICATIONS

Mechanical Contractor shall provide his sub-contractors with a copy of the ENTIRE portion of Part 1 of this specification, portions of this specification and copies of drawings which pertain to the equipment to be supplied at no cost to the sub-contractor. Provide ATC Contractor with entire set of Electrical plans and specifications. Provide Testing and Balancing sub-contractor with copies of shop drawings indicating coil gpm□s, air handling unit air volumes, etc. Failure to do so may result in the Architect providing the required materials at the Contractor□s expense.

1.10 ELECTRONIC DRAWINGS AND FILE SHARING

Plans and specifications may be made available in electronic format on request. Plans may be provided in either Adobe (.pdf) or CAD (.dwg or .dxf) formats and will be compressed using WinZip (.zip format). Recipient is responsible to obtain the necessary software to open the files. Note: CAD (.dwg and .dxf) files will be made available to successful bidders only after a contract is awarded.

CAD drawings are produced with AutoCAD 2006 and may be provided in either the 2000 or 2004 file formats. Upon request for CAD files a release form will be provided which must be signed and returned to the Engineer prior to transmission of electronic files. Physical mailing address, telephone numbers and e-mail address for this office are indicated on each drawing. A signed release will not be required for Adobe based files.

All contract documents are copyrighted material. No portion of materials may be reproduced or duplicated except as indicated in the release form. Where release forms are not required (Adobe based files), materials may be printed for use by the intended recipient only and may not be reproduced or copied in any other manner or for any purpose other than for use pertaining to the construction of this project unless written permission is obtained.

1.11 SHOP DRAWINGS & SUBMITTALS

A. As soon as possible after award of contract (but not longer than 21 calendar days), before any material or equipment is purchased, Mechanical Contractor shall submit shop drawings to the Architect for review. The quantity of copies shall be as outlined in Division 1. If shop drawings are not submitted within the allotted time frame all substitutions included in the late shop drawings will be invalid and the equipment primarily specified must be provided. Any costs resulting from delays in the project schedule due to failure to submit shop drawings related to this section in a timely manner shall be the responsibility of the Mechanical Contractor. Contractor's name, address, telephone and fax numbers shall be provided with every shop drawing submission. Shop drawings shall be properly identified and shall describe in detail the material and equipment to be provided, including all dimensional data, performance data clearly indicated, fan curves, pump curves, computer selection print-outs, etc. Capacities indicated are minimums. Equipment submitted with capacities below specified parameters will be refused.

B. Corrections or comments made on the shop drawings do not relieve the contractor from compliance with requirements of the drawings and specifications. Shop drawing review is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions, selecting

fabrication processes and techniques of construction; coordinating his work with that of all other trades and performing his work in a safe and satisfactory manner.

C. Should any materials or products be purchased and/or installed without prior review and comment the contractor shall be required to remove or replace those products and/or materials if directed by the Architect at his own expense. If the materials are not removed (or replaced) or if the project is delayed as a result the Architect reserves the right to order the withholding of payment until the situation is resolved in a manner satisfactory to the Architect.

D. Mechanical shop drawings shall be separate from Plumbing shop drawings. Submittals not separated from plumbing shop drawings will be refused for re-submittal.

E. Shop drawings must be original documents or good quality photocopies of original documents (photocopies of color samples are not acceptable). Faxed copies of submittal sheets will be refused unless prior arrangements are made. However, submitting shop drawings electronically in.pdf format is encouraged. Electronic files must be accessible and in an open format, meaning files must not be locked and comments may be added without altering the original content, or have interactive fields intended specifically for commenting. Locked files will not be reviewed.

F. Review must be obtained on the following items:

1. Ductwork and Accessories

   a. Registers, diffusers, and grilles
   b. Duct access doors
   c. Volume control dampers (manual and automatic)
   d. Duct sealant
   e. Fire dampers and sleeves
   f. Turning vanes
   g. Side takeoff fittings
   h. Flexible duct
   i. Manual dampers

2. Piping and Accessories

   a. Pipe, valves, unions and flanges
   b. Balancing valves with read-out gauge and pressure tappings. Provide a schedule clearly indicating every valve, its location, GPM, size and pressure drop.
   c. Air vents (automatic and manual)
   d. Pipe hangers and insulated pipe supports
   e. Pipe and valve markers

3. Insulation

   a. Pipe
   b. Duct
   c. Pipe fittings

4. Automatic Temperature Control (ATC) System

1.12 PRODUCT HANDLING

A. Protection

Use all means necessary to protect heating, ventilating and air conditioning materials before, during and after installation and to protect the installed work and materials of all other trades.

B. Replacements

In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

1.13 AS-BUILT DRAWINGS

Keep in good condition at the job, apart from all other prints used in actual construction, one complete set of all blueprints furnished for this job. On this special set of blueprints, record *completely and accurately* all differences between the work as actually installed and the design as shown on the drawings. These record prints must be kept up to date by recording all changes within one week of the time that the changes are authorized. At the completion of the work, this set of drawings shall be delivered to the Architect for the Owner electronically in the form of CAD drawings. If a complete record of changes is not made and electronic CAD drawings not provided by the Mechanical Contractor, a record shall be made by the Engineers, and *the cost of the record shall be paid by the Mechanical Contractor*. Copies of the mechanical CAD drawings may be made available to the Mechanical Contractor if desired. Drawings shall be dated accordingly and clearly identified as "AS-BUILT". See par. 1.10, "ELECTRONIC DRAWINGS AND FILE SHARING" for additional information.

1.14 MAINTENANCE MANUAL

A. On completion of this portion of the work, and as a condition of its acceptance, submit for approval two copies of a manual describing the system. Mechanical equipment manuals shall be separate from plumbing manuals. All manuals shall be original copies, not photocopies or they will be refused for re-submittal. Prepare manuals in durable 3-ring binders approximately 8½ inches by 11 inches in size with at least the following:

1. Identification on the front cover and spine stating general nature of the manual.
2. Neatly typewritten index.
3. Complete instructions regarding operation and maintenance of all equipment involved.
4. Complete nomenclature of all replaceable parts, their part numbers, current cost, and name, address and telephone number of nearest vendor of parts.
5. Copy of all guarantees and warranties issued.
6. Where contents of manuals including manufacturer's catalog pages, clearly indicate the precise item included in this installation and delete, or otherwise clearly indicate, all manufacturers' data with which this installation is not concerned.

B. In addition to above, provide two (2) separate offset style binders properly identified, each containing a copy of all reviewed shop drawings and catalog cuts. (NOTE: May be incorporated in Maintenance Manuals, if binders are of adequate size.)

1.15 OBJECTIONABLE NOISE AND VIBRATION

Mechanical equipment shall operate without objectionable noise and vibration. Should objectionable noise or vibration be transmitted to any occupied part of the building by apparatus, piping or ducts, as determined by the Architect, the necessary changes eliminating the noise or vibration shall be made by this Mechanical Contractor at no extra cost to the Owner.

1.16 GUARANTEE

This Contractor shall guarantee all materials and workmanship furnished by him or his sub-contractors to be free from all defects for a period of no less than one (1) year from date of final acceptance of completed system and shall make good, repair or replace any defective work which may develop within that time at his own expense and without expense to the Owner. Any additional costs required to extend manufacturer's guarantee and warranty for the period specified, shall be included in Contractor's base bid.

1.17 MINOR DEVIATIONS AND DISCREPANCIES

A. The drawings are intended to indicate only diagrammatically the extent, general character and approximate locations of mechanical work. Work indicated, but having minor details obviously omitted, shall be furnished complete to perform the functions intended without additional cost to the Owner. Follow the architectural, structural, plumbing and electrical drawings so that work under this section is properly installed and coordinated with other Sections.

B. The drawings and specifications are complimentary to each other and what is called for in one, shall be as binding as if called for by both. In the event of conflicting information on the mechanical drawings, or between drawings and specifications, or between trades, that which is better, best or most stringent shall govern.

C. Questions to the Architect or Engineers are encouraged, but any answers or advice is non-binding. Therefore, inquires about such items should be made at least 4 days prior to when bids are due to allow time for a clarifying addendum to be issued.

D. Any conflicts arising from duplication of equipment specified in different portions of the specifications shall be brought to the attention of the Architect prior to submitting bids. Failure to do so does not relieve the Contractor from responsibility of providing said materials and equipment and a credit will be taken for the duplicated item(s).

1.18 CHANGE ORDERS

A. No change shall be made from the work, equipment, or materials under this section except as directed in writing by Engineer.

B. All requests for change in contract price and scope shall be accompanied by a breakdown list of materials with unit and extended prices and labor hours with unit and extended price, plus markups that have been applied.

1.19 COORDINATION

A. Contractor shall be responsible to coordinate his work with that of other trades to adjust to field conditions prior to commencing work. If a reasonable solution cannot be achieved without compromising the integrity of the intended design or would result in additional cost the Architect must be notified immediately prior to commencement of work. Failure to do so does not relieve the Contractor from providing and installing the systems to the satisfaction of the Architect at no additional cost.

B. Contractor shall be responsible to review job conditions and identify conflicts and/or obstructions to ductwork and piping prior to fabrication. If conflicts and/or obstructions are noted the Architect must be notified immediately prior to commencement of work. The cost of any fabrication work performed without confirmation and notification of conflicts and/or obstructions shall be the responsibility of the contractor.

1.20 REQUESTS FOR INFORMATION

Requests for Information (RFI) or other correspondences which are submitted electronically must be in an open format, meaning files must not be locked and comments may be added without altering the original content, or have interactive fields intended specifically for commenting. Locked files will not be accepted.

1.21 WORKPLACE SAFETY

Mechanical contractor shall be responsible for the safety of his workpeople.

PART 2 - PRODUCTS

2.01 PIPING

A. General

Provide and erect in accordance with best practice of trade all hot water supply and return, chilled water supply and return, low pressure steam, condensate return, pump discharge, drain and vent piping shown on the plans and as required to complete intended installation. Contractor shall make offsets as shown or required to place all piping in proper position to avoid other work, and to allow application of insulation and finish painting.

B. Pipe Materials:

1.	Hot water	Schedule 40 standard weight black steel, ASTM 120
2.	Cold water, drains from relief valves and automatic vents.	Type "L" hard drawn copper tubing

C. Pipe Fittings:

1.	Screwed	125# cast iron screwed pattern ASTM A126, ASA B16.1
2.	Unions	250 malleable iron, brass to iron seats
3.	Sweat	Cast bronze or wrought copper made up with 95-5 solder
4.	Connections to equipment	2inches and smaller - screwed unions
5.	Dielectric fitting	Steel or copper pipe to ASTM A-53, zinc electroplated body with non-corrosive thermoplastic lining, thread connections. Victaulic Style 47-TT or approved equal.

D. Steel piping 2 inches and smaller shall have screwed connections. All threads on piping must be full length and clean-cut with inside edges reamed smooth to the full inside bore.

F. The Mechanical Contractor may, at his option, use type "L" hard drawn copper tube for piping 2 inches and smaller in lieu of steel. The option of steel or copper MUST be stipulated in the bid and thereafter no deviation will be acceptable. If copper is to be used, the piping system shall be 100% copper with no mixture from copper to steel.

G. Use dielectric fittings when connecting dissimilar metals.

2.02 VALVES

A. General

1. Valves shall be provided as shown and as required to make the installation and its apparatus complete in operation, locate to permit easy operation, replacement and repair. All pressures specified are steam working pressure.

2. All valves must be so constructed that they may be repacked under pressure while open.

3. Globe valves shall be installed in all lines where regulation is required.

4. Check valves shall be installed in all lines where flow may reverse from intended direction.

5. Except for above or as otherwise noted on drawings, ball valves shall be installed in all water supply and return lines and on all drain lines.

6. All valves to comply with federal specifications and be so listed.

7. Gate valves shall be installed in all steam and condensate piping. Ball valves shall not be used for steam or condensate service.

8. Butterfly valves shall not be used.

B. Types and Manufacturers

All valves shall be of one manufacturer and by one of the manufacturers listed. The following list is provided as a means of identifying the quality and type required.

1. Gate Valves 2 inches in size and smaller shall have bronze bodies, rising stem, solid wedge, union bonnet, rated for 150# WSP, 300# WOG:

	Soldered Ends	Screwed Ends
Milwaukee	1169	1151
Stockham	B-124	B-120
NIBCO	S-134	T-134
Hammond	IB648	IB629

2. Globe Valves 2 inches in size and smaller shall have bronze bodies, union bonnet, renewable composition disc for service intended, rated for 150# WSP, 300# WOG:

	Soldered Ends	Screwed Ends
Milwaukee	1590-T	590-T
Stockham	B-24-T	B-22-T
NIBCO	S-235-Y	T-235-Y
Hammond	IB423	IB413T

3. Plug type Globe valves 2 inches in size and smaller shall have bronze bodies, union bonnet, stainless steel plug type disc and seat. Rated for 150# WSP, 300# WOG:

	Soldered Ends	Screwed Ends
Milwaukee	591-A	
NIBCO	T-256-AP	

4. Ball valves 1¼ inches in size and smaller shall have bronze bodies, Type 316 stainless steel stems and balls, reinforced Teflon seats an seals, blow-out proof stems and adjustable stem gland. Shall be equipped with suitable packing for service intended. Ports shall be "full port". Rated for 400# WOG and 350°F:

	Soldered Ends	Screwed Ends
Milwaukee	BA-350S	BA-300S
Apollo	82-200	82-100
Watts	B-6081	B-6080
NIBCO	------	------
Hammond	8614	8604

5. Ball valves 1½ and 2 inches in size shall have bronze bodies, two piece, standard port, Type 316 stainless steel stems and balls, reinforced Teflon seats an seals, blow-out proof stems and adjustable stem gland. Shall be equipped with suitable packing for service intended. Rated for 400# Bar non-shock cold working pressure.

	Soldered Ends	Screwed Ends
Apollo	70-200	70-300
Watts	B-6000-SS	B-6001-SS
NIBCO	S-580-66	T-580-66
Hammond	8513	8503

6. Check Valves 2 inches in size and smaller shall be horizontal swing type with bronze body, Teflon disc. Rated for 125# WSP, 200# WOG:

	Soldered Ends	Screwed Ends
Milwaukee	1509-T	509-T
Stockham	B-310-T	B-320-T
NIBCO	S-413-Y	T-413-Y
Hammond	IB945	IB904

2.03 INTERIOR HANGERS AND SUPPORTS

A. General

1. All interior hangers and supports shall be specially manufactured for that purpose and shall be the pattern, design and capacity required for the location of use.

2. Piping specified shall not be supported from piping of other trades.

3. Hangers shall be steel, adjustable clevis type; plain for steel pipe and copper plated for copper tubing. Carpenter & Paterson, Inc., Fig. 100 (Fig. 100 CT copper plated) or approved equal. Hangers on hot water and drain piping shall be sized for the piping only (not including insulation). Hangers on cold water piping shall be sized to include the insulation and include thermal hanger shields (insulated pipe supports).
4. Thermal hanger shields shall be Carpenter & Paterson, Inc., Fig. 265P or approved equal.

5. Pipe covering protection saddles shall be Carpenter & Paterson, Inc., Fig. 352 for 1½ inch insulation and Fig. 355 for 3 inch insulation or approved equal. DO NOT USE ON COLD WATER PIPING.

6. Exposed vertical risers ¾ inch and smaller shall be supported at the mid-point between floor and ceiling with split ring type hangers; copper plated for copper tubing. Carpenter & Paterson, Inc., Fig. 81 (Fig. 81 CT copper plated) or approved equal.

7. Attachments to wide flange steel members shall be adjustable beam clamp, Carpenter & Paterson, Inc., Fig. 82 or approved equal.

8. Piping suspended from walls, trench walls and partitions shall be supported by steel support bracket. Carpenter & Paterson, Inc., Fig. 69 or approved equal.

B. Hanger Rods

1. Hanger rods shall be galvanized all thread rod. Rod size shall be as follows:

Pipe Size	Rod Size
½" to 2"	3/8"

2. Provide toggle bolts for fastening to concrete blocks and compound anchor shields for bolts for fastening to poured concrete.

3. Provide lag points with rod couplings or side beam connectors with drive screws for fastening to wood.

4. All nuts for hanger rod to be stainless steel.

C. Supports

Provide and install angle iron supports for pipe hangers as required. Angle iron supports shall be adequate size for span and piping or equipment load.

2.04 PIPE SLEEVES AND ESCUTCHEONS

A. Sleeves

1. Mechanical Contractor shall set sleeves for all piping penetrating interior concrete and masonry walls and floors. Sleeves shall be schedule 40 steel pipe, two sizes larger than the carrying pipe. Pipes passing through walls and floors of frame construction need not be provided with sleeves.

2. Sleeves set in floors shall finish flush with the underside, but extend a minimum of 1 inch above the finish floor. Sleeves set in walls shall finish flush with each side. General Contractor shall grout between sleeves and surrounding masonry.

3. Spaces between sleeves and pipes shall be sealed fire and smoke tight. Spaces between pipes and floors and between pipes and fire rated walls in frame construction shall also be sealed fire and smoke tight. Sealant material shall be 3M brand fire barrier caulk CP25 or putty 303, Ciba-Geigy CS240 Firestop Sealant, or approved equal and shall be U.L. listed.

B. Escutcheons

Where uninsulated piping passes through finish walls, floors, ceilings and partitions, provide and set two piece nickel plated steel floor and ceiling plates. Provide deep type floor plates as required for projecting sleeves. Piping through walls with insulation shall not require escutcheons.

2.05 ANCHORS

Anchors shall be provided and installed as detailed and shown on the drawings, or as required to control expansion.

2.06 SHEETMETAL

A. General

The work under this section includes all the required sheetmetal and duct work, extensions for grilles, manual dampers, automatic counterbalanced (backdraft) dampers, deflectors, duct lining, setting of control dampers, grilles, registers, diffusers, flexible connections, fire dampers, and louvers, as shown on the drawings or required to make the installation complete in accordance with the intent of the drawings and specifications.

B. Ducts

1. The size of ducts marked on the drawings will be adhered to as closely as possible. The right is reserved to vary duct sizes to accommodate structural conditions during the progress of the work without additional cost to the Owners. The duct layout is schematic to indicate size and general arrangement only. All ducts shall be arranged to adjust to "field conditions". The Sheet Metal Contractor shall coordinate his work with Division 16 and other trades.

2. Low pressure ducts shall be constructed of galvanized steel in accordance with the following table of duct sizes OR the latest SMACNA HVAC Duct Construction Standards for Metal and Flexible Duct unless otherwise shown on drawings.

Dimensions of Longest Side (inches)	Minimum Sheet Metal Gauge
Up thru 12	26
13 --> 30	24
31 --> 42	22
43 --> 60	20
61 --> inf.	18

3. Methods of fabrication and installation shall be in strict accordance with guidelines set forth in the latest SMACNA Guide and Data Book for Low and Medium Pressure Duct Construction unless otherwise shown on drawings. Cross break all ducts with largest dimension being 18 inches and larger. Beaded ducts are not acceptable except for ductwork less than 18 inches in either direction.

4. All dampers and deflectors shall be a minimum of #22 gauge and stiffened as required. Splitter dampers shall not be acceptable.

5. All joints in ducts shall be made air tight, and all branches and turns shall be made with long radius elbows and fittings. Long radius elbows are defined as having a centerline radius of 12 times the width of the duct. If long radius elbows are not used, elbows 18 inches wide and larger shall be provided with fixed double wall airfoil turning vanes designed to reduce the resistance of the elbow to the equivalent of a long radius elbow with a throat radius of not less than duct width. Square elbows less than 18 inches wide shall be provided with single wall turning vanes. Square elbows with outside corners cut at 45° or rounded are not acceptable.

6. All ducts shall be installed with necessary offsets, changes in cross sections, risers, and drops which may be required. They shall be constructed with approved joints and be supported in an approved manner.

7. Round ductwork shall be constructed in accordance with the latest SMACNA HVAC Duct Construction Standards for round and oval duct construction. Ductwork larger than 8 inches in diameter shall employ spiral seams. All turns shall be made with smooth (not segmented), long radius elbows and fittings. All seams shall be type RL-5, grooved seam pipe lock or better. *Lap seams are not permissible.* Gauge thicknesses shall be as outlined in SMACNA for galvanized steel round duct gauge selections for maximum 2 inches w.g. static pressure. Ductwork shall be supported with full wrap-around band and single hanger strap as indicated in Figure 4-4 of the 1985 edition of the SMACNA HVAC Duct Construction Standards handbook.

8. Furnish and install flexible connections on exhaust fans (where indicated), horizontal unit ventilators, horizontal cabinet unit heaters and all Mechanical units. Connections shall be made from Ventglas neoprene coated glass fabric as furnished by Ventfabrics, Inc., or approved equal.

9. Every precaution shall be taken to keep interior of duct system free from dirt and rubbish and to protect all ducts and equipment during construction. At completion, this Mechanical Contractor shall thoroughly clean all equipment to the satisfaction of the Architect.

10. Spaces between ducts and wall or floor construction shall be caulked to make smoke and water tight with 3M brand fire barrier caulk CP25 or putty 303, Ciba-Geigy CS240 Firestop Sealant or approved equal.

11. Testing, Balancing and Leak Testing... See Part 3, EXECUTION

12. Requirements set forth in applicable codes (see part one) shall supercede SMACNA standards.

C. Diffusers, Grilles and Registers

1. Grilles and/or registers shall be installed at all air supply, relief, return and exhaust openings as shown. All units to be aluminum, except as noted, and provided with baked enamel finish to match color of grille or register and countersunk screw holes. Mounting screws shall be oval head type with head painted to match finish. Unless stated otherwise, the following list is based on model numbers of Anemostat to establish a standard of quality (if substituting, certified sound criteria shall be included with submittals indicating CFM and NC levels of each register and grille). Krueger, Price and Titus only will also be considered for review.

   a. Supply Registers: Double deflection; X2HO with opposed blade damper and ¾ inch front blade spacing; front blades set horizontal.
   b. Supply Grilles: Double deflection; X2H, ¾ inch blade spacing; front blades set horizontal.
   c. Exhaust and Return Registers: X3HOD with opposed blade damper and 3/4 inch, 45° front blade spacing, front blades set horizontal.
   d. Exhaust, Return and Transfer Grilles: X3HD with ¾ inch, 45° front blade spacing, front blades set horizontal.

   All lay-in registers and grilles shall be supported directly to building structure with no less than two (2) safety chains located at opposing corners.

2. Diffusers shall be installed at all air supply openings as shown. All units to be aluminum, except as noted, and provided with white baked enamel finish. The following list is based on model numbers of Anemostat to establish a standard of quality (if substituting, certified sound criteria shall be included with submittals indicating CFM and NC levels of each diffuser) or approved equal units by Krueger and Price and Titus only.

a. Square face, steel construction, 4 way discharge with circular duct connection, removable core assembly, white prime finish. Model EPL with 24 inch x 24 inch lay-in application for suspended tile ceilings. Provide straightening grids, factory mounted.

All lay-in diffusers shall be supported to building structure with no less than two (2) safety chains located at opposing corners.

D. Sealing of Ducts

All interior ductwork (except prefabricated grease ducts and welded duct) shall be sealed with low VOC water based duct mastic, either "MP" (Multi-Purpose), Hardcast "Iron-grip 601", Polymer Adhesive "Airseal #11", or United Duct Seal (United McGill Corp.) water base, latex or acrylic type sealant. All transverse joints to be continuously sealed. Note that, except as noted, oil or solvent based sealants are specifically prohibited for use on this project. Duct tape, in any form or material, is also prohibited.

All seams and joints in shop and field fabricated ductwork shall be sealed by applying one layer of sealant, then immediately spanning the joint with a single layer of 3" wide open weave fiberglass tape. Sufficient additional sealant shall then be applied to completely imbed the cloth. All sealants shall be UL rated at no more than flame spread of 5 and smoke developed of 0. At contractor's option Hardcast

E. Duct Access Doors

Hinged insulated access doors with seals shall be provided in ducts where indicated on drawings, or as required. Units shall be provided at each manual damper, motor operated damper, duct coil (both sides), duct mounted temperature control device and fire damper unless accessible through grilles and as shown on drawings. Units to be Ruskin Model ADH-22 for rectangular duct and Model ADR for round duct or approved equal by Elmdor.

F. Motor Operated Dampers

Motor operated control dampers mounted in ductwork shall be provided by ATC Contractor, but installed by this Contractor. Contractor shall seal dampers to ductwork to provide a completely waterproof and airtight seal between damper frames and ductwork.

G. Manual Dampers

1. See Part 3, EXECUTION for installation notes.

2. Manual dampers with smallest dimension 5 inches or less shall be shop fabricated, single 22 gauge blade, 3/8 inch rod, provided with position indicator and locking quadrant.

3. Manual dampers with smallest dimension larger than 5 inches but smaller than 11 inches shall be single blade steel, 16 gauge construction, provided with position indicator and locking quadrant. Unit shall be Ruskin Type MD35 or approved equal.

4. Manual dampers with smallest dimension larger than 11 inches shall be opposed blade steel, 16 gauge construction, linkage concealed in frame, provided with position indicator and locking quadrant. Unit shall be Ruskin Type MD35 or approved equal.

5. Dampers to be installed in aluminum ductwork shall be fabricated of aluminum or isolated from ductwork with rubber grommets between the damper and the duct to prevent oxidation between dissimilar metals.

6. Provide hand quadrants for all manual dampers, Ventline Model 560 or approved equal.

H. Fire Dampers

1. Fire dampers shall be installed to comply with NFPA Code No. 90A and shall bear a U.L. label. Provide fire rated access door at each fire damper not accessible through grille. All dampers shall comply with UL555 for dynamic testing and positive closure under air flow.

2. All fire dampers to be provided by damper manufacturer with integral sleeves and mounting angles. Sleeves provided "in-field" are not acceptable. Models indicated are Ruskin to establish a standard:

   a. Wall and floor types, 12 inches in height and less; Model IBD20, style "B".
   b. Wall and floor types, greater than 12 inches in height; Model IBD20, style "A".

3. Provide factory mounted fusible links designed to melt at 165°F. and close the damper.

4. Installation shall be in accordance with damper manufacturer's instructions.

I. Side Takeoff Fittings (for flexible duct)

Provide and install, at all flexible duct branches to diffusers, a bellmouth side takeoff fitting similar to detail on drawing M5, "*Flexible Duct and Diffuser Connection Detail*"; with or without manual damper (some dampers to be added downstream - see plans). Fittings shall be pre-manufactured with bell end shall have a 1.1/2 inch radius and employ a self-adhesive gasket seal and be pre-drilled for attachment screws. Units with manual dampers shall be heavy duty with bearings and hand quadrants. Fittings shall be anchored to ductwork with *not less than* three (3) screws. Final diameter shall be same size as diffuser served. Units shall be no thinner than 22 gauge, G-90 galvanized steel. Buckley Bellmouth HD-BM, HD-BMD or approved equal by Flexmaster or United Enertech.

2.07 FILTERS

All existing air handling units serving the work areas shall be provided with a minimum of three (3) sets of filters with pleated media. One set to be used during construction (and replaced by the Mechanical Contractor during construction if required as determined by the Clerk of the Works and/or the Mechanical Engineer). Second set to be installed a minimum of one (1) day and a maximum of three (3) days prior to testing and balancing and/or final inspection. The third set shall be turned over to the Owner in their original unopened shipping boxes for their future use.

Filters shall be Farr 30/30, Air Guard DP-40 or approved equal, 2 inches thick. Confirm the thickness in the field prior to submitting a bid and match the existing filter thickness.

2.08 INSULATION AND CONDENSATE PROTECTION

A. General

1. Insulation shall be provided for all new supply ductwork and other insulation where shown on drawings.

2. Insulation systems shall have a flame spread rating of 25 or less and a smoke developed rating of 50 or less.

B. Duct Insulation

1. Insulate all new supply air ducts with 1½ inches thick fiberglass duct wrap with factory applied vapor barrier facing:

2. Material to carry U. L. label. All laps to be sealed and held in place with adhesive and flare staples. All lap joints to be folded under before stapling so no raw insulation will be showing. On the bottom of ducts 24 inches or wider, mechanical fasteners shall be provided approximately 12 inches O.C.

C. Condensate Protection

Solder or weld bottom and sides of ducts connected to outdoors to prevent water leaks from rain and snow. Seal duct wrap and liner to minimize condensation.

D. Installation

All insulation work shall be executed by skilled insulation workmen regularly employed in the trade.

2.09 AUTOMATIC TEMPERATURE CONTROL (ATC)

A. General

1. Furnish and install a complete system of direct digital electric/electronic temperature controls as indicated on drawings.

2. ATC contractor shall make the assumption there is a thermostat in each room to be demolished which shall be removed and reinstalled in each new space as directed by the Owner.

3. The control system shall be an extension of the existing Honeywell DDC controls and shall be manufactured and installed by Honeywell.

4. ATC Contractor must be capable of providing, installing and servicing the control system in its entirety. Sub contracting of parts or partial sections of the ATC system is not permitted. Exception: Sub contracting of ATC wiring is permissible but the ATC contractor shall be ultimately responsible and liable for proper installation as outlined in Divisions 15 and 16 of this specification.

5. The control systems shall be provided and installed by trained control mechanics, regularly employed by the approved vendors, in installation and calibration of ATC equipment. No other vendor will be accepted.

6. Shop drawings of new control system components shall be submitted for approval before work is started.

7. Provide ATC technician to test the complete ATC systems sequences for specified cycles of operation with the Testing and Balancing Contractor.

8. ATC Contractor must, at the end of the warranty period, furnish the Owner with all access codes and passwords assigned to the ATC control systems. ATC Contractor shall also instruct the Owner in the use of all digital control software and provide a backup copy of the final software package to the Owner on CD.

B. Scope

Control system shall consist of all new area thermostats and other accessory equipment, and a complete system of wiring to fulfill intent of ATC specification.

C. Incidental Work by Others

1. The following incidental work shall be furnished by the designated contractor under the supervision of the Control Contractor.

   a. Sheet Metal Contractor shall:

      (1) Install all automatic dampers.
      (2) Provide necessary blank-off plates required to install dampers that are smaller than duct size.
      (3) Assemble multiple section dampers with required interconnecting linkages and extend required number of shafts through duct for external mounting of damper motors.
      (4) Provide access doors or other approved means of access through ducts for service to control equipment.
      (5) Install duct smoke detectors (supplied by Division 16).

b. The General Contractor shall:

(1) Provide all necessary cutting, patching and painting.
(2) Provide access doors or other approved means of access through ceilings and walls for service to control equipment.

c. Division 16 shall:

(1) Disconnect and reconnect power to equipment as needed by the ATC contractor.

D. Electric Wiring

1. All low voltage and data wiring for installation of temperature controls shall be by ATC Contractor, except as noted. Power wiring for equipment shall be by Division 16, "ELECTRICAL". See Part 1, Paragraph 1.03, sub-paragraph C, 'MECHANICAL ELECTRICAL WORK" for specific requirements. Exception: Power wiring from circuit breaker to temperature control panel(s) will be provided and installed by the ATC Contractor.

2. Temperature Control Contractor shall be responsible for coordinating installation of his wiring conduits with Division 16, "ELECTRICAL".

E. Submittal Brochure

The following shall be submitted for approval:

1. Product data for all new control system components.

F. Instruction and Adjustment

Upon completion of the project, the Temperature Control Contractor shall:

1. Adjust for use by Owner, all new and relocated thermostats, controllers, valves, damper operators, and relays provided under this section.
2. Furnish two (2) instruction manuals covering function and operation of control systems for use of the Owner's operating personnel. A competent technician shall be provided for instruction purposes.
3. ATC Contractor shall be responsible for balancing return air, exhaust (relief) air and outdoor air dampers on air handling units in order to achieve proper mixed air temperatures.

G. Guarantee

New control system components shall be guaranteed to be free from original defects in both material and workmanship for a period of not less than one (1) year of normal use and service. This guarantee shall become effective starting the date Architect agrees Owner has begun to receive beneficial use of the system.

H. Hazardous Materials

Mercury, or any other material deemed hazardous by the Federal Environmental Protection Agency or the State of Maine Department of Environmental Protection, shall not be used in any components of the ATC system.

I. Thermostats

1. New Space thermostats

a. Direct Radiation: Thermostats shall be DDC thermostats. They shall have indexing switches to automatically index the day/night thermostat to its day mode and provide day temperature regardless of the setting of the occupied/unoccupied program timer.

b. Thermostats shall be mounted according to ADA requirements (http://www.access-board.gov/adaag/html/adaag.htm#4.27).

J. Sequence of Operation

Sequences of operation shall not be altered. Existing programming shall remain in place.

PART 3 – EXECUTION

3.01 SURFACE CONDITIONS

A. Inspection

1. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all work is complete to the point where this installation may properly commence.

2. Verify that Mechanical systems may be installed in strict accordance with all pertinent codes and regulations and the approved shop drawings.

B. Discrepancies

1. In the event of discrepancy, immediately notify Architect.

2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.02 INSTALLATION OF NEW DUCTWORK

A. General

1. Size and general arrangements as well as methods of connecting all diffusers, registers and grilles shall be as indicated, or to meet requirements for complete installation.

2. Construction standards and sheet metal gauges shall be as outlined in the latest edition of the SMACNA HVAC Duct Construction Standards handbook for metal and flexible ducts unless specifically indicated otherwise.

3. Manual Dampers

a. Manual dampers may be shop-fabricated on units 5 inches in height and less. All dampers larger than 5 inches MUST be pre-fabricated as previously outlined in this specification.
b. All manual dampers located within 10 feet of a fan outlet shall have the blades oriented perpendicular to the fan shaft.
c. Provide duct access door as large as possible up to 12 inches x 12 inches at EACH manual damper larger than 5 inches.

B. Protection and Cleaning

1. Existing duct work shall not be left open ended except when attaching new ductwork. All open ends of new ductwork which is to be unattended for 4 hours or more shall be temporarily protected with plastic sheeting and duct tape (or similar method) to reduce the collection of construction dust and debris.

2. Prior to testing and balancing and at the end of the construction, clean the interiors of all new supply and return air ductwork before changing filters in air handling equipment. Careful coordination must be maintained between the time of testing and balancing and final delivery to avoid re-accumulation of dust and debris within the duct systems which will require additional cleaning by the Mechanical Contractor.

3.03 TESTING, ADJUSTING AND BALANCING (TAB)

A. General

1. TAB contractor shall be a subcontractor to the Mechanical Contractor.

2. TAB contractor shall perform functional performance test of all Division 15 equipment and entire ATC system for specified operation and control sequences.

3. The mechanical contractor shall startup all Division 15 equipment as required by the equipment specifications. Mechanical contractor shall verify that systems are complete and operable before TAB commencing work. Ensure the following conditions:

   a. Systems are started and operating in a safe and normal condition.
   b. Temperature control systems are installed complete and operable.
   c. Duct systems are clean of debris.
   d. New fire and volume dampers are in place and open.
   e. Access doors are closed and duct end caps are in place.
   f. Air outlets are installed and connected.
   g. Duct system leakage is minimized.

4. TAB Contractor shall submit field reports to General Contractor. Report defects and deficiencies noted during performance of services which prevent system testing and balance.

5. TAB contractor shall submit all verification and functional performance checklists/results, signed by indicated personnel, organized by system and sub-system.

6. TAB contractor shall submit other reports described below.

B. Work Included

1. Test, adjust and balance all new air diffusers, registers and grilles to conform to air flow rates shown on drawings.

2. Complete and submit balance report. Report shall be submitted with information noted on one side of sheet only (i.e., backside of sheet shall be blank.).

3. Mechanical Contractor SHALL PROVIDE copies of shop drawings indicating coil gpm's, air handling unit air volumes, etc. to the Testing and Balancing contractor at no cost to the contractor.

4. Careful coordination must be maintained between the time of testing and balancing and final delivery to avoid re-accumulation of dust and debris within the duct systems which will require additional cleaning by the Mechanical Contractor.

C. Quality of Compliance

1. Qualification: TAB Contractor must be independent test and balancing agency.

2. AABC Compliance: Comply with AABC Manual MN-1 "AABC National Standards" as applicable to mechanical and hydronic distribution systems and/or Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA).

3. Industry Standards: Comply with ASHRAE recommendations for measurements, instruments and testing and balancing.

4. Coordination: Work together with Automatic Temperature Control Contractor to adjust set points of various devices to balance system(s) and test ATC sequences of operation. Temperature Control Contractor shall be responsible for balancing return air, exhaust (relief) air and outdoor air dampers on Air Handling Units in order to achieve proper mixed air temperatures.

5. ASHRAE Guideline 1-1996, "The HVAC Commissioning Process".

D. Execution of TAB Work

1. TAB Contractor shall examine each new air distribution system to see that it is free from obstructions. Determine that all dampers and registers are in a set or full open position; that moving equipment is lubricated, and that required filters are clean and functioning. Request that Installing Contractor perform any adjustments necessary for proper functioning of the system.

2. TAB Contractor shall use test instruments that have been calibrated within a time period recommended by the manufacturer, and have been checked for accuracy prior to start of testing, adjusting and balancing activity.

3. Verify that all new equipment performs as specified. Adjust volume dampers and new supply register discharge vanes as required by TAB work.

4. It is recognized that existing systems have been modified over time and may or may not deliver the air volumes indicated. However, attempt to adjust each new register, diffuser and damper to handle and properly distribute design airflow within 10% of specified quantities. Mark all setpoints.

5. Adjust front and rear discharge louvers on each new supply register to distribute air in an even pattern or as indicated on plans.

6. Document results of all testing on approved TAB report formats and submit 3 copies for approval and record within 15 days of completion of TAB work. Include a warranty period of 90 days, during which time the Architect/Engineer may request a re-check or re-adjustment of any part of the work.

7. Reports shall be compiled on a spreadsheet such as Excel, Quattro-Pro, Lotus, etc. and shall clearly indicate the following *minimum* information:

   a. Room name
   b. Design air flow rates
   c. Actual air flow rates (terminal readings must show location, make, model and size of register, grille or diffuser).

   Reports to have a minimum of color or must be compatible with monochrome printers. Reports must be submitted to the Architect electronically in addition to hard copies.

E. Drawings

Drawings in CAD format may be made available to the TAB Contractor after the contract for this work is awarded. Contact the Engineer via telephone or at mechsyst@maine.rr.com and request the drawings, indicating CAD format required and a return e-mail address. See par. 1.10, "ELECTRONIC DRAWINGS AND FILE SHARING" for additional information.

F. Acceptable TAB Contractors (listed alphabetically)

1. Central Air Balance
2. Maine Air Balance
3. Tab-Tech International
4. Tekon-Technical Consultants
5. Yankee Balancing

3.04 CLOSING IN UNINSPECTED WORK

A. General

Do not cover up or enclose work until it has been properly and completely inspected and approved.

B. Noncompliance

Should any work be covered up or enclosed prior to all required inspections and approvals, uncover the work as required. After it has been inspected completely and approved, make all repairs and replacements with materials necessary for approval by the Architect and at no additional cost to the Owner.

3.05 CLEANING

Prior to acceptance of the buildings, thoroughly clean all exposed portions of the Heating, Ventilating and Air Conditioning installation, including the removal all labels and all traces of foreign substance. Prior to testing and balancing vacuum and clean inside of all convectors, finned radiators (spackle droppings), unit ventilators, air handling units, VAV units, fans and cabinet unit heaters. Clean the interiors of ductwork as outlined in 3.04, "INSTALLATION OF DUCTWORK AND EQUIPMENT"; paragraph "B", "Protection and Cleaning".

3.06 INSTRUCTIONS

On completion of the job, the Mechanical Contractor shall provide a competent technician to thoroughly instruct the Owner's Representative in the care and operation of the system. The total period of instruction shall not exceed two (2) hours. (ATC system instruction shall be in addition to this instruction period). The time of instruction shall be arranged with the Owner.

3.07 REMOVAL OF EXISTING DUCTWORK, PIPING AND EQUIPMENT

A. All piping and equipment indicated on the drawings for removal shall be done so by the Mechanical Contractor.

B. All materials removed shall remain the property of the Owner until such time the Owner has reviewed the removed materials and either taken or designated items which he may wish to retain. The remainder shall become the property of this Mechanical Contractor and be removed from the premises immediately.

C. Any damages done to removed materials prior to release by the Owner shall be corrected by the Mechanical Contractor at no additional expense to the Owner. Any materials removed prior to release by the Owner shall be replaced by the Mechanical Contractor at no additional expense to the Owner.

3.08 RECYCLING

Discarded materials, both new and removed, shall be recycled whenever practical through metal salvage dealers (ductwork, piping, etc.), paper salvage (cardboard shipping containers, etc.), wood & plastic products, etc. The Mechanical Contractor shall retain the salvage value of discarded materials and may use this value to offset his project bid price if so desired. Toxic materials such as adhesives, coolants, refrigerants, etc. SHALL be disposed of in a manner acceptable to the State of Maine Department of Environmental Protection.

3.09 HAZARDOUS MATERIALS

Mercury, asbestos or any other material deemed hazardous by the Federal Environmental Protection Agency or the State of Maine Department of Environmental Protection, shall not be used in any components of the mechanical systems.

END OF SECTION 15600

SECTION 15710
FIRE SPRINKLERS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

General Provisions of Contract, including General and Supplementary conditions and General Requirements (if any) apply to work specified in this Section.

1.02 DEFINITIONS

A. Equal: Shall mean essentially the same as that product specified, but a model of a different manufacturer.

B. Concealed: Shall mean in walls, in chases, above ceilings, within enclosed cabinets, otherwise enclosed.

C. Exposed: Shall mean in finished spaces, in closets, under counters, behind and/or under equipment and/or otherwise visible.

D. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawl spaces, and tunnels.

E. Others: Shall mean provided by sections other than this section. If not purposely assumed by another section, shall be provided by the General Contractor.

F. Materials: Shall mean any product used in the construction, including but not limited to: fixtures, equipment, piping and supplies.

G. Piping: Shall mean pipe, fittings, hangers and valves.

H. Provide: Shall mean the furnishing and installing of materials.

I. Reviewed equal: Shall mean that the Engineer, not the contractor, shall make final determination whether materials are an equal to that which is specified.

J Substitution: Shall mean materials of significantly different physical, structural or electrical requirements, performance, dimensions, function, maintenance, quality or cost, than that specified.

1.03 DESCRIPTION OF WORK

A. Work Included

Provide all design services, construction documents, labor, transportation, equipment, permits, materials, tools, inspections, incidentals, tests and perform all operations in connection with the modification of a the existing Designed Wet Pipe Sprinkler System in the building to meet the new partition layout. Comply with requirements of all Authorities Having Jurisdiction. Include aesthetic considerations into the design.

Coordinate with interfacing trades. Submit equipment and components for review. Prepare Shop and Record Drawings and Owner's Manuals. Assure quality of workmanship. Provide guarantees and warranties.

1. Automatic Sprinkler System shall meet the standards of the most recent edition of the National Fire Protection Association's (NFPA) NFPA 13 Standard for the Installation of Sprinkler Systems.

1.04 SUBMITTALS

A. Shop Drawings:

1. Within 30 working days after the General Contractor has received a fully executed contract, prepare and submit Plans / Shop Drawings in accordance with the requirements of NFPA and obtain the Engineer's approval and Owner's Insurance Underwriter approval before proceeding with the fabrication and work.

2. Drawings shall include, but not be limited to:
   a. Name of Owner and Occupant
   b. Name and address of Contractor.
   c. Physical Location
   d. Plan view of system
   e. Full height cross section or schematic diagram including ceiling construction and spray obstructions.
   f. Locations of all partitions, with fire partitions noted.
   g. Occupancy class for each area and minimum density of water application.
   h. Locations of concealed spaces
   i. Make, model and nominal K factor of sprinkler heads.
   j. Control valves, check valves, drain pipes and test connections.
   k. Pipe sizes.
   l. Any switches and supervisory devices.
   m. Interface with Fire Control Panel.
   n. Professional Stamp of a Certified and State Licensed Fire Protection Designer/Engineer.

3. To obtain an electronic copy of the building plan and sections, contact the Engineer. Specify required CAD format when requesting the files.

4. Procedure

   a. As soon as possible after award of Contract, before any material or equipment is purchased, this Contractor shall submit to the Engineer no less than six (6) copies for approval. Shop drawings shall be properly identified and shall describe in detail the material and equipment shall be provided, including all dimensional data, performance data, curves, computer selection print-outs, etc.

   b. Corrections or comments made on the submittals do not relieve the contractor from compliance with requirements of the specification. Shop drawing review is only for review of general conformance with the

design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction; coordinating his work with that of all other trades and performing his work in a safe and satisfactory manner.

c. All related items shall be submitted as a package.

4. Submit data on the following items:
   a. Piping, fittings and couplings.
   b. Valves and supervisory devices.
   c. Sprinkler heads and escutcheon plates.
   d. Supports, hangers and accessories.
   e. Any other significant item valued over $100.00

5. Submit to the Owner's Insurance Underwriter sufficient copies for approval to allow one copy to be incorporated into each Owner's Manual in addition to the required As-Built Plans

1.05 HYDRAULIC DESIGN DATA

A. Water Density and Square Foot Requirements: Provide per NFPA.

B. Codes and Requirements:

1. Comply with the standards of most recent edition of the National Fire Protection Association.

2. Comply with the BOCA International Building Code, all Maine State laws as well as local codes and ordinances.

3. Comply with the requirements of the State Fire Marshals Office, Local Fire Chief, Owners Insurance Underwriter, Local Water District and other Authorities Having Jurisdiction

4. Comply with Maine Medical Center standards and directives.

1.06 GUARANTEE

This Contractor shall guarantee all materials and workmanship furnished by him or his sub-contractors to be free from all defects for a period of no less than one (1) year from date of final acceptance of completed system and shall make good, repair or replace any defective work which may develop within that time at his own expense and without expense to the Owner.

1.07 MAINTENANCE MANUAL

On completion of this portion of the work, and as a condition of its acceptance, submit for review two copies of a manual describing the system. Prepare manuals in durable 3-ring binders approximately 8.1/2" by 11" in size with at least the following:

A. Project name on the spine and front cover, and identification on the front cover stating the project name, general nature of the manual, and name, address and telephone number of the General and Sprinkler Contractors.

B. Neatly typewritten index.

C. Complete instructions regarding operation and maintenance of all equipment involved.

D. Complete nomenclature of all frequently replaceable parts and supplies, their part numbers, and name, address and telephone number of the vendor.

E. Copy of all guarantees and warranties issued, and dates of expiration.

F. Shop drawings and equipment/fixtures manufacturer's catalog pages.

PART 2 – PRODUCTS

All products shall be new and must be either Factory Mutual (FM) or Underwriters' Laboratory (U.L.) listed or both.

2.01 MANUFACTURERS, METHODS AND MATERIALS

Match existing whenever possible.

PART 3 – EXECUTION

3.01 PREBID EXAMINATION AND INVESTIGATION

A. Visit the site and become acquainted with the conditions.

B. Study all Drawings and Specifications for all related and interfacing trades. No claim will be recognized for extra compensation due to failure to become familiarized with the conditions and extent of the proposed work as indicated within.

C. Ascertain all Authorities Having Jurisdiction, and consult where needed.

3.02 OBTAINING DRAWINGS AND SPECIFICATIONS

A. Obtain a FULL set of drawings and specifications as soon as is practical.

3.03 SPECIFIC INSTALLATION REQUIREMENTS

A. All piping in finished areas shall be run concealed wherever possible.

B. For aesthetic reasons, locate sprinkler heads neatly and symmetrically, relative to the walls, ceiling grid, diffusers and light fixtures. Center heads in tiles in suspended ceilings.

C. All piping shall be run as high as practicable. Pitch piping slightly to allow the system to be drained.

D. System drains shall be valved and piped to discharge. No valve shall be provided ahead of the electric alarm devices.

E. All sprinkler work shall avoid proposed locations of, and installation clearances for, lighting, ducts, piping, framing and equipment.

F. Holes that may be required in the steel beams must be coordinated with the General Contractor as soon as possible after the contract is awarded.

3.04 COORDINATION

A. Coordinate sprinkler work with that of other trades. Coordinate space early for locations of mains. Ductwork, mechanical equipment, electrical panels and large gravity piping will be given priority over sprinkler piping, unless all effected parties agree otherwise. No compensation will be given for neglect to comply with the above and no claim will be recognized for sprinkler piping, heads and miscellaneous appurtenances which must be modified, removed and reinstalled or relocated, due to conflicts with other work which is or will be installed per the Contract Documents.

B. Contact Electrical Contractor and assure that all requirements for power and fire alarm system have been met.

3.05 TESTS

A. The entire installation shall be tested with water in accordance with all NFPA requirements, all requirements of the local Fire Department and local Water District; and the Owner's Insurance Underwriter; this includes the testing of all alarms.

B. All tests shall be witnessed by the Owner's representative and local Fire Chief's representative. Submit copies of all test certificates, properly signed, to the Engineer.

END OF SECTION 15710

SECTION 16000 GENERAL ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Provide electrical work associated with the renovation of nurse stations and general support areas as shown on the drawings. This project also includes minimal renovations to patient rooms outside of the CICU as shown on the drawings. This contractor shall work within the guidelines of the existing electrical system with respect to general power, equipment power and life safety systems and extend this branch circuit system as required for this installation. Also please note that the phasing of this work is defined in other sections and is designed such that part of the area under construction will be operable during the time that work on another part of the floor is being accomplished.

B. Furnish all materials, labor, tools, transportation, incidentals and appurtenances as required to complete the modifications outlined in this section and the construction drawings and leave in working order all systems effected by this construction.

C. The Contractor for this work is referred to Bidding Requirements, General Conditions, Special Conditions, Temporary Services and other pertinent sections of these specifications. These sections describe work that is part of this Contract as contained in Division 1. The following General Provisions amplify and supplement these Sections of Specifications. In cases of conflicting requirements, the stipulations of Division 1 supersede and must be satified by the Contractor.

1.02 APPLICABLE CODES AND STANDARDS

A. All work shall be in accordance with the laws, rules, codes, and regulations set forth by Local, State, and Federal authorities having jurisdiction. All products and materials shall be manufactured, installed and tested as specified, but not limited to the latest accepted edition of the following codes, standards and regulations:

NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Act
NEC	National Electrical Code (NFPA 70)
UL	Underwriters Laboratory
NESC	National Electrical Safety Code
FM	Factory Mutual Association
BOCA	Boca National Building Code
Local AHJ	Local and State building, electrical, fire and health department and public safety codes agencies.

B. When requirements cited in this Paragraph conflict with each other or with Contract Documents, the most stringent requirements shall govern conduct of work. The Engineer may relax this requirement when such relaxation does not violate the ruling of authorities that have jurisdiction.

Approval for such relaxation shall be obtained in writing. Should the Electrical Subcontractor perform any work that does not comply with the requirements of the applicable building codes, state laws, and industry standards, he shall bear all costs arising in correcting these deficiencies.

1.03 GENERAL REQUIREMENTS

A. Work to be provided under this division is shown on the electrical drawings listed in Division 1, General Requirements and in these Contract Specifications.

B. The listing of electrical drawings does not limit the responsibility of determining the full extent of work that is required by these contract documents. The Electrical Subcontractor shall refer to the drawings and other specification sections included in the complete Contract Package, that indicate types of construction with which work of this section must be coordinated. The General Contractor shall coordinate the work of all trades including that of the electrical contractor, with all other subcontractors to determine whether there will be any interference with the electrical work. If the Electrical Subcontractor fails to check with the General Contractor and the electrical work is later found to interfere with the work of other subcontractors, then he shall make necessary changes, without additional cost to the Owner, to eliminate such interference.

C. Drawings are diagrammatic and indicate the general arrangement of systems and work to be included in the Contract. Information and components shown on riser diagrams or called for in the specifications but not shown on plans, and vice versa, shall apply and shall be provided as though required expressly by both. The contract documents are not intended to indicate and specify each component required, but do require that the components and materials be provided for a complete and operational installation.

D. Contractor shall be responsible for examining the drawings and specifications carefully, with particular attention to errors, omissions, conflicts with provisions of laws and codes imposed by authorities having jurisdiction, conflicts between portions of drawings, or between drawings and specifications, and ambiguous definition of the extent of coverage in the contract. Any such discrepancy discovered shall be brought to the immediate attention of the Owner's Representative for correction.

E. The drawings and these specifications are intended to comply with all the above mentioned Codes, Rules and Regulations. If discrepancies occur, the Electrical Subcontractor shall immediately notify the Engineer in writing of said discrepancies and apply for an interpretation and, unless and interpretation is offered in writing by the Engineer prior to the execution of the contract, the applicable rules and regulations shall be complied with as a part of the contract.

F. All telecommunications work shall conform to the requirements listed in the Owner's "Telecommunications Network Services 16600 Specifications". The Contractor shall obtain a copy of these standards and become familiar with all applicable requirements contained within.

1.04 SUBMITTALS

A. Submit under provisions of Division 1.

B. After the Contract is awarded, but prior to proceeding with the Work, the Electrical Subcontractor shall obtain complete shop drawings, product data and samples from manufacturers, suppliers, vendors, and Subcontractors for all materials and equipment specified herein, and submit data and details of such materials and equipment for review by the Engineer. [Submission of such items shall follow the guidelines set in the General Section of the Specification Document.] Prior to submission of the shop drawings, product data and samples to the Engineer, the Electrical Subcontractor shall review and certify that the shop drawings, product data and samples are in compliance with the Contract Documents. Further, the Electrical Subcontractor shall check all materials and equipment after their arrival on the jobsite and verify their compliance with the Contract Documents. A minimum period of ten working days, exclusive of transmittal time will be required in the Engineer's office each time shop drawings, product data and/or samples are submitted or resubmitted for review. This time period shall be considered by the Electrical Subcontractor when scheduling his Work.

C. The shop drawing submittal shall include all data necessary for interpretation as well as manufacturer's name and catalog number. Sizes, capacities, colors, etc., specified on the drawings shall be specifically noted or marked on the shop drawings.

D. Submittals shall contain only information specific to systems, equipment and materials required by Contract Documents for this Project. Do not submit catalogs that describe products, models, options or accessories, other than those required, unless irrelevant information is marked out or unless relevant information is highlighted clearly. Marks on submittals, whether by Contractor, Subcontractor, manufacturer, etc., shall not be made in red ink. Red is reserved for review process.

E. The Engineer's review of such drawings shall not relieve the Subcontractor of responsibility for deviations from the Contract, Drawings or Specifications, unless he has in writing called the attention of the Engineer to such deviations at the time of the submission. The Engineer's review shall not relieve the Electrical Subcontractor from responsibility for errors or omissions in such drawings.

1.05 RECORD DRAWINGS

A. Record any changes in location of boxes, service runs, and similar construction on a set of prints and deliver them to the Owner's Representation upon completion of work. Additionally, update all panel schedules in panels containing demolished, used or reused circuits as part of this project.

1.06 PROJECT SITE CONDITIONS

A. The Contractor shall investigate the existing conditions to determine the exact existing electrical configuration and to confirm that the existing facilities can accommodate the requirements of the new construction per the Plans and Specifications.

B. Prepare any drawings showing proposed rearrangement of Work to meet the Project Conditions, including changes to Work specified in other Sections. Obtain permission of Owner and Architect/Engineer prior to proceeding.

1.07 EXISTING SERVICES

A. Obtain permission from Owner in writing at least 48 hours in advance of the interruption to any of the following systems:

1. Electric Power

2. Telephone and/or Data
3. Paging/Intercom
4. Nurse Call
5. Fire Alarm
6. Patient Monitoring
7. Health Care Systems (medical gas, etc.)

PART 2 - PRODUCTS

2.01 CONDUIT AND FITTINGS

A. Electrical Metallic Tubing: Shall be constructed of zinc coated steel with an interior coating of lacquer or enamel to permit easier wire pulling and conform to the following standards:

ANSI C80.3	Standard for Electrical Metallic Tubing
UL797	Electrical Metallic Tubing

B. Fittings: ANSI/NEMA FB 1, Steel. EMT fittings shall utilize compression type connectors.

2.02 BUILDING WIRE

A. All conductors shall be annealed copper in accordance with ASTM B-3.

B. The jacket of all wire shall be printed with the following information: Manufacturer, Size, Insulation type, Maximum voltage, and UL label.

C. All insulation shall be rated 600 for volts. Feeders and motor branch circuits shall be type XHHW or THHN/THWN. All power wiring shall be stranded, Class B strand in accordance with ASTM B-8, minimum size #12 AWG.

D. In lieu of EMT conduits and cables where allowed by the Owner and Local Authority Having Jurisdiction, UL-Listed Medical Metal Clad cable assemblies may be considered where new conductors are being furnished. Verify with Owner's Representative.

2.03 PULL AND JUNCTION BOXES

A. Sheet metal boxes: NEMA OS 1, galvanized steel, sized per NEC.

2.04 GROUNDING MATERIALS

A. Feeder and branch circuit grounding conductors shall be stranded copper with Type TW, THW or THHN/THWN insulation. Grounding conductor shall be provided with green insulation for identification purposes.

2.05 CIRCUIT BREAKERS

A. Where additional circuit breakers are required in existing panels, breakers shall match the manufacturer, type, and Interrupting Current (AIC) ratings that exist in the panelboard being modified.

PART 3 - EXECUTION

3.01 GENERAL SCOPE: The Work shall be complete from point of service to each outlet or device with all accessory construction and materials required to make each item of equipment or system complete and ready for operation. The work shall include but not be limited to the following. The Electrical Subcontractor shall provide:

A. Grounding System: Maintain existing grounding system and comply with NEC 517 for all grounding of equipment in Patient Care Areas.

B. Power Distribution Systems: Provide power and lighting distribution systems including modifications to existing panelboards including but not limited to the addition of overcurrent devices, as well as any additional raceways, cable and wire.

C. Feeder and Branch Circuit Wiring: Provide feeder and branch circuits and devices for power to equipment and convenience receptacles.

D. Interior Lighting Systems: Provide complete interior lighting system including normal and emergency fixtures, lamps, controls, trim and accessories.

E. Fire Alarm Systems: Provide additional devices as required and shown on the Contract Drawings to the existing fire alarm and detection system including indicating appliances and other devices shown on the Drawings. All components shall be compliant with the existing Honeywell Fire Alarm System. Coordinate with the Owner's Fire Alarm Systems representative for exact part numbers. Scope of this work shall include all wiring, conduits, boxes, devices, auxiliary equipment and programming for a complete and operable installation.

F. Intercom Systems: Provide equipment for additional intercom and paging system speakers as shown on these plans and integrated into existing system, furnish all wiring and auxiliary equipment required for a complete and operable installation. See the Owner's "Telecommunications Network Services 16600 Specifications" for equipment specifications.

G. Nurse Call Systems: Provide empty boxes and conduits for nurse call system components identified on the contract drawings. Coordinate installation with the Owner's Nurse Call System representative and the existing Rauland System. See the Owner's "Telecommunications Network Services 16600 Specifications" for equipment specifications.

H. Telephone and Data Systems: Provide empty conduits for voice and data) outlets. See the Owner's "Telecommunications Network Services 16600 Specifications" for further specifications.

I. Cable Television Systems: Provide conduit, cable and jack for CATV outlets. See the Owner's "Telecommunications Network Services 16600 Specifications" for further specifications.

J. Supports and Fittings: Provide all support material and hardware for raceway, cable tray and electrical equipment.

K. Terminations: Provide terminations of all cable and wire unless otherwise noted.

L. Penetrations: Provide all building wall, floor and roof penetrations for raceway and cable tray where not provided by the General Contractor.

3.02 DEMOLITION AND EXTENSION OF EXISTING CIRCUITS

A. Disconnect and remove all existing electrical system equipment and associated wiring within the area of the limits of construction where such is not identified as existing to remain.

B. Relocate and/or extend existing wiring that passes through the area of the limits of construction that serve items in other areas that must remain in service. Provide conduit, wiring, boxes, etc. as required to facilitate the relocation and/or extension of existing wiring as required.

C. Disconnect and remove existing wiring to the point of origin where such wiring is not re-used.

3.03 CUTTING AND PATCHING

A. Cut and patch as required to install new work. Patching shall match existing surfaces in kind and finish. Obtain prior approval from the Architect/Engineer prior to cutting any structural members.

3.04 CONDUIT AND SURFACE RACEWAY

A. Conduit, EMT, boxes & enclosures shall be installed so that they are mechanically secure, electrically continuous and neat in appearance.

B. Exposed runs shall be installed to conform to the shape of the surface over which they are run. Where they are run over a plane surface, they shall be straight and true. All exposed conduits shall be run parallel and perpendicular to building column lines and walls. Diagonal runs will not be permitted. Conduit runs in groups shall be supported by means of common members made of channel framing. Group mounting is not required where the group consists of only two conduits. Machine bolts with expansion shields shall be used when fastening to solid masonry or concrete. Toggle bolts shall be used to fasten to hollow masonry.

C. Unless otherwise approved, spacing between conduit supports shall not exceed ten feet. Conduits shall not be supported from structural members marked "Removable" on the structural drawings. Conduit hangers and supports shall be fastened to buildings and structural members only and not to any equipment or piping. Separate conduits a minimum of 6" from flues, steam and hot water lines. Install conduit above mechanical piping wherever possible.

D. All conduit supports other than structural members shall be galvanized. The use of perforated strap or plumber straps will not be permitted.
Conduit up to 1-1/2 inch may be supported by one-hole malleable iron straps with clamp backs.
Conduit 2 inches and larger shall be supported by two-hole straps.

E. Conduit runs shall not exceed 100 feet between boxes, fittings or devices. MC cables shall be neatly bundled and tie wrapped and sufficiently supported.

F. All conduit crossing building or structure expansion joints shall be provided with approved expansion fittings.

G. Field bends shall be made with approved bending tools. All field-formed bends shall be of maximum radius permitted by the design and construction conditions.

H. Where a group of exposed conduits change direction, the bends shall have a common center in order to maintain the uniformity and neat appearance of the group, having regard for the minimum bending radius of the largest conduit in the group.

I. Bends shall be uniform radius and free from cracks, crimps or other damage to the conduit or its coating and shall not unduly flatten the conduit section.

J. All conduit terminations in panels, enclosures, outlet boxes and equipment shall be provided with bushings.

K. Flexible conduit shall be use to terminate all, lighting, motors, unit lanterns, transformers, pilot devices and vibrating equipment. Liquitite flexible conduit and fitting shall be used outdoors and in all damp or wet areas, or where exposed to grease or oil.

L. Connections to lighting fixtures (lighting whips) shall be maximum length of 6 feet. All other flexible connections shall be maximum 24 inches.

M. All penetrations through concrete slabs, masonry walls or roofs shall be provided with sleeves. All sleeves shall be sealed to maintain the integrity of the structure. Fire resistant walls and floors shall be sealed with approved material, and shall maintain the original fire rating.

3.05 WIRING INSTALLATION

A. Install all wiring in accordance with manufacturers' instructions.

B. Pull all conductors into conduit or raceway at the same time. Use suitable pulling lubricant for building wire #4AWG or larger.

C. Use split-bolt connectors for copper conductor splices and taps #6AWG or larger. Tape un-insulated conductors and connector with electrical tape to 150% of the insulation rating of the conductor.

3.06 WIRING DEVICE INSTALLATION

A. Install all products in accordance with manufacturers' instructions.

B. Install all devices plumb and level. Device plates shall be installed such that they are flush and level. Switches shall be installed with the off position down and receptacles shall be installed with the grounding pole on top.

C. Install devices at heights specified in the general notes of the drawings unless noted otherwise on the plans.

D. Receptacles shall be tested for polarity and GFI receptacles shall be tested for proper operation.

3.07 LIGHTING FIXTURE AND CONTROLS INSTALLATION

A. Examine all areas and conditions under which lighting fixtures are to be installed and structure which will support lighting fixtures. Notify the Contractor in writing of any conditions detrimental to proper installation and completion of the work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

B. Coordinate light fixture installations with other trades. Fluorescent light fixtures should be installed at least two feet away from smoke detectors. Coordinate all lighting fixtures with mechanical piping and ductwork to allow for proper clearance.

C. Install all lighting fixtures at locations and heights indicated, in accordance with the architectural reflected ceiling plans.

D. All recessed lighting fixtures installed in ceiling which require a fire resistance rating shall be installed in accordance with the 1996 BOCA National Building Code Section 713.

E. Provide fixtures and/or fixture outlet boxes with hangers, channel or other method of fastening and supporting fixtures required for proper installation.

F. Tighten connectors and terminals, including screws and bolts in accordance with equipment manufacturer's published torque tightening values for equipment connectors. All screws and bolts shall have washers.

G. Twist on wire connectors shall be installed which utilize square-wire spring grips and thermo plastic shells. Install connectors to meet the manufacturer's torquing requirements. Install wire connectors of size required as not to exceed the manufacturers UL-listed CSA recognized wire combinations.

H. At date of substantial completion, all lamps that are not functioning, have color deficiencies, or are noticeably dimmed shall be replaced with new lamps as determined by the Engineer.

I. All light fixtures shall be cleaned of dirt and debris upon completion of construction. All finger prints and smudges shall be cleaned. All light fixtures damaged in shipping or during installation shall be replaced with new fixtures at no cost to the owner.

J. All light fixtures shall be grounded in accordance with article 250 and 410 of the NEC. Tighten connections to comply with tightening torques specified in UL 486A to assure permanent and effective grounds.

END OF SECTION