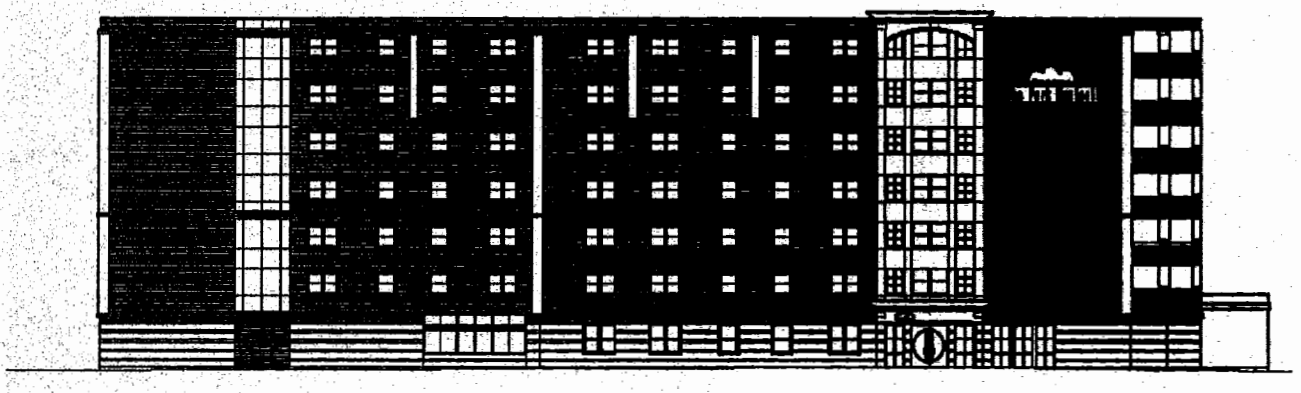
S P E C I F I C A T I O N S

for

Exterior Renovations to
The Park Danforth

777 Stevens Avenue
Portland ME
HUD No. 024-35098

October 1, 2004
Revised: 2 February, 2005
HUD Submission March 15, 2005



Signature Block

The Park Danforth
777 Stevens Avenue
Portland, ME 04103

Mortgagor_____

Phone: 207-797-7710 Fax: 207-797-3672

Curtis Walter Stewart Architects
434 Cumberland Avenue
Portland, ME 04101-2325

Architect_____

Phone: 207-774-4441 Fax: 207-774-4016

Allied/Cook Construction Co. Inc.
PO Box 1396
Portland, ME 04104

Contractor_____

Phone: 207-772-2888 Fax: 207-885-5135

Suburban Mortgage Assoc., Inc.
1 Union Street – Suite 400
Portland, ME 04101

Mortgage Company_____

Phone: 207-775-3568 Fax: 207-775-1061

Skillings-Shaw Assoc., Inc.
485 Main Street – PO Box 481
Lewiston, ME 04243-0481

Bonding Company_____

Phone: 207-753-7300 Fax: 207-753-7310

INDEX OF CONTRACT DOCUMENTS

CONTRACT

SPECIFICATIONS

DIVISION 0 – INFORMATION AVAILABLE TO CONTRACTOR

DIVISION 1 – GENERAL REQUIREMENTS

DIVISION 2 – SITEWORK

DIVISION 3 – CONCRETE

DIVISION 4 – MASONRY

DIVISION 5 – METALS

DIVISION 6- WOOD & PLASTICS

DIVISION 7 – THERMAL & MOISTURE PROTECTION

DIVISION 8 – DOORS & WINDOWS

DIVISION 9 – FINISHES

DIVISION 10 – SPECIALTIES: NOT USED

DIVISION 11 – EQUIPMENT: NOT USED

DIVISION 12 – FURNISHINGS: NOT USED

DIVISION 13 – SPECIAL CONSTRUCTION: NOT USED

DIVISION 14 – CONVEYING SYSTEMS: NOT USED

DIVISION 15 – MECHANICAL:

DIVISION 16 – ELECTRICAL:

INDEX OF DRAWINGS

DRAWINGS

STRUCTURAL: 12/30/04

ARCHITECTURAL: MARCH 15, 2005

Contract Documents

Construction Contract
Lump Sum

U.S. Department of Housing and Urban Development
Office of Housing
Federal Housing Commissioner

OMB Approval No. 2502-0011 (Exp. 4/30/2007)

Public Reporting Burden for this collection is estimated to average 16 hours per response, including the time for reviewing, searching existing data sources, gathering and maintaining the data needed, and compiling and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to the Reports Management Officer, Paperwork Reduction Project (2502-0011), U.S. Department of Housing and Urban Development, 451 7th Street SW, Washington, DC 20410-3600.

The Department of Housing and Urban Development (HUD) is authorized to collect this information by provisions set forth in Article I.E. of the National Housing Act (Public Law 479, 48 Stat. 1246, 12 U.S.C. 1701 et. seq.). This information is provided to the FHA-Commissioner to obtain approval by contractors and mortgagors to document the terms and conditions of any Contract Document, or order for extra work, or changes by altering or adding to the work, or which will change the design concept. The information is used by HUD to ensure that viable projects are developed. Furnishing of this information is mandatory, and failure to provide it may result in your not receiving your benefits.

Privacy Act Notice. The United States Department of Housing and Urban Development, Federal Housing Administration, is authorized to solicit the information requested in this form by virtue of Title 12, United States Code, Section 1701 et seq., and regulations promulgated thereunder at Title 12, Code of Federal Regulations. While no assurances of confidentiality is pledged to respondents, HUD generally discloses this data only in response to a Freedom of Information request. This agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless that collection displays a valid OMB control number.

This Agreement, made the _____ day of _____ 20____, between _____

_____ (hereinafter called the "Contractor") and

_____ (hereinafter called the "Owner").

Witnesseth, that the Contractor and the Owner, for the consideration hereinafter set out, agree as follows:

Article 1—Scope of Contract

A. The Contract between the parties is set forth in the "Contract Documents," which consist of this Agreement, the Drawings and Specifications, which include the current edition of AIA Document A201, "General Conditions of the Contract for Construction," and Form HUD-2554, "Supplementary Conditions of the Contract for Construction." The provisions of this instrument and the said HUD Supplementary Conditions take precedence over all inconsistent provisions in the said AIA General Conditions. This Contract constitutes the entire agreement between the parties, and any previously existing contract concerning the work contemplated by the Contract Documents is hereby revoked.

B. The Contractor shall furnish all of the materials and perform all of the work (within the property lines) shown on, and in accordance with, the Drawings and Specifications entitled _____

_____ ,

HUD Project No._____, dated_____.

C. The Drawings, which are numbered_____,

and the Specifications, the pages of which are numbered_____

_____ ,

have been prepared by _____

_____ ("Design Architect").

The Architect administering the Construction Contract (hereinafter, and elsewhere in the Contract Documents, referred to as the "Architect") is_____

_____ .

D. A master set of said Drawings and Specifications, identified by the parties hereto and by the Design Architect, the Architect, and the Contractor's Surety or Guarantor have been placed on file with the Federal Housing Commissioner (hereinafter referred to as the "Commissioner"), and shall govern in all matters which arise with respect to such Drawings and Specifications.

E. Changes in the Drawings and Specifications or any terms of the Contract Documents, or orders for extra work, or changes by altering or adding to the work, or which will change the design concept, may be effected only with the prior written approval of the Owner's Lender (more particularly identified below and hereinafter referred to as the "Lender") and the Commissioner under such conditions as either the Lender or the Commissioner may establish.

Article 2—Time

A. The work to be performed under this Contract shall be commenced within _____ days of this Agreement, and shall be completed by _____, 20____. The time by which the work shall be completed may be extended in accordance with the terms of the said AIA General Conditions only with the prior written approval of the Commissioner.

B. The Contractor shall correct any defects due to faulty materials or workmanship which appear within one year from the date of final completion.

C. If the work is not brought to final completion in accordance with the Drawings and Specifications, including any authorized changes, by the date specified above, or by such date to which the contract time may be extended, the contract sum stated in Article 3A below shall be reduced by $_____, as liquidated damages, for each day of delay until the date of final completion. When the Owner cost certifies to HUD, the actual cost of interest, taxes, insurance, mortgage insurance premiums, and construction and permanent loan extension fees, as approved by the Commissioner, for the period from the scheduled date of completion through the date construction was actually completed, shall be determined. The lesser of the liquidated or actual damages shall be applied. The applicable amount shall be reduced by the project's net operating income (as determined by the Commissioner) for the damage period.

D. The Owner and Contractor may amend this contract prior to initial endorsement (insurance of advances projects) or upon execution of the construction contract (insurance upon completion projects), in a form prescribed by the Commissioner, to provide for an incentive payment to the Contractor, which will result in an increase in the contract sum stated in Article 3A below, if the work is completed before the date specified in this contract. The Contractor will **not** be entitled to any incentive payment resulting from early completion if HUD determines that the Contractor's cost certification, if required by Article 7, is fraudulent or materially misrepresents the Contractor's actual cost of construction.

E. The date of final completion shall be the date the HUD representative signs the final HUD Representative's Trip Report provided that the trip report is subsequently endorsed by the Chief Architect.

Article 3—Contract Sum and Payments

A. The Owner shall pay the Contractor for the performance of the Contract, as hereinafter provided, the sum of $_____

.

B. Each month after the commencement of work hereunder, the Contractor shall make a monthly request on Form HUD-92448 for payment by the Owner for work done during the preceding month. Each request for payment shall be filed at least _____ days before the date payment is desired. Subject to the approval of the Lender and the Commissioner, the Contractor shall be entitled to payment thereon in an amount equal to (1) the total value of classes of the work acceptably completed; plus (2) the value of materials and equipment not incorporated in the work, but delivered to and suitably stored at the site; plus (3) the value of components stored off-site in compliance with applicable HUD requirements; less (4) 10 percent holdback and less prior payments. The "values" of (1), (2) and (3) shall be computed in accordance with the amounts assigned to classes of work in the "Contractor's and/or Mortgagor's Cost Breakdown," attached hereto as Exhibit "A". The Contractor agrees that no materials or equipment required by the Specifications will be purchased under a conditional sale contract or with the use of any security agreement or other vendor's title or lien retention instrument.

C. The balance due the Contractor hereunder shall be payable upon the expiration of 30 days after the work hereunder is fully completed, provided the following have occurred.

(1) All work hereunder requiring inspection by municipal or other governmental authorities having jurisdiction has been inspected and approved by such authorities and by the rating or inspection organization, bureau, association or office having jurisdiction;

(2) All certificates of occupancy, or other approvals, with respect to all units of the project have been issued by State or local governmental authorities having jurisdiction; and

(3) Permission(s) To Occupy (Form HUD-92485) for all units of the project have been issued by the Commissioner.

D. With its final application for payment by the Owner, the Contractor shall disclose, on a form prescribed by the Commissioner, all unpaid obligations contracted in connection with the work performed under this Contract. The Contractor agrees that within 15 days following receipt of final payment, it will pay such obligations in cash and furnish satisfactory evidence of such payment to the Owner.

Article 4—Receipts & Releases of Liens

The Owner may require the Contractor to attach to each request for payment its acknowledgement of payment and all subcontractors' and material supplier's acknowledgements of payment for work done and materials, equipment and fixtures furnished through the date covered by the previous payment. Concurrently with the final payment, the Owner may require the Contractor to execute a waiver or release of lien for all work performed and materials furnished hereunder, and may require the Contractor to obtain similar waivers or releases from all subcontractors and material suppliers.

Article 5—Requirements of Contractor

A. The Contractor shall furnish, at its own expense, all building and other permits, licenses, tools, equipment and temporary structures necessary for the construction of the project. The Contractor shall give all required notices and shall comply with all applicable codes, laws, ordinances, rules and regulations, and with the current regulations of the National Board of Fire Underwriters, wherever applicable. The Contractor further shall comply with the provisions of the Occupational Safety and Health Act of 1970. The Contractor shall immediately notify the Commissioner of the delivery of all permits, licenses, certificates of inspection, certificates of occupancy, and any other such certificates and instruments required by law, regardless of to whom issued, and shall cause them to be displayed to the Commissioner upon request.

B. If the Contractor observes that the Drawings and Specifications are at variance with any applicable codes, laws, ordinances, rules or regulations, or protective covenants, it shall promptly notify the Architect in writing, and any necessary changes shall be made as provided in this Contract for changes in the Drawings and Specifications. If the Contractor performs any work knowing it to be contrary to such codes, laws, ordinances, rules or regulations, or protective covenants, without giving such notice to the Architect, it shall bear all costs arising therefrom.

C. Upon completion of construction, the Contractor shall furnish to the Owner a survey showing the location on the site of all improvements constructed thereon, and showing the location of all water, sewer, gas and electric lines and mains, and of all existing utility easements. Such survey shall be prepared by a licensed surveyor who shall certify that the work is installed and erected entirely upon the land covered by the mortgage and within any building restriction lines on said land, and does not overhang or otherwise encroach upon any easement or right-of-way of others. In addition, the Contractor shall furnish additional surveys when required by the Owner for any improvements, including structures and utilities, not theretofore located on a survey. The Contractor shall furnish copies of such survey required hereunder for the Lender and the Commissioner.

D. The Contractor shall assume full responsibility for the maintenance of all landscaping which may be required by the Drawings and Specifications until such time as both parties to this Contract shall receive written notice from the Commissioner that such landscaping has been finally completed. The Owner hereby agrees to make available to the Contractor, for such purpose, without cost to the latter, such facilities as water, hose and sprinkler.

Article 6—Assurance of Completion

The Contractor shall furnish to the Owner assurance of completion of the work in the form of (specify) _____

_____

_____

_____ .

Such assurance of completion shall run to the Owner and the Lender as obligees and shall contain a provision whereby the surety agrees that any claim or right of action that either the Owner or the Lender might have thereunder may be assigned to the Commissioner.

Article 7—Cost Certification

In the event the Commissioner determines that there is an identity of interest between the Contractor and the Owner, the Contractor shall certify, on a form prescribed by the Commissioner, its cost incurred in the performance of work under this Contract.

Article 8—Right of Entry and Interpretation

A. The Lender and its agents or assigns and the Commissioner and his/her agents shall, at all times during construction, have the right of entry and free access to the project and the right to inspect all work done and materials, equipment and fixtures furnished, installed or stored in and about the project. For such purposes, the Contractor shall furnish such enclosed working space as the Lender or Commissioner may require and find acceptable as to location, size, accommodations and furnishings.

B. The Commissioner shall also have the right to interpret the Contract Documents and to determine compliance therewith.

Article 9—Assignments, Subcontracts and Termination

A. This Contract shall not be assignable by either party without the prior written consent of the other party, the Lender and the Commissioner, except that the Owner may assign the Contract, or any rights hereunder, to the Lender or the Commissioner.

B. The Contractor shall not subcontract all of the work to be performed hereunder without the prior written consent of the Owner, the Lender and the Commissioner.

C. Upon request by the Owner, the Lender or the Commissioner, the Contractor shall disclose the names of all persons with whom it has contracted or will contract with respect to work to be done and materials and equipment to be furnished hereunder.

D. The Contractor understands that the work under this contract is to be financed by a building loan to be secured by a mortgage and insured by the Commissioner, and that the terms of said loan are set forth in a Building Loan Agreement between the Owner as Borrower

and_____

_____

_____ as Lender.

The Contractor further understands that said Building Loan Agreement provides that, in the event of the failure of the Owner to perform its obligations to the Lender thereunder, the Lender may, as attorney-in-fact for the Owner, undertake the completion of the project in accordance with this Contract. In the event the Lender elects not to undertake such completion, the Contractor's obligations under this contract shall terminate.

In Witness Whereof, the parties to these presents have executed this contract in six (6) counterparts, each of which shall be deemed an original, in the year and day first above mentioned.

(Seal) Attest:	Owner
Witness	By
Witness	Title

(Seal)	Contractor
Witness	By
Witness	Title

Note: If Contractor or owner is a corporation, Secretary should attest.

AIA DOCUMENT A201-1997

General Conditions of the Contract for Construction

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

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

TABLE OF ARTICLES

CAUTION: You should use an original AIA document with the AIA logo printed in red. An original assures that changes will not be obscured as may occur when documents are reproduced.

AIA DOCUMENT A201-1997
GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

The American Institute of Architects
1735 New York Avenue, N.W.
Washington, D.C. 20006-5292

INDEX

AIA DOCUMENT A201-1997
GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

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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).

1.1.2 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, (3) between the Owner and Architect or (4) 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 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, systems, standards and workmanship for the Work, and performance of related services.

1.1.7 THE PROJECT MANUAL

The Project Manual is a volume assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract and Specifications.

1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

1.2.1 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 indicated results.

1.2.2 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.

1.2.3 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 CAPITALIZATION

1.3.1 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.

1.4 INTERPRETATION

1.4.1 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.

1.5 EXECUTION OF CONTRACT DOCUMENTS

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

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

1.6 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

1.6.1 The Drawings, Specifications and other documents, including those in electronic form, prepared by the Architect and the Architect's consultants are Instruments of Service through which the Work to be executed by the Contractor is described. The Contractor may retain one 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 or the Architect's consultants, and unless otherwise indicated the Architect and the Architect's consultants shall be deemed the authors of them and will retain all common law, statutory and other reserved rights, in addition to the copyrights. All copies of Instruments of Service, 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 the Architect's consultants, 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, Architect and the Architect's consultants. The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Architect and the Architect's consultants appropriate to and for use in

the execution of their Work under the Contract Documents. All copies made under this authorization shall bear the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Architect and the Architect's consultants. 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 or Architect's consultants' copyrights or other reserved rights.

ARTICLE 2 OWNER

2.1 GENERAL

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 otherwise 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 The Owner shall furnish to the Contractor within fifteen days after receipt of a written request information 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.

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.2.1 The Owner shall, at the written request of the Contractor, prior to commencement of the Work and thereafter, furnish to the Contractor reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. Furnishing of such evidence shall be a condition precedent to commencement or continuation of the Work. After such evidence has been furnished, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

2.2.2 Except for permits and fees, 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.

2.2.3 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. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

2.2.4 Information or services required of the Owner by the Contract Documents shall be furnished by the Owner with reasonable promptness. 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.

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 may issue a written order to 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 three-day period. If the Contractor within such three-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 reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services 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 GENERAL

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.

3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

3.1.3 The Contractor shall not be relieved of obligations to perform 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.

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.2.1 Since the Contract Documents are complementary, before starting each portion of the Work, the Contractor shall carefully study and compare the various Drawings and other Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Subparagraph 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, any errors, inconsistencies or omissions discovered by the Contractor shall be reported promptly to the Architect as a request for information in such form as the Architect may require.

3.2.2 Any design errors or omissions noted by the Contractor during this review shall be reported promptly to the Architect, but it is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional unless otherwise specifically provided in the Contract Documents. The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations, but any nonconformity discovered by or made known to the Contractor shall be reported promptly to the Architect.

3.2.3 If the Contractor believes that additional cost or time is involved because of clarifications or instructions issued by the Architect in response to the Contractor's notices or requests for information pursuant to Subparagraphs 3.2.1 and 3.2.2, the Contractor shall make Claims as provided in Subparagraphs 4.3.6 and 4.3.7. If the Contractor fails to perform the obligations of Subparagraphs 3.2.1 and 3.2.2, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. The Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents or for differences between field measurements or conditions and the Contract Documents unless the Contractor recognized such error, inconsistency, omission or difference and knowingly failed to report it to the Architect.

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 the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any resulting loss or damage.

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 or entities performing portions of the Work for or on behalf of the Contractor or any of its Subcontractors.

3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed 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 may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order.

3.4.3 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.

3.5 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 to 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 and 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 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 applicable to 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 appropriate responsibility for such Work and shall bear the costs attributable to correction.

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 to whom the Contractor has reasonable objection.

3.8.2 Unless otherwise provided in the Contract Documents:

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

.2 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 but not in the allowances;

.3 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 3.8.2.1 and (2) changes in Contractor's costs under Clause 3.8.2.2.

3.8.3 Materials and equipment under an allowance shall be selected by the Owner in sufficient time to avoid delay in the Work.

3.9 SUPERINTENDENT

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.

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.

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.

3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

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 field changes and selections made during construction, and one record copy of 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 by the Contract Documents the way by which 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. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals which are not required by the Contract Documents may be returned by the Architect without action.

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 as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Architect without action.

3.12.6 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.

3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect.

3.12.8 The Work shall be in accordance with approved submittals except that 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 (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the 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. In the absence of such written notice the Architect's approval of a resubmission shall not apply to such revisions.

3.12.10 The Contractor shall not be required to provide professional services which constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Subparagraph 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

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, PATENTS AND COPYRIGHTS

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

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), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be

construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this 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 Subparagraph 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' compensation acts, disability benefit acts or other employee benefit acts.

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 If the employment of the Architect is terminated, the Owner shall employ a new Architect against whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the former Architect.

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 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 one-year period for correction of Work described in Paragraph 12.2. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified in writing in accordance with other provisions of the Contract.

4.2.2 The Architect, as a representative of the Owner, will visit the site at intervals appropriate to the stage of the Contractor's operations (1) to become generally familiar with and to keep the Owner informed about the progress and quality of the portion of the Work completed, (2) to endeavor to guard the Owner against defects and deficiencies in the Work, and (3) to determine in general if the Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will neither have control over or charge of, nor be responsible for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Subparagraph 3.3.1.

4.2.3 The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

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 with each other through the Architect about matters arising out of or relating to the Contract. 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 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 that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require 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 or entities 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 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 in writing within any time limits agreed upon or otherwise with reasonable promptness. 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 initial 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 initiated by written notice. The responsibility to substantiate Claims shall rest with the party making the Claim.

4.3.2 Time Limits on Claims. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims must be initiated by written notice to the Architect and the other party.

4.3.3 Continuing Contract Performance. Pending final resolution of a Claim except as otherwise agreed in writing or as provided in Subparagraph 9.7.1 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

4.3.4 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 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 days after the Architect has given notice of the decision. If the conditions encountered are materially different, the Contract Sum and Contract Time shall be equitably adjusted, but 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.

4.3.5 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 10.6.

4.3.6 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 this Paragraph 4.3.

4.3.7 CLAIMS FOR ADDITIONAL TIME

4.3.7.1 If the Contractor wishes to make Claim for an 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.

4.3.7.2 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, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

4.3.8 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, or of others for whose acts such party is legally responsible, 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 discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

4.3.9 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so 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.

4.3.10 Claims for Consequential Damages. The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes:

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Subparagraph 4.3.10 shall be deemed to preclude an award of liquidated direct damages, when applicable, in accordance with the requirements of the Contract Documents.

4.4 RESOLUTION OF CLAIMS AND DISPUTES

4.4.1 Decision of Architect. Claims, including those alleging an error or omission by the Architect but excluding those arising under Paragraphs 10.3 through 10.5, shall be referred initially to the Architect for decision. An initial decision by the Architect shall be required as a

condition precedent to mediation, arbitration or litigation of all Claims between the Contractor and Owner arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Architect with no decision having been rendered by the Architect. The Architect will not decide disputes between the Contractor and persons or entities other than the Owner.

4.4.2 The Architect will review Claims and within ten days of the receipt of the Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Architect is unable to resolve the Claim if the Architect lacks sufficient information to evaluate the merits of the Claim or if the Architect concludes that, in the Architect's sole discretion, it would be inappropriate for the Architect to resolve the Claim.

4.4.3 In evaluating Claims, the Architect may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Architect in rendering a decision. The Architect may request the Owner to authorize retention of such persons at the Owner's expense.

4.4.4 If the Architect requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either provide a response on the requested supporting data, advise the Architect when the response or supporting data will be furnished or advise the Architect that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Architect will either reject or approve the Claim in whole or in part.

4.4.5 The Architect will approve or reject Claims by written decision, which shall state the reasons therefor and which shall notify the parties of any change in the Contract Sum or Contract Time or both. The approval or rejection of a Claim by the Architect shall be final and binding on the parties but subject to mediation and arbitration.

4.4.6 When a written decision of the Architect states that (1) the decision is final but subject to mediation and 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.

4.4.7 Upon receipt of a Claim against the Contractor or at any time thereafter, the Architect or the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Architect or the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

4.4.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines prior to resolution of the Claim by the Architect, by mediation or by arbitration.

4.5 MEDIATION

4.5.1 Any Claim arising out of or related to the Contract, except Claims relating to aesthetic effect and except those waived as provided for in Subparagraphs 4.3.10, 9.10.4 and 9.10.5 shall, after initial decision by the Architect or 30 days after submission of the Claim to the Architect, be

subject to mediation as a condition precedent to arbitration or the institution of legal or equitable proceedings by either party.

4.5.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Mediation Rules of the American Arbitration Association currently in effect. Request for mediation shall be filed in writing with the other party to the Contract and with the American Arbitration Association. The request may be made concurrently with the filing of a demand for arbitration but, in such event, mediation shall proceed in advance of arbitration or legal or equitable proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order.

4.5.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

4.6 ARBITRATION

4.6.1 Any Claim arising out of or related to the Contract, except Claims relating to aesthetic effect and except those waived as provided for in Subparagraphs 4.3.10, 9.10.4 and 9.10.5, shall, after decision by the Architect or 30 days after submission of the Claim to the Architect, be subject to arbitration. Prior to arbitration, the parties shall endeavor to resolve disputes by mediation in accordance with the provisions of Paragraph 4.5.

4.6.2 Claims not resolved by mediation shall be decided by arbitration which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association currently in effect. The demand for arbitration shall be filed in writing with the other party to the Contract and with the American Arbitration Association, and a copy shall be filed with the Architect.

4.6.3 A demand for arbitration shall be made within the time limits specified in Subparagraphs 4.4.6 and 4.6.1 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.

4.6.4 Limitation on Consolidation or Joinder. No arbitration arising out of or relating to the Contract 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 Claim 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.

4.6.5 Claims and Timely Assertion of Claims. The party filing 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.

4.6.6 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 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 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. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time 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 substitute.

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, including the responsibility for safety of the

Subcontractor's Work, 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 will 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 and Contractor 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 increases in cost resulting from the suspension.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1 OWNER'S 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 in Paragraph 4.3.

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

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 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Subparagraph 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, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

7.1 GENERAL

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.

7.1.2 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.

7.2 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 change in the Work;

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

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

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 prior to agreement on 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 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. 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' 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. 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 Pending final determination of the total cost of a Construction Change Directive to the Owner, amounts not in dispute for such changes in the Work shall be included in Applications for Payment accompanied by a Change Order indicating the parties' agreement with part or all of such costs. For any portion of such cost that remains in dispute, the Architect will make an interim determination for purposes of monthly certification for payment for those costs. That determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a claim in accordance with Article 4.

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.

8.1.2 The date of commencement of the Work is the date established in the Agreement.

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 and Owner. 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 the Contract Documents or 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 morgages, 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.

8.3 DELAYS AND EXTENSIONS OF TIME

8.3.1 If the Contractor is delayed at any time in the commencement or 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, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending mediation and arbitration, or by other causes which the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the 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.

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.

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 in the Contract Documents.

9.3.1.1 As provided in Subparagraph 7.3.8, such applications may include requests for payment on account of changes in the Work which have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

9.3.1.2 Such applications may not include requests for payment for portions of the Work for which the Contractor does not intend to pay to a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

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 the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

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 in 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.

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

9.5 DECISIONS TO WITHHOLD CERTIFICATION

9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Subparagraph 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Subparagraph 9.4.1. If the Contractor 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 withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's

opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Subparagraph 3.3.2, because of:

.1 defective Work not remedied;

.2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;

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

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

.5 damage to the Owner or 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 a 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 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

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, plus interest as provided for in the Contract Documents.

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 that the Owner can occupy or utilize the Work for its intended use.

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 prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion 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.

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

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 Clause 11.4.1.5 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 on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. 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 canceled 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.

9.10.4 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.

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

ARTICLE 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.

10.2 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 HAZARDOUS MATERIALS

10.3.1 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.

10.3.2 The Owner shall obtain the services 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 of 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 of 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.

10.3.3 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.

10.4 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 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.

10.6 EMERGENCIES

10.6.1 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.

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 to do business in the jurisdiction 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' 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;

.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;

.7 claims for bodily injury or property damage arising out of completed operations; and

.8 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.

11.1.3 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 canceled 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, an 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 on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

11.2 OWNER'S LIABILITY INSURANCE

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

11.3 PROJECT MANAGEMENT PROTECTIVE LIABILITY INSURANCE

11.3.1 Optionally, the Owner may require the Contractor to purchase and maintain Project Management Protective Liability insurance from the Contractor's usual sources as primary coverage for the Owner's, Contractor's and Architect's vicarious liability for construction operations under the Contract. Unless otherwise required by the Contract Documents, the Owner

shall reimburse the Contractor by increasing the Contract Sum to pay the cost of purchasing and maintaining such optional insurance coverage, and the Contractor shall not be responsible for purchasing any other liability insurance on behalf of the Owner. The minimum limits of liability purchased with such coverage shall be equal to the aggregate of the limits required for Contractor's Liability Insurance under Clauses 11.1.1.2 through 11.1.1.5.

11.3.2 To the extent damages are covered by Project Management Protective Liability insurance, the Owner, Contractor and Architect waive all rights against each other for damages, except such rights as they may have to the proceeds of such insurance. The policy shall provide for such waivers of subrogation by endorsement or otherwise.

11.3.3 The Owner shall not require the Contractor to include the Owner, Architect or other persons or entities as additional insureds on the Contractor's Liability Insurance coverage under Paragraph 11.1.

11.4 PROPERTY INSURANCE

11.4.1 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 written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Paragraph 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Paragraph 11.4 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

11.4.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

11.4.1.2 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 in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

11.4.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

11.4.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

11.4.1.5 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.

11.4.2 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.

11.4.3 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.

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

11.4.5 If during the Project construction period the Owner insures properties, real or personal or both, at 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 11.4.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

11.4.6 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 11.4. 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 canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

11.4.7 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 causes of loss to the extent covered by property insurance obtained pursuant to this Paragraph 11.4 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.

11.4.8 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 11.4.10. 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.

11.4.9 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 4.6. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

11.4.10 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 is made, the dispute shall be resolved as provided in Paragraphs 4.5 and 4.6. The Owner as fiduciary shall, in the case of arbitration, make settlement with insurers in accordance with directions of the arbitrators. If distribution of insurance proceeds by arbitration is required, the arbitrators will direct such distribution.

11.5 PERFORMANCE BOND AND PAYMENT BOND

11.5.1 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.

11.5.2 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 examination 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 examine 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 at the Owner's expense. If such Work is not in accordance with the Contract Documents, correction shall be at the Contractor's expense 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 BEFORE OR AFTER SUBSTANTIAL COMPLETION

12.2.1.1 The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

12.2.2 AFTER SUBSTANTIAL COMPLETION

12.2.2.1 In addition to the Contractor's obligations under Paragraph 3.5, 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. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Paragraph 2.4.

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

12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Paragraph 12.2.

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 are neither corrected by the Contractor nor accepted by the Owner.

12.2.4 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.

12.2.5 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 one-year period for correction of Work 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.

13.2 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. Except as provided in Subparagraph 13.2.2, 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.

13.2.2 The Owner may, without consent of the Contractor, assign the Contract to an institutional lender providing construction financing for the Project. In such event, the lender shall assume the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

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 that the Architect may be present for 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 that the Architect may be present for such procedures. Such costs, except as provided in Subparagraph 13.5.3, shall be at the Owner's expense.

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, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses shall be at the Contractor's expense.

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.

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 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

.1 issuance of an order of a court or other public authority having jurisdiction which requires all Work to be stopped;

.2 an act of government, such as a declaration of national emergency which requires all Work to be stopped;

.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; or

.4 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 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work 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.

14.1.3 If one of the reasons described in Subparagraph 14.1.1 or 14.1.2 exists, the Contractor may, upon seven 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.

14.1.4 If the Work is stopped for a period of 60 consecutive 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 14.1.3.

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. Upon request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

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, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages 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 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Subparagraph 14.3.1. Adjustment of the Contract Sum shall include profit. 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 the Contract.

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:

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

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

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

14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

Supplementary Conditions of the Contract for Construction

U.S. Department of Housing and Urban Development
Office of Housing
Federal Housing Commissioner

Article 1 – Labor Standards

Instructions

Whenever only FHA mortgage insurance is involved, use paragraph (A) and (C) of Article 1 – Labor Standards. Whenever any direct form of assistance (Section 8, Section 202/811 Capital Advance, grants etc.) is involved, use paragraphs (A) and (B) and (C) of Article 1 – Labor Standards.

Applicability

The Project or Program to which the construction work covered by this contract pertains is being assisted or insured by the United States of America and the following Federal Labor Standards Provisions are included in this Contract or related instrument pursuant to the provisions applicable to such Federal assistance or insurance.

A. 1. (i) Minimum Wages. All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR Part 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii) (a) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(c) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs A.1.(ii)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

2. Withholding. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD

or its designee may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

3. (i) Payrolls and basic records. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and budget under OMB Control Numbers 1215-0140 and 1215-0017.)

(ii) (a) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR Part 5.5(a)(3)(i). This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149.)

(b) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be maintained under 29 CFR Part 5.5(a)(3)(i) and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissable deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph A.3.(ii)(b) of this section.

(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph A.3.(i) of this section available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR Part 5.12.

4. (i) Apprentices and Trainees. Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman's hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act Requirements. The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor will insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as HUD or its designee may be appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5.5.

7. Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

10. (i) Certification of Eligibility. By entering into this contract the contractor certifies neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S. Criminal Code, Section 1010, Title 18, U.S.C., "Federal Housing Administration transactions", provides in part: "Whoever, for the purpose of . . . influencing in any way the action of such Administration . . . makes, utters or publishes any statement, knowing the same to be false . . . shall be fined not more than $5,000 or imprisoned not more than two years, or both."

B. Contract Work Hours and Safety Standards Act. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages, liquidated damages. In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph (1) of this paragraph, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in subparagraph (1) of this paragraph.

3. Withholding for unpaid wages and liquidated damages. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2) of this paragraph.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

C. The Contractor will be required to execute FHA Form No. 2403-A, Contractor's Prevailing Wage Certificate, as a condition precedent to insurance by the Federal Housing Administration of that certain mortgage loan, or an advance thereof, made or to be made by the mortgagee in connection with the construction of the project.

Article 2 – Equal Employment Opportunity

The applicant hereby agrees that it will incorporate or cause to be incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 CFR Chapter 60, which is paid for in whole or in part with funds

obtained from the Federal Government or borrowed on the credit of the Federal Government pursuant to a grant, contract, loan insurance, or guarantee, or undertaken pursuant to any Federal program involving such grant, contract, loan, insurance, or guarantee, the following equal opportunity clause:

During the performance of this contract, the Contractor agrees as follows:

A. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, 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 to be provided setting forth the provisions of this nondiscrimination clause.

B. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

C. The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding a notice to be provided advising the said labor union or workers representatives of the Contractor's commitments hereunder, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

D. The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965 and of the rules, regulations, and relevant orders of the Secretary of Labor.

E. The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

F. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulations or order of the Secretary of Labor, or as otherwise provided by law.

G. The Contractor will include the portion of the sentence immediately preceding paragraph A and the provisions of paragraphs A through G in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the Secretary of Housing and Urban Development or the Secretary of Labor may direct as a means of enforcing such provisions, including sanctions for noncompliance. *Provided, however,* that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Secretary of Housing and Urban Development or the Secretary of Labor, the Contractor may request the United States to ener into such litigation to protect the interests of the United States.

H. The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: *Provided, That* if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

I. The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

J. The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

Article 3 – Equal Opportunity for Businesses and Lower Income Persons Located Within the Project Area

(Applicable to Section 236 projects, where the estimated replacement cost of the project as determined by the Secretary of Housing and Urban Development exceeds $500,000, and to all projects, including Section 236 regardless of estimated replacement cost, receiving rent supplement assistance under Title I, Section 101 of the Housing and Urban Development Act of 1965.)

A. The work to be performed under this contract is on a project assisted under a program providing direct Federal financial assistance from the Department of Housing and Urban Development and is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u. Section 3 requires that to the greatest extent feasible opportunities for training and employment be given lower income residents of the unit of local government or the metropolitan area (or nonmetropolitan county) as determined by the Secretary of Housing and Urban Development in which the projects located and contracts for work in connection with the project be awarded to business concerns which are located in, or owned in substantial part by persons residing in the same metropolitan area (or nonmetropolitan county) as the project.

Article 4 – Health and Safety

A. No laborer or mechanic shall be required to work in surroundingss or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

B. The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 (formerly part 1518) and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act (Public Law 91-54, 83 Stat. 96).

C. The Contractor shall include the provisions of this Article in every subcontract so that such provisions will be binding on each subcontractor. The Contractor shall take such action with respect to any subcontract as the Secretary of Housing and Urban Development of the Secretary of Labor shall direct as a means of enforcing such provisions.

Division 0
Information Available to Bidders

GENERAL DECISION: **ME20030001** 03/04/2005 ME1

Date: March 4, 2005
General Decision Number: **ME20030001** 03/04/2005

Superseded General Decision Number: ME020001

State: Maine

Construction Types: Building

Counties: Androscoggin, Cumberland and Penobscot Counties in Maine.

Building Construction Projects (does not include single family homes and apartments up to and including 4 stories).

Modification Number	Publication Date
0	06/13/2003
1	09/19/2003
2	10/10/2003
3	11/07/2003
4	07/30/2004
5	12/31/2004
6	02/04/2005
7	03/04/2005

BOIL0029-003 10/01/2004

	Rates	Fringes
Boilermaker	$ 25.77	7.71+25.6%

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* CARP1996-001 10/01/2004

	Rates	Fringes
Carpenters: (Including acoustical ceiling installation, drywall hanging and batt insulation installation)		
Carpenters	$ 18.25	9.78
Carpenters:		
Millwrights	$ 20.50	9.78

ELEC0567-001 12/01/2004

ANDROSCOGGIN COUNTY: Townships of Auburn, Durham, Lewiston, Lisbon, Mechanic Falls, Minot, Poland
CUMBERLAND COUNTY: Entire County (All Townships)
PENOBSCOT COUNTY: Entire County, excluding 2R.8, Chester, Prentis, Seboeis, Webster, and Winn Townshps and area south thereof.

	Rates	Fringes
Electricians:	$ 25.78	10.32
Teledata Technicians	$ 19.00	8.73

ELEC1253-001 09/01/2004

ANDROSCOGGIN COUNTY (Townships of Greene, Leeds, Livermore, Livermore Falls, Turner, Wales, Webster)

PENOBSCOT COUNTY (Townships of Alton, Argyle, Bangor, Bradford, Bradley, Brewer, Burlington, Carmel, Carroll, Charleston, Chester, Clifton, Corinna, Corinth, Dixmont, Eddington, Edinburg, Enfield, Etna, Exeter, Garland, Glenburn, Grand Falls, Greenbush, Greenfield, Hampden, Hermon, Holden, Howland, Hudson, Kenduskeag, LeGrange, Lakeville, Lee, Levant, Lincoln, Lowell, Mattamiscontis, Maxfield, Milford, Newburg, Newport, Old Town, Orono, Orrington, Passadumkeag, Plymouth, Prentiss, Seboeis, Springfield,Stetson, Summit, Veazie, Webster, Winn, 2R.8, 3R.1, 5R

	Rates	Fringes
Electricians:	$ 22.62	11.85
Teldata Technicians	$ 18.00	7.90

IRON0496-001 09/16/2003

	Rates	Fringes
Ironworkers:		
Structural and Reinforcing	$ 20.15	14.99

SUME2000-001 10/24/2000

	Rates	Fringes
Bricklayer	$ 15.12	2.66
Caulker/Waterproofer	$ 13.49	3.40
Cement Mason/Finisher	$ 11.71	1.26
Drywall Finisher	$ 13.09	
Elevator Constructor	$ 20.07	6.26
Laborers: (Including General Laborers and Brick Mason Tenders)	$ 10.55	4.40
Pipefitter	$ 17.89	7.40
Plumber	$ 13.92	1.19
Power equipment operators:		
Backhoes	$ 14.22	5.39
Cranes	$ 14.78	4.47
Excavators	$ 14.53	2.45
Loaders	$ 13.95	2.71
Rollers	$ 13.50	4.31
Roofer (including Built Up, Composition and Single Ply)	$ 11.47	1.91
Sheetmetal Worker	$ 12.47	3.61
Sprinkler Fitter	$ 10.53	1.27

Truck drivers:		
Dump	$ 10.33	1.27
Tri Axle	$ 10.11	2.02

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

Division 1

General Requirement

SECTION 01001

BASIC REQUIREMENTS

1 PART 1 GENERAL

1.1 SECTION INCLUDES

A. Summary of Work: Contract, work by owner, contractor use of premises, future work.

B. Contract Considerations: Cash allowances, contingency allowance, inspection and testing allowances, schedule of values, applications for payment, change procedures, alternates.

C. Coordination and Meetings: Coordination, field engineering, cutting and patching, meetings, progress meetings, equipment electrical characteristics and components, examination, preparation, cutting and patching.

D. Submittals: Submittal procedures, construction progress schedules, proposed products list, shop drawings, product data, samples, manufacturers' installation instructions, manufacturers' certificates.

E. Quality Control: Quality assurance - control of installation, Tolerances, References, Mock-ups, Inspection and testing laboratory services, Manufacturers' field services and reports.

F. Construction Facilities and Temporary Controls: Temporary electricity, temporary lighting for construction purposes, temporary heat, temporary ventilation, telephone service, temporary water service, temporary sanitary facilities, barriers and fencing, water control, exterior enclosures, interior enclosures, protection of installed work, security, access roads, parking, progress cleaning and waste removal, project identification, field offices and sheds, removal of utilities, facilities, and controls.

G. Material and Equipment: Products, transportation, handling, storage, and protection, products options, substitutions.

H. Starting of Systems: Starting systems, demonstration and instructions, testing, adjusting and balancing.

I. Contract Closeout: Contract closeout procedures, final cleaning, adjusting, project record documents, operation and maintenance data, spare parts and maintenance materials, warranties.

1.2 WORK BY OWNER

A. The Owner may award a contract(s) for supply and installation of building components which may commence before date of Substantial Completion. Work under these contract(s) may include, but is not limited to:

1. Furnishings: Supplying and installing window treatments in common areas and individual units.

1.3 CONTRACTOR USE OF PREMISES

A. Limit use of premises to allow:

1. Owner occupancy.
2. Work by others and work by owner.
3. Use of premises by public.

1.4 ALLOWANCES – Not Used.

1.5 ALTERNATES – Not Used.

1.6 SCHEDULE OF VALUES

A. Submit schedule on AIA Form G703. Contractor's standard form or electronic media printout will be considered.

B. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement. .

1.7 DAVIS BACON WAGE RATES

A. This project is subject to wage reporting under the Davis-Bacon Act. Comply with reporting requirements and ensure compliance with minimum wages.

1.8 APPLICATIONS FOR PAYMENT

A. Submit (5) five copies of each application on AIA Form G702 and G703.

B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.

C. Payment Period: Monthly.

1.9 CHANGE PROCEDURES

A. Stipulated Sum/Price Change Order: Based on Proposal Request and Contractor's maximum price quotation or Contractor's request for a Change Order as approved by Architect.

B. Change Order Forms: AIA G701. Equivalent electronic form may be used.

1.10 COORDINATION

A. Coordinate scheduling, submittals, and Work of the various sections of specifications to ensure efficient and orderly sequence of installation of interdependent construction elements.

B. Verify utility requirement characteristics of operating equipment are compatible with building utilities.

C. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable.

D. In finished areas, conceal pipes, ducts, and wiring within the construction.

1.11 FIELD ENGINEERING

A. Employ a Land Surveyor to locate a reference datum and protect survey control and reference points.

B. Establish elevations, lines, and levels and certify that elevations and locations of the Work conform with the Contract Documents.

C. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

1.12 PRECONSTRUCTION PREINSTALLATION MEETINGS

A. Owner will schedule a preconstruction meeting after Notice to Proceed for all affected parties.

B. When required in individual specification section, convene a preinstallation meeting at Project site prior to commencing work of the section.

1.13 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work on at least monthly intervals.

B. Preside at meetings, record minutes, and distribute copies within two days to those affected by decisions made.

1.14 EQUIPMENT ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Motors: NEMA MG1 Type; specific motor type is specified in individual specification sections.

B. Wiring Terminations: Terminal lugs to match branch circuit conductor; size terminal lugs to NFPA 70.

C. Cord and Plug: Minimum 6 foot cord and plug including grounding connector; cord of longer length is specified in individual sections.

1.15 CUTTING AND PATCHING

A. Employ skilled and experienced installer to perform cutting and patching new Work; restore Work with new Products.

B. Submit written request in advance of cutting or altering structural or building enclosure elements.

C. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:

1. Fit the several parts together, to integrate with other Work.
2. Uncover Work to install or correct ill-timed Work.
3. Remove and replace defective and non-conforming Work.
4. Remove samples of installed Work for testing.
5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

D. Cut masonry and concrete materials using masonry saw or core drill. Restore Work with new Products in accordance with requirements of Contract Documents.

E. Cut from finished side of surfaces to concealed side.

F. Fit Work tight to adjacent elements. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

G. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

H. Refinish patched surfaces to match adjacent finishes. Extend refinishing to entire contiguous surface containing patched area to completely conceal evidence of patching.

1.16 SUBMITTAL PROCEDURES

A. Submittal form to identify Project, Contractor, Subcontractor or supplier; and pertinent Contract Document references.

B. Apply Contractor's stamp, signed or initialed, certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.

C. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.

D. Revise and resubmit submittals as required; identify all changes made since previous submittal.

E. Distribute copies of approved submittals to job site, suppliers, subcontractors and others involved in the work as needed. Do not allow work to progress without copies of approved submittals.

1.17 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial progress schedule in duplicate within 15 days after date of Owner-Contractor Agreement for Architect review.

B. Submit revised schedules with each Application for Payment, identifying changes since previous version. Indicate estimated percentage of completion for each item of Work at each submission.

C. Submit a horizontal bar chart with separate line for each major section of Work or operation, identifying first workday of each week.

1.18 PROPOSED PRODUCTS LIST

A. Within 30 days after date of Owner-Contractor Agreement, submit list of major Products proposed for use, with name of manufacturer, trade name, and model number of each product.

1.19 PRODUCT DATA

A. Product Data for Review:

1. Submitted to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in CONTRACT CLOSEOUT.

B. Product Data for Information:

1. Submitted for the Architect's benefit as contract administrator or for the Owner.

C. Product Data for Project Close-out:

1. Submitted for the Owner's benefit during and after project completion.

D. Submit the number of copies which the Contractor requires, plus two copies which will be retained by the Architect.

E. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this project.

1.20 SHOP DRAWINGS

A. Shop Drawings for Review:

1. Submitted to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.
2. After review, produce copies and distribute in accordance with the SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700 - CONTRACT CLOSEOUT.

B. Shop Drawings for Information:

1. Submitted for the Architect's benefit as contract administrator or for the Owner.

C. Shop Drawings for Project Close-out:

1. Submitted for the Owner's benefit during and after project completion.

D. Submit in the form of one reproducible transparency and three opaque reproductions which will be retained by Architect.

1.21 SAMPLES

A. Samples for Review:

1. Submitted to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
2. After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in CONTRACT CLOSEOUT.

B. Samples for Information:

1. Submitted for the Architect's benefit as contract administrator or for the Owner.

C. Samples for Selection:

1. Submitted to Architect for aesthetic, color, or finish selection.

2. Submit samples of finishes from the full range of manufacturers' standard colors, in custom colors selected, textures, and patterns for Architect selection.
3. After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in CONTRACT CLOSEOUT.

D. Submit samples to illustrate functional and aesthetic characteristics of the Product.

E. Submit samples of finishes from the full range of manufacturers' standard colors, textures, and patterns for Architect's selection.

1.22 MANUFACTURER INSTALLATION INSTRUCTIONS

A. For components of work in all individual specification sections, submit manufacturer printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing of all materials and Products, in quantities specified for Product Data.

1.23 MANUFACTURER CERTIFICATES

A. For components of work in all individual specification sections, submit certifications by manufacturer to Architect for all materials and Products, in quantities specified for Product Data.

B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

1.24 QUALITY ASSURANCE - CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality. Immediately notify Owner of any deviations from specified quality of Work as soon as they are identified.

B. Comply with manufacturers' instructions.

C. Comply with specified standards as minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

D. Cost of correction of defective, rejected, or substandard quality Work shall be charged to Contractor.

1.25 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions and assumption of sole responsibility for results.

B. Verify that utility services are available, of the correct characteristics, and in the correct location.

1.26 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

1.27 TOLERANCES

A. Monitor fabrication and installation tolerance control of installed Products over suppliers, manufacturers, Products, site conditions, and workmanship, to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply fully with manufacturers' tolerances.

1.28 REFERENCES

A. Conform to reference standards by date of issue current as of date of Contract Documents.

B. Should specified reference standard conflict with Contract Documents, request clarification from Architect before proceeding.

C. Reference Standards have the same force and effect as if bound herein and include, but are not limited to, publications of the following:

1. American National Standards Institute (ANSI).
2. American Concrete Institute (ACI).
3. American Institute of Steel Construction (AISC).
4. American Plywood Association (APA).
5. American Society for Testing and Materials (ASTM).
6. American Society of Civil Engineers (ASCE).
7. American Society of Heating, Refrigeration and Air Conditioning Engineers, Inc. (ASHRAE).
8. American Society of Mechanical Engineers (ASME).
9. Americans with Disabilities Act (ADA).
10. American Water Works Association (AWWA).
11. American Welding Society (AWS).
12. International Code Council – International Building Code (IBC).
13. Consumer Product Safety Commission (CSPC).
14. Factory Mutual (FM).
15. National Electric Manufacturers Association (NEMA).
16. National Fire Protection Association (NFPA).
17. Underwriters Laboratories, Inc. (UL).
18. US Department of Commerce, National Bureau of Standards (NBS).
19. Federal, State and local codes and regulations.

1.29 CORRELATION AND INTENT

A. Contract Documents are complementary, and elements of the Work required by one shall be as binding as if required by all. The intent of the Documents is to include all items necessary for the proper execution and completion of the Work.

B. Contract Documents are based on information taken from the original contract documents and limited field investigations. Existing conditions indicated on the drawings reflect the original intent, and are assumed to be correct. Bids should be based on the information shown, but conditions in the field may vary from those indicated on drawings. If discrepancies are discovered between indicated and actual conditions, notify Architect before proceeding with Work.

C. Where discrepancies or conflicting requirements exist among the Contract Documents and/or applicable reference standards, the Contractor shall assume the greater quantity or quality level, normally the most costly. Refer conflicting requirements to the Architect/Engineer for interpretation before proceeding.

1.30 MOCK-UPS

A. Construct mock-ups as indicated in individual specification sections.

B. Tests will be performed under provisions identified in this section and identified in the respective product specification sections.

C. Accepted mock-ups are representative of the quality required for the Work.

D. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so.

1.31 INSPECTION AND TESTING LABORATORY SERVICES

A. Owner will appoint, employ, and pay for specified services of an independent firm to perform inspection and testing.

B. The independent firm will perform inspections, tests, and other services as required.

C. Cooperate with independent firm; furnish samples as requested.

D. Re-testing required because of non-conformance to specified requirements will be charged to the Contractor.

1.32 MANUFACTURERS' FIELD SERVICES AND REPORTS

A. When specified in individual specification sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions and to initiate instructions when necessary.

B. Report observations and site decisions or instructions that are supplemental or contrary to manufacturers' written instructions.

1.33 TEMPORARY ELECTRICITY

A. Cost: Contractor to provide and pay for power service required from source.

B. Provide power outlets for construction operations, branch wiring, distribution boxes, and flexible power cords as required.

1.34 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Provide and maintain temporary lighting for construction operations.

B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.

C. Permanent building lighting may be utilized during construction. Repair, clean, and replace lamps at end of construction.

1.35 TEMPORARY HEAT

A. Provide heating devices and heat as needed to maintain specified conditions for construction operations.

B. Pay cost of energy used.

C. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

D. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.

1.36 TEMPORARY VENTILATION

A. Ventilate work areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

B. Take adequate measures to ensure that dust, fumes, vapors or gases do not enter occupied areas of building.

1.37 TELEPHONE SERVICE

A. Provide, maintain and pay for telephone and facsimile service to field office at time of project mobilization. Allow Architect and Owner incidental use.

1.38 TEMPORARY WATER SERVICE

A. Provide, maintain and pay for suitable quality water service required.

1.39 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required sanitary facilities and enclosures. Existing facilities may not be used.

B. Maintain in clean and sanitary condition.

1.40 BARRIERS AND FENCING

A. Provide barriers adequate to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage.

B. Provide adequate protection devices to prevent injury to residents, guests and Owner's personnel from construction operations.

1.41 WATER CONTROL

A. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

B. Provide erosion control measures acceptable to governing authorities.

1.42 EXTERIOR ENCLOSURES

A. Provide temporary weather tight closures to exterior openings to permit acceptable living conditions for residents and protection of the Work. Remove temporary closures as soon as permanent closures are installed.

1.43 INTERIOR ENCLOSURES

A. Provide temporary partitions and ceilings as required to separate work areas from Owner occupied areas, to prevent penetration of dust and moisture into Owner occupied areas, and to prevent damage to existing materials and equipment.

B. Maintain fire ratings as required with temporary enclosures.

C. Paint surfaces exposed to view from Owner occupied areas, or otherwise finish to satisfy Owner.

1.44 PROTECTION OF INSTALLED WORK

A. Protect installed Work and provide special protection where specified in individual specification sections.

B. Prohibit traffic or storage upon waterproofed or roofed surfaces.

1.45 SECURITY

A. Provide security measures and facilities to protect Work and existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

1.46 ACCESS AND EGRESS

A. Maintain safe access to main entrance and all required means of egress from the building at all times for residents, guests and Owner's personnel.

B. Cooperate fully with emergency services personnel to allow unrestricted access to the building at all times.

C. Maintain full access to all emergency systems, including fire department sprinkler and standpipe connections at all times. Cooperate fully with fire department personnel.

1.47 ACCESS ROADS

A. Construct and maintain temporary roads or access lanes as required accessing public thoroughfares to serve construction area.

B. At completion of construction, remove temporary roads or access lanes and restore lawns, landscaping and paving to original condition.

1.48 PARKING

A. Arrange for temporary parking areas to accommodate construction personnel.

1.49 PROGRESS CLEANING AND WASTE REMOVAL

A. Collect and maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition at all times.

1.50 PROJECT IDENTIFICATION

A. Provide an 8 foot wide x 4 foot high project sign of exterior grade plywood and wood frame construction, painted, to Architect's design and colors.

B. Erect on site at location, established by Owner.

1.51 FIELD OFFICES AND SHEDS

A. Office: Weather tight, with lighting, electrical outlets, heating, cooling and ventilating equipment, and equipped with sturdy furniture and drawing display table.

B. Provide space for Project meetings, with table and chairs to accommodate 8 persons.

1.52 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, and materials prior to Substantial Completion review.

B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.

C. Clean and repair damage caused by installation or use of temporary work.

D. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

1.53 PRODUCTS

A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components specifically identified for reuse.

B. Do not use materials and equipment removed from existing premises, except as specifically identified or allowed by the Contract Documents.

C. Provide interchangeable components of the same manufacture for components being replaced.

1.54 TRANSPORTATION, HANDLING, STORAGE AND PROTECTION

A. Transport, handle, store, and protect Products in accordance with manufacturer's instructions.

1.55 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

1.56 SUBSTITUTIONS

A. Architect will consider requests for Substitutions only within 15 days after date of Owner-Contractor Agreement. .

B. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

C. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.

D. Conditions: Substitutions will be considered under the following conditions:

1. Revisions to the Contract Documents are not required.
2. Proposed changes are in keeping with the intent of the Contract Documents.
3. The specified product or construction method cannot be provided within the Contract Time, if not due to failure by the Contractor to pursue the work promptly.
4. The specified product or construction method cannot receive approval by governing authorities, and the substitution can be approved.
5. A substantial advantage is offered to the Owner in terms of cost, time or maintenance.
6. The specified product or construction method is not compatible with other materials, and the substitution is compatible.
7. The specified product or construction method cannot receive a required warranty, and the substitution can be warranted.
8. The Contractor will bear the impact of additional cost or time needed to provide the substitution, including design services.
9. The Contractor will be responsible for coordinating the substitution with other Work.

1.57 STARTING SYSTEMS

A. Provide seven days notification prior to start-up of each item.

B. Ensure that each piece of equipment or system is ready for operation.

C. Execute start-up under supervision of responsible persons in accordance with manufacturers' instructions.

D. Submit a written report that equipment or system has been properly installed and is functioning correctly.

1.58 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of Products to Owner's personnel prior to date of Substantial Completion.

B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at designated location.

1.59 SYSTEM TESTING, ADJUSTING, AND BALANCING

A. Contractor will appoint, employ, and pay for services of an independent firm to perform testing, adjusting, and balancing of building systems.

B. Reports will be submitted by the independent firm to the Architect indicating observations and results of tests and indicating compliance or non-compliance with specified requirements and with the requirements of the Contract Documents.

C. Cooperate with independent firm; furnish assistance as requested.

D. Re-testing required because of non-conformance to specified requirements will be charged to the Contractor.

1.60 CONTRACT CLOSEOUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect's inspection.

B. Submit final Application for Payment identifying total adjusted Contract Sum/Price, previous payments, and amount remaining due.

1.61 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. Clean interior and exterior surfaces exposed to view. Vacuum carpeted and soft surfaces. Polish glass and reflective surfaces.

C. Clean debris from site, roofs, gutters, downspouts, and drainage systems.

D. Replace filters of operating equipment.

E. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.62 ADJUSTING

A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.63 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of Contract Documents to be utilized for record documents.

B. Record actual revisions to the Work. Record information concurrent with construction progress.

C. Specifications: Legibly mark and record at each Product section a description of actual Products installed.

D. Record Documents and Shop Drawings: Legibly mark each item to record actual construction.

E. Submit two copies of record documents to Owner.

1.64 OPERATION AND MAINTENANCE DATA

A. Submit two sets prior to final inspection, bound in 8-1/2 x 11 inch text pages, three D side ring binders with durable covers.

B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS" and title of project.

C. Internally subdivide the binder contents with permanent page dividers, logically organized, with tab titles clearly printed under reinforced laminated plastic tabs.

1.65 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide Products, spare parts, maintenance and extra materials in quantities specified in individual specification sections.

B. Deliver to Project site and place in location as directed; obtain receipt prior to final payment.

1.66 WARRANTIES

A. Provide duplicate notarized copies.

B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.

C. Submit prior to final Application for Payment.

2 PART 2 PRODUCTS: Not Used.

3 PART 3 EXECUTION Not Used.

END OF SECTION

Division 2

Excavation

SECTION 02225

SELECTIVE DEMOLITION

1. PART 1 GENERAL

1.1 SUMMARY

A. Section includes demolition of designated portions of structures; removal of masonry veneers, windows, roofing; and removing designated building equipment and fixtures; removing designated partitions and components.

1.2 SUBMITTALS

A. Shop Drawings and Schedule: Describe demolition, removal procedures, sequence and schedule.

2. PART 2 PRODUCTS: NOT USED

3. PART 3 EXECUTION

3.1 PREPARATION

A. Provide, erect, and maintain temporary barriers, protection devices and security measures as required by local authorities and for adequate protection of residents, guests and Owner's personnel.

B. Notify Owner and adjacent owners of work which may affect their property, potential noise, utility outage, or disruption, in accordance with procedures described in Contract.

C. Prevent movement or settlement of structures. Provide bracing and shoring as required.

D. Protect existing structures and site improvements which are not to be demolished.

E. Protect existing items which are not indicated to be removed.

F. Mark buried utility locations.

3.2 DEMOLITION REQUIREMENTS

A. Conduct demolition to minimize interference with adjacent structures and municipal property.

B. Conduct operations with minimum interference to public or private accesses. Maintain unrestricted access to emergency systems, including fire department sprinkler and standpipe connections, at all times.

C. Maintain protected access to the building main entrance and all required means of egress at all times for residents, guests, Owner's personnel and emergency services personnel. Do not close or obstruct roadways or sidewalks without permits.

D. Cease operations immediately if any portion of structures appear to be in any kind of danger, or pose any threat to residents, guests, Owner's or Contractor's personnel. Immediately notify authority having jurisdiction, Owner and Architect/Engineer.

3.3 SELECTIVE DEMOLITION

A. Disconnect and remove designated utilities.

B. Demolish components indicated in an orderly and careful manner.

1. Remove portions of masonry veneer as indicated.
2. Remove balcony handrails as indicated.
3. Remove existing windows and doors as indicated.
4. Remove existing greenhouse as indicated.

C. Protect existing supporting structural members and components indicated to remain.

3.4 CLEAN UP

A. Remove all demolished materials from site as work progresses. Do not allow demolished materials to accumulate on site.

B. Leave areas of work in clean condition.

END OF SECTION

Division 3

Concrete

SECTION 03450

ARCHITECTURAL PRECAST CONCRETE

1. PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. General Conditions, Supplementary Conditions and Division 1 - General Requirements apply to Work of this Section.

1.2 SUMMARY

A. Section Includes: Plant-precast architectural concrete Work shown and specified.

B. Substitutions: Submit in accordance with requirements of Section 01001.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO).

B. American Concrete Institute (ACI).

1. ACI 318 - "Building Code Requirements for Reinforced Concrete."
2. ACI 533 - "Guide for Precast Concrete Wall Panels."

C. Architectural Precast Association (APA).

D. American Society for Testing and Materials (ASTM).

1. A 123 - "Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products."
2. A 185 - "Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement."
3. A 416 - "Specification for Steel Strand, Uncoated Seven-Wire for Prestressed Concrete."
4. A 496 - "Specification for Steel Wire, Deformed, for Concrete."
5. A 615 - "Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement."
6. A 767 - "Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement."
7. A 934 - "Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars."
8. C 33 - "Specification for Concrete Aggregates."
9. C 150 - "Specification for Portland Cement."
10. C 260 - "Specification for Air-Entraining Admixtures for Concrete."
11. C 330 - "Specification for Lightweight Aggregates for Structural Concrete."
12. C 404 - "Specification for Aggregates for Masonry Grout."
13. C 494 - "Specification for Chemical Admixtures for Concrete."
14. C 979 - "Specification for Pigments for Integrally Colored Concrete."
15. C 1107 - "Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)."
16. C 1240 - "Specification for Silica Fume for Use in Hydraulic-Cement Concrete and Mortar."

E. American Welding Society (AWS).

1. AWS D1.1 - "Structural Welding Code."

F. Cement and Concrete Reference Laboratory (CCRL).

G. Concrete Reinforcing Steel Institute (CRSI).

1. "Manual of Standard Practice."

H. Department of Defense (DOD).

I. Precast/Prestressed Concrete Institute (PCI).

1. MNL 117 - "Manual for Quality Control."
2. MNL 120 - "Design Handbook."

1.4 SYSTEM DESCRIPTION

A. Performance Requirements: Comply with International Building Code, municipal building codes, regulations of other governing agencies having jurisdiction and as follows: (Some or all of the following performance requirements may apply, depending on the type and use of precast units and the nature of the structure.)

1. Wind Loads
2. Seismic forces
3. Building dynamics: thermal, live, impact or concentrated loads, structural deflection, story drift.

1.5 SUBMITTALS

A. Product Data: Include color pigments, admixtures, steel reinforcing.

B. Shop Drawings

1. Show in-place location, fabrication details, plans, elevations, anchorages, reinforcement, connection details and methods, dimensions, finishes, relationships to adjacent materials, and erection and placement.

2. Show identification marks, coordinated to Shop Drawings, and date of manufacture on all units to facilitate hauling and erection.

3. Setting diagrams, templates, instructions and directions as required for installation.

C. Engineering Calculations: Engineering calculations sealed by an engineer licensed to practice in project state.

D. Samples: Nominal size 6 inch by 12 inch by appropriate thickness, of each type of unit and finished facing shown and specified for approval of quality, color, and texture of surface finish. Submit prior to fabrication.

E. Mix Design(s): Proposed concrete mix design for each type and color of concrete mix required including backup mix.

F. Test Reports: Include materials, compressive strength, and water absorption.

G. Certifications:

1. Fabricator's certification from APA and PCI, or applicable municipal certification.
2. Welders' AWS certification.

1.6 QUALITY ASSURANCE

A. Fabricator's Qualifications: Firm shall have a minimum of five (5) years experience in producing units similar to those required for this Project, with sufficient production capacity to produce and deliver required units without causing delay in the Work.

1. Fabricating plant shall be certified by one of the following:

a. Architectural Precast Association (APA).
b. Precast/Prestressed Concrete Institute (PCI), Group A1.
c. Applicable municipal building department.
d. Firms not certified by APA or PCI shall submit a written Quality Assurance/Quality Control program for approval.

B. Installer's Qualifications: Installer shall have a record of at least five (5) years of successful installation of units similar to those required for this Project.

D. Applicable Standards: As specified under Paragraph 1.3 References.

E. Production Samples or Mock-ups:

1. Provide color and texture range samples for approval prior to production start

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver units to the Project site in such quantities and at such times to ensure continuity of installation.

B. Avoid job site storage. When job site storage is required store in a manner to prevent physical damage and so that markings are visible.

C. Lift and support only at designated lifting or supporting points as shown on reviewed Shop Drawings.

D. Provide anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, templates, instructions, and directions as required for installation.

1.8 PROJECT CONDITIONS PROJECT CONDITIONS

A. Field Dimensions: General Contractor to furnish field measurements, if required, to precast fabricator.

2. PART 2 PRODUCTS

2.1 MATERIALS

A. Concrete Materials:

1. Portland Cement: ASTM C 150, Type I or III, white or gray colors to achieve desired finish colors. Use only one brand, type, and color from the same mill. Gray cement maybe used for non-exposed backup mixes.
2. Aggregates: ASTM C 33, gradation may differ to achieve desired finish characteristics. Select coarse and fine aggregate colors and screen sizes to match approved sample(s). Verify that adequate supply, from one pit or quarry, for each type of aggregate is available for the entire Project. If possible obtain entire aggregate supply prior to starting Work, or have aggregate supply held in reserve by aggregate supplier.
3. Water: Potable. Clean, clear, and free from deleterious amounts of salts, acids, alkalis, organic materials, oils, detergents, or other matter that may interfere with color, curing, or strength of concrete.
4. Admixtures: Select to be compatible in specified mix.

    a. Air Entraining: ASTM C 260.
    b. Water Reducing: ASTM C 494, Type A, B, C, F, or G.
    c. Silica Fume: ASTM C 1240, for cement replacement for high performance concrete.
    d. Coloring Agent: ASTM C 979, compatible with other concrete materials.

B. Formwork:

1. Provide forms with acceptable form facing materials that are non-reactive with concrete or form release agents and will produce required finish surfaces.
2. Construct and maintain forms to produce precast concrete units of shapes, lines, and dimensions indicated, within specified tolerances.

C. Reinforcing Materials:

1. Reinforcing Bars: ASTM A 615, Grade 60, unless otherwise required to meet structural requirements. (Use galvanized reinforcing bars; ASTM A 767, hot-dip galvanized where concrete cover is less than 1-1/2 inches).
2. Steel Welded Wire Fabric: ASTM A 185, plain, cold drawn.
3. Pre-stressing Tendons: ASTM A 416, Grade 250 or 270, un-coated, 7 wire, low relaxation strand.

D. Grout Materials:

1. Cement Grout: Cement ASTM C 150; sand ASTM C 404; proportions 1:2.5 by volume, minimum water for placement and hydration.
2. Non-Shrink Grout: ASTM C 1107.

2.2 MIXES

A. Design mixes for each type of concrete specified may be prepared by an independent testing agency or by architectural precast manufacturing plant personnel at precast fabricator's option, provided requirements are met.

B. Proportion mixes by either testing agency trial batch or field test data methods in accordance with ACI 211.1, using materials to be used on the Project, to provide normal weight concrete with properties as follows:

1. Compressive Strength: 5,000 psi when tested in accordance with ASTM C 39.
2. Maximum water cement ratio 0.40 at point of placement.
3. Add air-entrainment admixture to result in air content at point of placement complying with ACI 533 requirements.
4. List other admixtures and recommended quantities.
5. Water absorption maximum 6% (by weight) when tested in accordance with ASTM C 642.

2.3 FABRICATION

A. General:

1. Fabricate precast concrete units with manufacturing and testing procedures, quality control recommendations, and dimensional tolerances as specified in ACI 533, unless more stringent requirements are shown or specified.
2. Fabricate units straight, smooth and true to size and shape, with exposed edges and corners precise and square, unless otherwise indicated.

B. Cast openings larger than 10 inches in any dimension according to locations shown on Shop Drawings. Smaller holes may be field cut when approved by Architect.

C. Reinforcement: Comply with CRSI "Manual of Standard Practice" and ACI 318 recommendations. Reinforce architectural precast concrete units to resist handling, transportation, and erection stresses, and to comply with specified performance criteria.

D. Pre-tension tendons for units in compliance with ACI-533.

E. Cast-In Items: Provide embedded anchors, inserts, steel shapes, and lifting devices as shown on reviewed Shop Drawings. Window connections are best made by field drilled inserts. Firmly hold cast items in place by jigs, strongbacks, or other approved means.

F. Comply with ACI-533 requirements for measuring, mixing, transporting, and placing concrete. Place facing mix to a thickness of the greater of 1 inch or 1.5 times the maximum aggregate size. Place back-up concrete to ensure bond with face concrete.

G. Consolidate concrete using equipment and procedures complying with ACI 533.

H. Permanently mark units with pick-up points as shown on reviewed Shop Drawings. Imprint casting date and
piece mark on a surface to be concealed from view in the finished structure.

I. Cure concrete in accordance with ACI 533 requirements.

J. Discard units that are warped, cracked, broken, spalled, stained, or otherwise defective unless repairs are approved by the Architect and meet specified requirements. Refer to ACI 533 for product finish requirements unless otherwise shown or specified.

K. Fabrication Tolerances: Fabricate to tolerances listed in ACI 533. (More stringent tolerances, if required, will cause increased cost).

2.4 FINISHES

A. Light Acidwash # 224650

2.5 SOURCE QUALITY CONTROL

A. Inspect and test architectural precast concrete in accordance with ACI 533.

B. Producers certified by APA or PCI may conduct their own Quality Control operations with reports to designated authorities.

C. Non-certified producers shall furnish and pay for reports by an independent Testing Laboratory, approved by the Owner as specified in paragraph 2.6.D.

D. The Owner may retain an independent Testing Laboratory to evaluate fabricator's quality control and testing methods. Testing Laboratory shall be certified by CCRL or similar National authority. Fabricator shall allow Testing Laboratory access to all operations pertinent to the Project.

E. Defective Work: Discard units that do not conform to requirements as shown or specified. Replace with units which meet requirements.

3. PART 3 EXECUTION

3.1 EXAMINATION

A. Field Dimensions: Furnish field dimensions to fabricator as required.

B. Examine substrates and conditions for compliance with requirements for installation, tolerances, true and level bearing surfaces, and other conditions affecting performance of architectural precast concrete units. Do not proceed with installation until unsatisfactory conditions have been corrected.

C. Do not install units until supporting structure has been completed (has attained minimum allowable design compressive strength).

3.2 ERECTION

A. Erection shall be by persons experienced and trained in placement and securing of architectural precast concrete units.

B. Erect level, plumb, and true to line. Do not allow cumulative dimensional errors to develop. Adjustments such as shimming which would place additional stress on units will not be permitted. Adhere to dimensional tolerances in accordance with PCI recommendations. Erect and secure in a manner to prevent damage to units or units in place. Replace any damaged units.

C. Lift and handle precast using lift points and embeds as shown on precast shop drawings.

D. Erection Tolerances:

1. Erect within tolerances listed in ACI-533.
2. Erect to conform with structure tolerances listed in ACI-533.

E. Joint Sealants: As specified in Section 07900.

3.3 REPAIR

A. When approved by Architect, repair exposed surfaces of units to match color, texture, and uniformity of surrounding units.

B. Remove and replace damaged units when repairs do not meet requirements.

3.4 CLEANING

A. Clean exposed surfaces of units after erection if soiled or stained.

1. Wash and rinse according to architectural precast concrete fabricator's recommendations. Protect other Work from damage while cleaning.
2. Do not use cleaning materials or methods that change the appearance of architectural precast concrete finishes. Test clean a small area to verify adequacy and safety of materials and methods.

3.5 PROTECTION

A. Protect finished surfaces from soiling or damage.

END OF SECTION

Division 4

Masonry

SECTION 04100

MORTAR AND MASONRY GROUT

1 PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract including General and Supplementary Conditions and Division 1 specification sections, apply to work of this section.

1.2 SECTION INCLUDES

A. Mortar and grout for masonry.

1.3 SUBMITTALS

A. Samples: Submit two samples of mortar, illustrating mortar color and color range.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 530 and ACI 530.1.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Cold Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.

B. Hot Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Hot Weather Masonry Construction.

2 PART 2 PRODUCTS

2.1 MATERIALS

A. Portland Cement: ASTM C150, Type I gray color.

B. Mortar Aggregate: ASTM C144, standard masonry type.

C. Hydrated Lime: ASTM C207, Type S.

D. Mortar Color: Mineral oxide pigment color as selected.

E. Grout Aggregate: ASTM C404.

F. Water: Clean and potable.

G. Bonding Agent: Epoxy type.

H. Prism Strength: 1500 psi.

2.2 MORTAR MIXES

A. Mortar for Load Bearing Walls and Partitions: ASTM C270, Type S using the Property Method.

B. Mortar for Brick Veneer Walls: ASTM C270, Type S using the Property Method.

C. Mortar for Reinforced Masonry: ASTM C270, Type S using the Property Method.

2.3 MORTAR MIXING

A. Thoroughly mix mortar ingredients in quantities needed for immediate use in accordance with ASTM C270 C780.

B. Add mortar color in accordance with manufacturer's instructions.

C. Do not use anti-freeze compounds to lower the freezing point of mortar.

2.4 GROUT MIXES

A. Bond Beams, Engineered Masonry: 3,000 psi strength at 28 days; 8-10 inches slump; premixed type in accordance with ASTM C94 .

2.5 GROUT MIXING

A. Mix grout in accordance with ASTM C94.

B. Do not use anti-freeze compounds to lower the freezing point of grout.

2.6 MIX TESTS

A. Testing of Mortar Mix: In accordance with ASTM C780.

B. Testing of Grout Mix: In accordance with ASTM C1019.

3 PART 3 EXECUTION

3.1 INSTALLATION

A. Install mortar in accordance with ASTM C780

B. Work grout into masonry cores and cavities to eliminate voids. Do not displace reinforcement.

3.2 SCHEDULES

A. Exterior Face Brick Wall: Type S mortar, matching color of existing mortar.

B. Concrete Masonry Walls: Type S mortar.

END OF SECTION

SECTION 04300

UNIT MASONRY SYSTEM

1 PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract including General and Supplementary Conditions and Division 1 specification sections, apply to work of this section.

1.2 SECTION INCLUDES

A. Concrete masonry units and face brick units, reinforcement, anchorage, and accessories.

1.3 SUBMITTALS

A. Product Data: Provide for concrete masonry units, face brick, flashings, fabricated wire reinforcement and veneer ties.

B. Samples: Submit four samples of face brick units of each type to illustrate color, texture and extremes of color range.

C. Mock-up: Construct mock-up wall panel in location as directed by Owner, not less than 8'x4' size, to fully illustrate construction details, including masonry bond, coursing, joints, flashings, etc., for approval of Owner and Architect. Maintain mock-up panel during construction operations. Remove mock-up panel upon substantial completion.

D. Extra Stock: Upon substantial completion, deliver to Owner's designated location a minimum of two pallets of field brick and one pallet of accent brick used in the project for Owner's future use.

1.4 REGULATORY REQUIREMENTS

A. Conform to applicable codes for requirements for fire rated, bearing wall and veneer masonry construction.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 530 and ACI 530.1.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Cold Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.

B. Hot Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Hot Weather Masonry Construction.

2 PART 2 PRODUCTS

2.1 CONCRETE MASONRY UNITS

A. Concrete Masonry Units: ASTM C90, Grade N, Type I - Moisture Controlled; normal weight.

B. Size and Shape: Nominal modular size of 4x16x8 inches. Provide special units for 90 degree corners, bond beams, lintels, and bullnosed corners.

2.2 BRICK UNITS

A. Face Brick: ASTM C216, Grade SW, Type FBS, wirecut texture.

1. Field Brick: Mojave Mission as manufactured by Mutual Materials Co., Newcastle WA.
2. Accent Brick: #760, as manufactured by Richtex Brick Co., Columbia SC.

B. Size and Shape: Utility size, nominal modular size of 4x4x12 inches. Provide special units for 90 degree corners.

2.3 REINFORCEMENT AND ANCHORAGE

A. Reinforcement and Anchorage Manufacturers:

1. AA Wire Products Co.
2. Dur-O-Wal Inc.
3. Heckman Building Products Inc.
4. Hohmann & Barnard Inc.
5. Masonry Reinforcing Corp. of America.
6. National Wire Products Corp.

B. Single Wythe Joint Reinforcement: Truss type; steel wire, hot dip galvanized to ASTM A641 Class 3 after fabrication, 3/16 inch side rods with 9 gage cross ties.

1. Provide reinforcement with Type 304 Stainless Steel wire at balcony piers only.

C. Multiple Wythe Joint Reinforcement: Truss type; with moisture drip steel wire, hot dip galvanized to ASTM A641 Class 3 after fabrication, 3/16 inch side rods with 9 gage cross ties.

D. Reinforcing Steel: ASTM A615, 60 ksi yield grade, deformed billet bars, uncoated finish.

E. Veneer Ties: Formed steel wire, triangular shape, 3/16" diameter, adjustable, fabricated of ASTM A580 Type 304 stainless steel, with 12 gage sheet metal anchor section, fabricated of ASTM A167 Type 304 Stainless Steel.

1. Veneer Tie Fasteners: Zinc chromate organic coated hex head screws with neoprene washers, as recommended by tie manufacturer; Hilti Kwik-Cote, or equal.

F. Retrofit Repair Anchors: Dur-O-Wal 5100 series, Type 304 stainless steel.

2.4 MORTAR AND GROUT

A. Mortar and Grout: As specified in Section 04100.

2.5 FLASHINGS

A. Laminated Copper Flashings: 5 oz/sq ft sheet copper bonded to asphalt saturated fiberglass fabric.

1. Manufacturers:

a. Afco Products Inc.
b. Hohmann & Barnard Inc.
c. Sandell Manufacturing Co. Inc.
d. York Manufacturing Inc.

B. Lead Coated Copper Flashings: 16 oz lead coated copper, hemmed edge.

2.6 ACCESSORIES

A. Preformed Control Joints: Neoprene material. Provide with corner and tee accessories, cement fused joints.

B. Weeps: Preformed polymer mesh type weep vents with integral notch design; CavClear, or equal.

C. Cavity Guard: Preformed nylon mesh cavity guard, continuous; CavClear, or equal.

D. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials, recommended by masonry unit manufacturer.

3 PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify that field conditions are acceptable and are ready to receive Work.

B. Coordinate placement of anchors supplied to other Sections.

3.2 COURSING

A. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

B. Concrete Masonry Units:
1. Bond: Running. .
2. Vertical Coursing: One unit and one mortar joint to equal 8 inches.
3. Mortar Joints: Concave.

C. Brick Units:
1. Bond: Running.
2. Vertical Coursing: Two units and two mortar joints to equal 8 inches.
3. Mortar Joints: Concave.

3.3 PLACING AND BONDING

A. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.

3.4 WEEPS

A. Install weeps in veneer at 24 inches oc horizontally above through-wall flashing, above shelf angles and lintels and at bottom of walls.

3.5 CAVITY WALL CONSTRUCTION

A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep holes.

B. Install cavity guard above all flashing and brick bearing locations to provide positive adequate weeping from cavity to exterior.

3.6 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER

A. Install horizontal joint reinforcement 16 inches oc. Place joint reinforcement continuous in first and second joint below top of walls. Place horizontal joint reinforcement in alternate courses from veneer anchors.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 12 inches each side of opening.

C. Masonry Back-Up: Install retrofit repair anchors in existing masonry at 16" oc horizontally, 24" oc vertically.

D. Stud Framed Back-Up: Secure wall ties and embed into masonry veneer at maximum 16 inches oc horizontally and 24 inches oc vertically. Place at maximum 4 inches oc each way around perimeter of openings, within 12 inches of openings

E. Reinforce joint corners and intersections with strap anchors at 16 inches oc vertically.

3.7 REINFORCEMENT AND ANCHORAGES - MULTIPLE WYTHE UNIT MASONRY

A. Install horizontal joint reinforcement at 16 inches oc vertically. Place joint reinforcement continuous in first and second joint below top of walls.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

D. Reinforce joint corners and intersections with strap anchors at 16 inches oc vertically.

3.8 MASONRY FLASHINGS

A. Extend flashings horizontally at foundation walls, above ledge or shelf angles and lintels, under parapet caps and at bottom of walls. Extend flashings to exterior of wall surfaces to ensure positive drainage.

B. Turn flashing up minimum 8 inches and seal under air and water infiltration barrier and sheathing over steel stud framed back-up.

C. Lap end joints and seal watertight.

D. Above wall openings, turn ends of flashing up to form dam and seal watertight.

E. Turn flashing, fold, and seal at corners, bends, and interruptions.

3.9 LINTELS

A. Install loose steel lintels over openings

B. Install reinforced unit masonry lintels over openings where steel or precast concrete lintels are not scheduled.

C. Maintain minimum 8 inch bearing on each side of opening.

3.10 GROUTED COMPONENTS

A. Reinforce bond beam and pilasters as detailed

B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

C. Place and consolidate grout fill without displacing reinforcing.

D. At bearing locations, fill masonry cores with grout for a minimum 12 inches either side of opening.

3.11 CONTROL AND EXPANSION JOINTS

A. Do not continue horizontal joint reinforcement through control and expansion joints.

B. Install preformed control joint device in continuous lengths. Seal end, butt, and corner joints in accordance with manufacturer's instructions.

C. Size control joint in accordance with Section 07900 for sealant performance.

D. Form expansion joint as detailed.

3.12 BUILT-IN WORK

A. As work progresses, install built-in metal door and glazed frames, fabricated metal frames, wood nailing strips, anchor bolts plates and other items to be built in the work furnished by other Sections.

B. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

3.13 TOLERANCES

A. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

B. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft ; 1/2 inch in 30 ft.

3.14 CUTTING AND FITTING

A. Cut and fit for chases, pipes, conduit, sleeves, and grounds. Coordinate with other sections of work to provide correct size, shape, and location.

3.15 CLEANING

A. Remove excess mortar and mortar smears as work progresses.

B. Clean soiled surfaces with cleaning solution.

END OF SECTION

Division 5

Metals

SECTION 05120

STRUCTURAL STEEL

1 PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. The drawings and general conditions of the contract including General and Supplementary Conditions and other Division 1 Specification sections apply to work of this section.

B. Examine all other sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.2 DESCRIPTION OF WORK:

A. Extent of structural steel work is shown on drawings, including schedules, notes and details to show size and location of members, typical connections, and type of steel required.

B. Structural steel is that work defined in AISC "Code of Standard Practice" and as otherwise shown on drawings.

1.3 QUALITY ASSURANCE:

A. Codes and Standards: Comply with provisions of the following, except as otherwise indicated:

1. AISC "Code of Standard Practice for Steel Buildings and Bridges-March 7, 2000". Paragraph 4.2.1 of the above code is herby modified by deletion of the following sentence: "

2. AISC "Specification for Structural Steel Buildings - Allowable Stress Design and Plastic Design", June 1, 1989 including "Commentary" and Supplements issued thereto.

3. AISC *"Specifications for Structural Joints using ASTM A 325 or A 490 Bolts"* approved by the Research Council on Structural Connections of the Engineering Foundation.

4. AWS D1.1 - 2004 "Structural Welding Code" - Steel.

5. AWS D1.3 - 2004 "Structural Welding Code" - Sheet Steel.

6. ASTM A 6 "General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use."

7. "Code of Federal Regulations, Part 1926" per the Occupational Safety and Health Administration (OSHA), Department of Labor (Latest Revision).

B. Qualifications for Welding Work: Qualify welding processes and welding operators in accordance with AWS D1.1 "Standard Qualification Procedure."

1. Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests.

2. If re-certification of welders is required, retesting will be the Contractor's responsibility.

C. Fabricator Qualifications: Fabricator must be a member of the American Institute of Steel Construction (AISC), be certified for SBD – Conventional Steel Building Structures, STD – Standard for Steel Building Structures, or be a member of the Structural Steel Fabricators of New England (SSFNE). Provide certification of at least one of the above.

1.4 SUBMITTALS

A. Unless otherwise specified, submittals required in this section shall be submitted for review. Submittals shall be prepared and submitted in accordance with this section and Section 01001.

B. General Contractor shall submit a Submittal Schedule to the engineer within 30 days after they have received the Owner's Notice to Proceed.

C. Incomplete submittals will not be reviewed.

D. Submittals not reviewed by the General Contractor prior to submission to the Engineer will not be reviewed. Include on the submittal statement or stamp of approval by Contractor, representing that the Contractor has seen and examined the submittal and that all requirements listed in section 01001 have been complied with.

E. Engineer will review submittals a maximum of two review cycles as part of their normal services. If submittals are incomplete or otherwise unacceptable and re-submitted, General Contractor shall compensate Engineer for additional review cycles.

F. Product Data: Submit producer's or manufacturer's specifications and installation instructions for the following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).

1. Structural steel certified mill reports for each grade of steel covering chemical and physical properties and yield strengths.

2. High-strength bolts (each type), including nuts and washers.

3. Structural steel primer paint.

4. Structural steel top coat paint. (Refer to Section 09900.)

5. Structural steel Hot-Dipped Galvanizing.

6. welder certifications.

7. Expansion/Adhesive Anchors (coordinate with section 03300).

G. Shop Drawings:

1. Shop Drawing Review: Electronic files of structural drawings will not be provided to the contractor for preparation of shop drawings.

a. Review of the shop drawings will be made for the size and arrangement of the members and strength of the connections. Conformance of the Shop Drawings to the Contract Drawings remains the responsibility of the General Contractor. Engineer's review in no way relieves the General Contractor of this responsibility. Submit one print and one reproducible. Print will be reviewed and a reproducible will be returned to Contractor for printing and distribution. Multiple copies will not be marked by Engineer.

b. Shop drawings will not be reviewed as partial submittals. A complete submittal shall be provided and shall include; erection and piece drawings indicating all members, braced frames, moment frames and connections. Incomplete submittals will not be reviewed.

2. Test Reports: Submit copies of reports of tests conducted on shop and field bolted and welded connections. Include data on type(s) of test conducted and test results.

1.5 DELIVERY, STORAGE AND HANDLING:

A. Deliver materials to site at such intervals to insure uninterrupted progress of work.

B. Deliver anchor bolts and anchorage devices, which are to be embedded in cast-in-place, in ample time to not delay work.

C. Store materials to permit easy access for inspection and identification. Keep steel members off ground, using pallets, platforms, or other supports. Protect steel members and packaged materials from corrosion and deterioration.

D. Do not store materials on structure in a manner that might cause distortion or damage to members or supporting structures. Steel materials shall be stored in a manner to avoid ponding of precipitation on members. Repair or replace damaged materials or structures as directed.

2 PART 2 PRODUCTS

2.1 MATERIALS:

A. Structural Steel Shapes, Plates and Bars: ASTM A 36 minimum, higher strength steel is acceptable.

B. Structural Steel Hot Rolled Shapes: ASTM A 992 Grade 50 (ASTM A572 Grade 50 with special requirements per AISC Technical Bulletin #3, dated March 1997)

C. Steel Tube: ASTM A 500, Grade B, Fy = 46 ksi.

D. Steel Pipe: ASTM A 53, Grade B.

E. Unfinished Threaded Fasteners: ASTM A 307, Grade A, regular low-carbon steel bolts and nuts. Provide hexagonal heads and nuts for all connections.

F. High-Strength Threaded Fasteners: Heavy hexagon structural bolts, heavy hexagon nuts, and hardened washers, as follows:

1. Quenched and tempered medium-carbon steel bolts, nuts and washers, complying with ASTM A325 or ASTM A490. Refer to drawings for diameter.

2. Provide hot-dipped galvanized fasteners.

G. Electrodes for Welding: E70XX and comply with AWS Codes with proper rod to produce optimum weld joint considering material, weld position and size of joint. All filler metal used for complete penetration groove welds shall have a minimum Charpy V Notch value of 20 ft-lbs. at 40 degrees F for enclosed and heated structures and 20 ft-lbs. at 0 degrees F for all other structures. Electrodes shall be compatible with steel of both connected elements.

H. Structural Steel Coatings: Use painting methods which result in full coverage of joints, corners, edges, and exposed surfaces. Apply galvanizing, primer, and top coats at a rate to provide dry film thickness given in specification section 09900.

1. Existing in-place steel (embedded plates and relieving angles) shall be field cleaned and painted in place. Remove loose rust scale, mortar splatter, or other deposits. Clean steel in accordance with Steel Structures Painting Council (SSPC) SP-2 "Hand Tool Cleaning". Power tool clean to bare metal and apply paint as per specifications section 09900.

2. New Steel at Balcony piers shall be Hot Dipped Galvanized per ASTM A 525. Shop fabricate pieces to the fullest extent possible prior to galvanizing. Mask base connection zone from galvanizing to facilitate field welding as shown on drawings..

3. New steel relieving angles: Hot Dipped Galvanized per ASTM A 525, Top coat as per specification section 09900.

4. Galvanizing touch-up: Cold galvanizing compound, bursh applied, ZRC or approved equal.

I. Non Shrink Cement-Based Grout: Non-mettalic, non-shrink, 5,000 psi 5-Star Grout by U.S. Grout Corp. or approvied Equal.

J. Drilled Anchors: Expansion and adhesive by HILTI, SIMPSON or POWERS/RAWL as indicated on the drawings.

2.1 FABRICATION:

A. Shop Fabrication and Assembly: Fabricate and assemble structural assemblies in shop to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final shop drawings.

1. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence which will expedite erection and minimize field handling of materials.

2. Where finishing is required, complete assembly, including welding of units, before start of finishing operations. Provide finish surfaces of members exposed in final structure free of markings, burrs and other defects.

B. Connections: Weld or bolt shop connections, as indicated.

C. Bolt field connections, except where welded connections or other connections are indicated.

1. Provide high-strength threaded fasteners for principal bolted connections, except where unfinished bolts are indicated.

D. High-Strength Bolted Connection: Install high-strength threaded fasteners in accordance with AISC "Specification for Structural Joints using ASTM A 325 or A 490 Bolts". Unless otherwise indicated, all bolted connections are to be tightened to the snug tight condition as defined by AISC.

E. Welded Construction: Comply with AWS Codes for procedures, appearance and quality of welds, and methods used in correcting welding work.

F. Holes for Other Work: Provide holes required for securing other work to structural steel framing, and for passage of other work through steel framing members, as shown on final shop drawings.

G. Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame cut holes or enlarge holes by burning. Drill holes in bearing plates.

3 PART 3 EXECUTION

3.1 ERECTION:

A. General: Comply with AISC Specifications for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.

B. Erection Procedures: Comply with "Code of Federal Regulations, Part 1926" per the Occupational Safety and Health Administration (OSHA), Department of Labor (Latest Revision).

C. Surveys: Check elevations of concrete bearing surfaces, and locations of anchor bolts and similar devices, before erection work proceeds, and report discrepancies to Architect. Do not proceed with erection until corrections have been made, or until compensating adjustments to structural steel work have been approved by Engineer of Record. Additional surveys required to verify out-of-alignment work and/or corrective work shall be performed at the contractor's expense.

D. Temporary Shoring and Bracing: This is the sole responsibility of the contractor. Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads. Remove temporary members and connections when permanent members are in place and final connections are made. Provide temporary guy lines to achieve proper alignment of structures as erection proceeds. Comply with OSHA Standard referenced previous. Retain the services of a Specialty Structural Engineer (Not the Engineer of Record) to design specialty shoring and bracing.

E. Anchor Bolts: Furnish anchor bolts and other connectors required for securing structural steel to foundations and other in-place work.

1. Tighten anchor bolts after supported members have been positioned and plumbed. Do not remove wedges or shims, but if protruding, cut off flush with edge of base or bearing plate prior to packing with grout.

2. Welding to anchor bolts for corrective measures is strictly prohibited without prior written approval from the Engineer.

F. Setting Plates and Base Plates:

1. Furnish templates and other devices as necessary for presetting bolts and other anchors to accurate locations. Refer to division 3 of these specifications for anchor bolt installation requirements in concrete.

2. Clean concrete bearing surfaces of bond-reducing materials. Clean bottom surface of setting and bearing plates.

3. Set loose and attached base plates for structural members on wedges or other adjusting devices.

4. Pack grout solidly between bearing surfaces and bases or plates to ensure that no voids remain. Finish exposed surfaces, protect installed materials, and allow to cure. For proprietary grout materials, comply with manufacturer's instructions.

G. When installing expansion bolts or adhesive anchors, the contractor shall take measures to avoid drilling or cutting any existing reinforcement or damaging adjacent concrete. Holes shall be blown clean with compressed air and/or cleaned per manufacturer's recommendations prior to the installation of anchors.

H. Field Assembly:

1. Set structural frames accurately to lines and elevations indicated.

2. Align and adjust various members forming part of complete frame or structure before permanently fastening.

3. Clean bearing surfaces and other surfaces which will be in permanent contact before assembly.

4. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

5. Level and plumb individual members of structure within specified AISC tolerance.

6. Splice members only where indicated and accepted on shop drawings.

7. Do not enlarge unfair holes in members by burning or by use of drift pins, except in secondary bracing members. Ream holes that must be enlarged to admit bolts.

I. Erection bolts: Remove erection bolts. On exposed welded construction fill holes with plug welds and grind smooth at exposed surface.

J. Gas Cutting: Do not use gas cutting torches in field for correcting fabrication errors in primary structural framing. Cutting will be permitted only on secondary members which are not under stress, as accepted by the Engineer of Record. Finish gas-cut sections equal to a sheared appearance when permitted.

K. Paint Damage: Touch up shop applied paint whenever damaged or bare. Clean surface and touch up with shop primer noted and top coat, if required.

L. Welders shall have current evidence of passing the appropriate AWS Qualifications test available in the field.

M. Welding electrodes, welding process, minimum preheat and interpass temperatures shall be in accordance with AISC and AWS specifications. Any structural steel damaged in welding shall be replaced.

3.2 QUALITY CONTROL:

A. General: Contractor is responsible for maintaining quality control in the field and for providing a structure that is in strict compliance with the contract documents.

1. Required inspection and testing services are intended to assist the Contractor in complying with the Contract Documents. These specified services, however, do not relieve the Contractor of his responsibility for compliance, nor are they intended to limit the Contractor's quality control efforts in the field.

B. Testing: Owner shall engage an independent testing agency to inspect all high-strength bolted and welded connections, to perform tests and prepare reports of their findings. All connections must pass these inspections prior to the installation of subsequent work which they support.

1. Testing agency shall conduct tests and state in each report which specific connections were examined or tested, whether the connections comply with requirements, and specifically state any deviations therefrom.

2. Contractor shall provide access for testing agency to places where structural steel work is being fabricated, produced or erected so that required inspection and testing can be accomplished. Testing agency may inspect structural steel at plant before shipment. The Engineer, however, reserves the right, at any time before final acceptance, to reject material not complying with specified requirements.

C. Inspection Requirements:

1. Bolted Connections: Inspect all bolted connections in accordance with procedures outlined in the AISC "Specification for Structural Joints using ASTM A325 or A490 Bolts.

2. Snug Tight Bolted Connections:

a. The inspector shall monitor the installation of bolts to determine that all plies of connected material have been drawn together and that the selected procedure is used to tighten all bolts.

b. If the inspector does not monitor the installation of bolts, he shall visually inspect the connection to determine that all plies of connected material have been drawn together and conduct tests on a sampling connection bolts to determine if they have been tightened to the snug tight condition. The test sample shall consist of 10% of the bolts in the connection, but not less than two bolts, selected at random. If more than 10% of the tested bolts fail the initial inspection, the engineer reserves the right to increase the number of bolts tested.

3. Field Welded Connections: inspect and test during fabrication of structural steel assemblies, and during erection of structural steel all welded connections in accordance with procedures outline in AWS D1.1. Record types and location of defects found in work. Record work required and performed to correct deficiencies.

   a. Certify welders and conduct inspections and tests as required. Submit welder certifications to Engineer of Record. Perform visual inspection of all welds.

   b. Welds deemed questionable by visual inspection shall receive non-destructive testing. In addition, all partial and full penetration welds, and any other welds indicated on the drawings to receive non-destructive testing. Non destructive testing methods include the following:

   c. Radiographic Inspection: ASTM E 94 and ASTM E 142; minimum quality level "2-2T".

D. Nonconforming Work: Contractor shall be responsible for correcting deficiencies in structural steel work which inspections laboratory test reports have indicated to be not in compliance with requirements. Additional tests shall be performed, at the Contractor's expense, as may be necessary to show compliance of corrected work. Any costs associated with the Engineer's review and disposition of faulty works shall be borne by the Contractor.

END OF SECTION

SECTION 05400

COLD FORMED METAL FRAMING

1 PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. The drawings and general conditions of the contract including General and Supplementary Conditions and other Division 1 Specification sections apply to work of this section.

B. Examine all other sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all trades affecting of affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.2 DESCRIPTION OF THE WORK

A. Work specified within this Section includes, but is not necessarily limited to, the following:

1. Provide and install steel stud structural framing system at exterior walls as noted on the Drawings.

2. Repairs to existing steel stud curtainwall system including the addition of clips and anchors at the top and bottom tracks, field welding existing jamb studs to join two separate studs, and the infill of existing openings to re-size the window or door rough opening.

3. Providing and installing miscellaneous fasteners, hat channels, stiffeners, bridges, expansion joints, and accessories necessary to complete the work.

B. Related work specified elsewhere:

1. Interior Partition Walls: Section 09260 – Gypsum Board Systems

1.3 QUALITY ASSURANCE

A. Materials and installation shall conform to recommendations of the following publications:

1. American Iron and Steel Institute Cold-Formed Steel Design Manual, *"Specification for the Design of Cold-Formed Steel Structural Members"*.

2. AWS D1.1 *"Structural Welding Code"* – Steel

3. AWS D1.3 *"Structural Welding Code"* – Sheet Steel

4. ASTM C 954, Standard Specification for Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases to Steel Studs from 0.033 in to 0.112 in. Thickness.

5. ASTM C 955, Standard specification for Load Bearing Steel Studs, Runners, and Bracing or Bridging, for Screw Application of Gypsum Board and Metal Plaster Bases.

6. ASTM C 1007 Standard Specification for Installation of Load Bearing Steel Studs and Related Accessories.

7. Standard Specification for Installation of Load Bearing Steel Studs and Related Accessories.

8. ASCE 7-95 "Minimum Design Loads for Building and Other Structures," (formally ANSI A58.1).

9. International Building Code.

B. Maximum Allowable Deflections: Deflections limitations, (either horizontal or vertical), include the effect of studs only, no sheathing or facing material concrete.

1. Supporting Masonry or Brick Veneer: 1/600 of span
2. Supporting Metal Wall Panels: 1/360 of span

C. Design wind pressures: Design wind pressures calculated in accordance with IBC or ASCE 7-95 for Components and Cladding, shall be used in the design of the exterior cold formed steel framing system.

D. Slip Track Tolerances: Where non-bearing light gage framing abuts the structure, provide a slip joint capable of accommodating the vertical movement of the structure. Slip joint gaps shall allow for ¾" Live Load deflection of the supporting member. Minimum depth of slip track shall be 2". Minimum thickness shall be 14 gage.

1.4 SUBMITTALS

A. Product Data: Submit Manufacturer's specification and installations for the following products. Include laboratory test reports and other data to show compliance with specifications.

1. Steel studs.
2. Anchors and anchor bolts.
3. Self drilling screws.

B. Shop drawings:

1. General: Submit shop drawings showing the following:

a. Stud gages and spacing
b. Sizes, gages and fastenings for all built-up members including but not limited to headers and jambs.
c. Shop coatings.
d. Type, size, quantity, locations and spacings of all anchorages and self drilling screws.
e. Detail of attachment to structure and adjacent work.
f. Supplemental strapping, bracing, splices, bridges, hat channels and other accessories required for proper installation.
g. Critical installation procedures.

2 PART 2 PRODUCTS

2.1 FRAMING MEMBERS

A. Steel Studs:

1. Acceptable manufacturers: Marino/Ware, Dietrich, Unimast, Superior

2. Minimum stud shall be 6", 20 gage with 1.325" flange at load bearing walls.

3. Minimum stud at new cold formed wall framing at entry and balcony infill over entry shall be 4", 18 gage with 1.625" flange.

4. Provide channel-shaped load bearing studs, channel-shaped joists, runners (tracks), blocking, lintels, clip angles, shoes, reinforcements, stiffeners, fasteners, and other accessories recommended by manufacturer for complete framing system.

5. Steel framing materials shall comply with ASTM A 446, A 570, or A 611, as applicable. Fabricate all components from structural quality sheet steel with the following minimum yield points:

   a. 16 ga., and heavier 50,000 psi
   b. 18 ga., 33,000 psi
   c. 20 ga., 33,000 psi

6. Manufacture of studs, runners (track), and other framing members shall comply with ASTM C 955.

7. Framing components shall be galvanized per ASTM A 525, minimum G-60 coating.

B. Screws and other attachment devices:

1. Provide a protective cadmium or zinc plated coating and comply with ASTM A 165 type NS.

2. Self-drilling screws shall comply with the Industrial Fastener Institute Standard for steel self-drilling and tapping screws (IFI-113).

3. Penetration through jointed materials shall not be less than three (3) exposed threads.

C. Standard Steel Shapes: Standard steel shapes, plates, etc. shall conform to material and finish specifications in Division 5 – Miscellaneous Metals.

3 PART 3 EXECUTION

3.1 INSTALLATION

A. Product Storage: Store studs, joist, track, etc. on a flat plane. Material damaged (i.e. rusted, dented, bent or twisted) shall be discarded. Protect adhesives and sealants from freezing.

B. Construction Methods. Construction may be either piece-by-piece (stick-built), or by fabrication into panels either on or off site.

C. Material Fit-Up: All framing components shall be cut squarely or at an angle to fit squarely against abutting members. Members shall be held firmly in position until properly fastened. Prefabricated panels, if used, shall be square and braced against racking.

D. Attachment: Components shall be joined by self-drilling screws, so that connection meets or exceeds required design loads. Wire tying of framing components will be permitted. Field welding will be permitted only where shown on the drawings or approved by the engineer.

E. Anchorage to Structure: Securely anchor studs and track to floor construction and overhead structure. Provide fasteners at maximum of 16" on center. Provide slip joints where non-bearing vertical studs meet floor or roof structural steel, or as indicated on the drawings. Provide sill sealer beneath all floor tracks.

F. Welding: Shop and field welds shall conform to applicable AWS and AISI standards, and may be fillet, plug, butt, or seam type. Touch-up damage to galvanizing caused by welding with zinc-rich paint.

G. Openings: Frame openings larger than 2 ft. square with double studs. Provide suitable reinforcements (double studs, headers, jack studs, cripples, bracing, etc.) at control joint intersections, corners, and other special conditions.

H. Tolerances: Finished installation shall be level and plumb within a tolerance of 1/8 inch in 10 feet horizontally and vertically. Maximum deviation from plan or section dimension shall not exceed 1/8 inch. Spacing of studs shall not be more than 1/8 inch from design spacing, providing that cumulative error does not exceed requirements of finishing materials.

END OF SECTION.

SECTION 05500

METAL FABRICATIONS

1 PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Shop fabricated ferrous metal items, galvanized.
   2. Guardrails, balusters.

1.2 SYSTEM DESCRIPTION

A. Design railing, wall rails, and attachments to resist uniform lateral force of 75 lbs and concentrated load of 200 lbs, applied at any direction at any point without damage or permanent set. Comply with International Building Code requirements.

1.3 SUBMITTALS

A. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
   1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

1.4 QUALITY ASSURANCE

A. Finish joints in accordance with NOMMA Guideline 1.

B. Design guardrails under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of Maine.

2 PART 2 PRODUCTS

2.1 COMPONENTS

A. Steel Sections: ASTM A36/A36M.

B. Steel Plate: ASTM A283/A283M.

C. Steel Tubing: ASTM A500, Grade B.

D. Steel Pipe: ASTM A53/A53M, Grade B Schedule 40.

E. Sheet Steel: ASTM A653/A653M, Grade 33 Structural Quality with galvanized coating.

F. Bolts, Nuts, and Washers: ASTM A325 galvanized to ASTM A153/A153M for galvanized members.

G. Anchor Bolts: ASTM A307; 3/4 inch steel bolt, standard J-hook, with nut and washer; unfinished.

2.2 ACCESSORIES

A. Welding Materials: AWS D1.1.

B. Touch-Up Primer for Galvanized Surfaces: SSPC Paint 20 Type II Organic zinc rich

2.3 FABRICATION

A. General:
1. Fit and shop assemble items in largest practical sections, for delivery to site.
2. Continuously seal joined members by continuous welds.
3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
4. Exposed Mechanical Fastenings: Flush countersunk screws or bolts, consistent with design of component.
5. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication.
6. Accurately form components required for anchorage of railings to each other and to building structure.
7. Exposed Welded Joints: NOMMA Guideline 1 Joint Finish 1.

B. Handrails:
1. Fit and shop assemble components in largest practical sizes, for delivery to site.
2. Grind exposed joints flush and smooth with adjacent finish surface.
3. Accurately form components, to each other and to building structure.
4. Form balusters with square steel sections, welded to guardrails.

2.4 FINISHES

A. Galvanize to ASTM A123/A123M, structural steel members; provide minimum thickness of galvanized coating specified in referenced standard.

3 PART 3 EXECUTION

3.1 EXAMINATION

A. Verify field conditions are acceptable and are ready to receive Work.

3.2 PREPARATION

A. Make provisions for erection stresses. Install temporary bracing to maintain alignment, until permanent bracing and attachments are installed.

B. Supply items required to be cast into concrete or embedded in masonry with setting templates, to appropriate sections.

3.3 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads and provide temporary bracing to maintain indicated alignment until completion of erection and installation of permanent attachments.

C. Field weld components indicated on drawings. Perform field welding in accordance with AWS D1.1.

D. Obtain approval prior to site cutting.

E. After erection, touch up welds, abrasions, and damaged finishes with prime paint or galvanizing repair paint to match shop finishes.

3.4 SCHEDULES

A. This Schedule is list of principal items only. Refer to Drawing details for items not specifically scheduled.

B. Guardrails: As detailed, galvanized finish.

C. Ledge and Shelf Angles, Channels and Plates Attached to Structural Framing: For support of masonry, galvanized finish.

D. Lintels: As detailed; galvanized finish.

END OF SECTION

Division 6

Carpentry

SECTION 06100

ROUGH CARPENTRY

1 PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract including General and Supplementary Conditions and Division 1 specification sections, apply to work of this section.

1.2 SECTION INCLUDES

A. Preservative treatment; sill gaskets.

B. Roof curbs and cants; blocking in wall openings; wood furring and grounds; concealed wood blocking.

C. Air and water infiltration barrier.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with the following agencies:

1. Lumber Grading Agency: NLGA, SPIB.
2. Plywood Grading Agency: APA.

2 PART 2 PRODUCTS

2.1 LUMBER MATERIALS

A. Lumber Grading Rules: NLGA, SPIB.

B. Miscellaneous Framing and Blocking: S-P-F, No. 2 & Better.

C. Pressure Treated Blocking: SYP, No. 2 & Better.

2.2 SHEATHING MATERIALS

A. Wall Sheathing: Moisture resistant, Fire resistant, 5/8 inch thick, 48 x 96 inch sized sheets, square edges, silicone treated gypsum core, water repellant glass mat faces. Georgia Pacific "Dens-Glass", or equal.

B. Parapet Sheathing: 5/8" thick preservative treated APA Rated Sheathing, plywood, Exposure 1, span rating 40/20.

2.3 ACCESSORIES

A. Fasteners: Hot dip galvanized steel for exterior and high humidity locations, and in contact with treated wood; plain finish elsewhere.

B. Anchors: Toggle bolt type for anchorage to hollow masonry. Expansion shield and lag bolt type for anchorage to solid masonry or concrete. Bolt or ballistic fastener for anchorages to steel.

C. Air and water infiltration barrier: DuPont Tyvek HomeWrap. No Substitutions.

D. Seam Sealing Tape: DuPont Tyvek Contractor Tape.

E. Door and Window Flashing: DuPont FlexWrap.

2.4 WOOD TREATMENT

A. Wood Preservative (Pressure Treatment): AWPA Treatment C1 using water borne ACQ preservative with 0.40 percent retainage.

B. Shop preservative treat wood materials indicated in accordance with manufacturer's instructions.

3 PART 3 EXECUTION

3.1 FRAMING

A. Curb all roof openings except where curbs are provided. Construct curb members of single pieces per side.

B. Install pressure treated framing where in contact with roofing materials or concrete.

3.2 SHEATHING

A. Install sheathing in strict accordance with manufacturer's instructions and requirements of the International Building Code.

B. Secure sheathing with ends staggered, over firm bearing.

1. Fasten with 1-1/4" #6 bugle head self-tapping corrosion resistant screws, 8" oc at edges and at all intermediate supports.

3.3 AIR AND WATER INFILTRATION BARRIER

A. Install air and water infiltration barrier over exterior wall sheathing as instructed by manufacturer.

B. Overlap joints and seal with tape recommended by manufacturer.

C. Install flashing at door and window openings as recommended by manufacturer.

END OF SECTION

SECTION 06200

FINISH CARPENTRY

1 PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract including General and Supplementary Conditions and Division 1 specification sections, apply to work of this section.

1.2 SUMMARY

A. Finish carpentry items, other than shop prefabricated casework; hardware and attachment accessories.

1.3 SUBMITTALS

A. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, finishes, and accessories.

B. Samples: Submit two samples illustrating wood grain and specified finish.

1.4 QUALITY ASSURANCE

A. Perform work in accordance with AWI Quality Standards, Custom Grade.

1.5 REGULATORY REQUIREMENTS

A. Conform to applicable code for fire retardant requirements.

2 PART 2 PRODUCTS

2.1 LUMBER MATERIALS

A. Softwood Lumber: PS 20; Graded in accordance with AWI Custom; Eastern White Pine species, plain sawn, maximum moisture content of 15 percent; with mixed grain, of quality suitable for painted finish.

B. Hardwood Lumber: Graded in accordance with AWI Custom; White Birch species, quarter sawn, maximum moisture content of 11 percent; with vertical grain, of quality suitable for transparent finish.

C. Medium Density Fiberboard (MDF): Wood fibers with resin binders compressed and moulded under pressure to produce a medium density product, factory primed and suitable for opaque finishes.

2.2 SHEET MATERIALS

A. Softwood Plywood: PS 1 Grade C-D Graded in accordance with AWI veneer lumber core; fir face species, plan sliced cut.

B. Hardwood Plywood: HPVA HP-1 Grade A1; Graded in accordance with AWI veneer lumber core, type of glue recommended for application; white birch face species, rotary cut.

C. Wood Particleboard: ANSI A208.1 Type 1; AWI standard, composed of wood chips, sawdust, or flakes, made with waterproof resin binders, sanded faces.

2.3 ACCESSORIES

A. Fasteners: Size and type to suit application; hot dipped galvanized steel for exterior, high humidity and treated wood locations, plain finish elsewhere.

B. Wall Adhesive: Cartridge type, compatible with wall substrate, capable of achieving durable bond.

C. Primer: Alkyd primer sealer type.

2.4 FABRICATION

A. Fabricate to AWI Custom standards.

2.5 SHOP FINISHING

A. Stain, seal, and varnish exposed to view surfaces scheduled to receive transparent finish. Brush apply only.

B. Seal internal surfaces and semi-concealed surfaces. Brush apply only.

C. Prime paint Seal surfaces in contact with cementitious materials.

3 PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Prime paint surfaces of items or assemblies in contact with cementitious materials, before installation.

3.2 INSTALLATION

A. Install work in accordance with AWI Custom quality standard.

B. Set and secure materials and components in place, plumb and level.

C. Install trim by nails.

D. Cover exposed edges of shelving with 3/8 inch thick hardwood edging.

3.3 PREPARATION FOR FINISH

A. Sand work smooth and set exposed fasteners. Apply wood filler in exposed fastener indentations.

B. Site Finishing: Refer to Section 09900.

3.4 SCHEDULE

A. Interior:

1. Window Sills: Clear White Birch, prepare for satin urethane finish.
2. Moldings, Bases, Casings, and Miscellaneous Trim: Clear white pine, prepare for paint finish.

END OF SECTION

Division 7

Thermal and Moisture Protection

SECTION 07180

TRAFFIC-BEARING WATERPROOF DECK SURFACING

1 PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 WORK INCLUDED

A. Work of this Section includes all labor, materials, equipment and services necessary to complete the waterproof elastomeric traffic-bearing roof deck surfacing as scheduled on the drawings and/or specified herein.

1.3 RELATED WORK

A. Concrete - Section 03300.

1.4 SUBMITTALS

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

B. Product Data: Submit manufacturer's technical data, application instructions and general recommendations for the waterproof elastomeric traffic-bearing roof deck surfacing specified herein.

C. Samples for initial selection purposes in form of manufacturer's color charts showing full range of colors and finishes available.

1. Submit 2-1/2" x 4" samples of color chips from color chart selection designated by the Architect.

D. Material certificates signed by manufacturer certifying that the waterproof elastomeric traffic-bearing roof deck surfacing complies with requirements specified herein.

E. Maintenance Instructions: Submit manufacturer's written instructions for recommended maintenance practices.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer or applicator who has specialized in installing waterproof deck covering system types similar to that required for this Project and who is acceptable to manufacturer of primary materials.

B. Single-Source Responsibility: Obtain waterproof elastomeric traffic-bearing roof deck surfacing materials, including primers, resins, hardening agents, and finish or sealing coats, from a single manufacturer.

C. Pre-Qualified Suppliers: Submit any request for alternative products for review to Architect prior to bid date. Any request for alternate products received after this date will not be considered.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original packages and containers with seals unbroken and bearing manufacturer's labels containing brand name and directions for storage and mixing with other components.

B. Comply with manufacturer's directions for materials storage to prevent deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects.

1.7 PROJECT CONDITIONS

A. Environmental Conditions: Comply with waterproof elastomeric traffic-bearing roof deck surfacing manufacturer's directions for maintenance of ambient and substrate temperature, moisture, humidity, ventilation, and other conditions required to execute and protect work.

2 PART 2 PRODUCTS

2.1 MATERIALS

A. Troweled waterproof elastomeric traffic-bearing roof deck surfacing shall be Dex-O-Tex Elastatex 500 as manufactured by Crossfield Products Corp., Rancho Dominguez, California; Rosette Park, New Jersey and Burr Ridge, Illinois. Equivalent products from alternate manufacturers may be accepted as judged solely by Architect.

B. The trowel-applied waterproof elastomeric traffic-bearing roof deck surfacing system shall be composed of a primer, moisture-cured polyurethane rubber binder with SBR, ABR and natural rubber aggregate basecoat, polyurethane top coat, and shall conform to the following standards:

2.2 PROPERTIES

A. Colors: As indicated, or if not otherwise indicated, as selected by Architect from manufacturer's standard colors.

B. Physical Properties: Provide a waterproof deck covering system that meets or exceeds the listed minimum physical property requirements when tested according to the referenced standard test method in parentheses.

1. Weight: 0.46 lbs. per sq. ft.
2. Accelerated Weathering: (ASTM G-23): (Atlas Twin-Arc Weatherometer – 2,000 hrs.): No cracking, blistering, delamination, chalking, crazing or color change
3. Accelerated Aging: (ASTM D-756): No cracking, blistering, delamination, chalking, crazing or color change
4. Freeze-Thaw: (ASTM C-67): No breakage or weight loss
5. Percolation: (ICBO standard): Complies
6. Water Absorption: (ASTM D-570): <6.09%, no warping or cracking
7. Adhesion: (ASTM D-903): 175 psi
8. Hardness: (ASTM 2240): 60-70 Durometer "A"
9. Crack Bridging and Low Temperature Flexibility (ASTM C-836): Complies
10. Tensile Strength (ASTM D-412): 1,050 psi
11. Elongation (ASTM D-412): 500%
12. Chemical Resistance:
    a. Industrial Detergent: No change in texture or color
    b. Salt (20%): No change in texture or color
    c. Ammonia Solution (5%): No change in texture or color
    d. Muriatic Acid (10%): No change in texture or color
    e. Chlorine (10%): No change in texture or color
    f. Kerosene: No change in texture or color
    g. Turpentine: Slight temporary softening of surface
    h. Paint Thinner: Slight temporary softening of surface

2.3 SUPPLEMENTAL MATERIALS

A. Optional Decorative Finishes: Type recommended or produced by manufacturer of waterproof elastomeric traffic-bearing roof deck surfacing system to achieve desired color and texture.

B. Flashings: Galvanized steel, 26 ga, with baked enamel finish, compatible with deck coating system, color as selected.

3 PART 3 EXECUTION

3.1 INSPECTION

A. Examine the areas and conditions where the waterproof elastomeric traffic-bearing roof deck surfacing is to be installed and notify the Architect of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

B. Evaluate level of moisture in the substrate to determine that moisture levels are acceptable for application of specified waterproof deck covering system.

3.2 PREPARATION

A. Substrate: Perform preparation and cleaning procedures according to waterproof deck covering manufacturer's instructions for particular substrate conditions involved, and as specified. Provide clean, dry and neutral substrate for application of waterproof deck covering.

B. Materials: Mix aqueous emulsions and aggregate when required as per manufacturer's instructions. Prepare materials according to waterproof deck covering system manufacturer's instructions.

3.3 APPLICATION

A. General: Apply each component of waterproof elastomeric traffic-bearing roof deck surfacing system according to manufacturer's directions to produce a uniform, monolithic surface of thickness indicated.

B. Install flashings as recommended by manufacturer. Embed in full bed of mastic compatible with deck coating.

C. Apply primer bondcoat over entire surface to be coated with the deck surfacing. Apply in thin, even coating. Do not allow primer bondcoat to puddle. Apply subsequent coats within 48 hours of application of primer bondcoat.

C. Apply reinforced membrane detail coat at all vertical junctures, transitions, cracks, or joints. Embed polypropylene fabric into polyurethane membrane liquid. Overlap all seams a minimum of 2 inches.

D. Trowel-apply the Elastatex 500 urethane bodycoat over the entire surface. Take care to provide a uniform thickness and avoid trowel marks.

E. Broadcast rubber aggregate into the wet urethane bodycoat; allow to cure.

F. Remove all excess rubber aggregate. Inspect surface to insure a completely monolithic, seamless surface.

G. Roller apply two coats of final-finish dressing to a uniform finish.

H. Finished elastomeric traffic-bearing roof deck surfacing shall be a nominal 1/16 inch thick, uniform in color and texture.

3.4 CURING, PROTECTION AND CLEANING

A. Cure waterproof elastomeric traffic-bearing roof deck surfacing materials according to manufacturer's directions, taking care to prevent contamination during application stages and before completing curing process. Close application area to traffic for a minimum of 24 hours.

END OF SECTION

SECTION 07210

BUILDING INSULATION

1 PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 specifications sections, apply to work of this section.

1.2 SECTION INCLUDES

A. Batt thermal insulation and vapor retarder in exterior wall construction.

1.3 ENVIRONMENTAL REQUIREMENTS

A. Protect insulation materials from damage by weather or construction operations.

2 PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Glass Fiber Insulation:

1. CertainTeed Corp.
2. Knauf Fiber Glass GmbH.
3. Manville Building Insulation/Div. Schuller.
4. Owens-Corning Fiberglas Corp.

2.2 INSULATION MATERIALS

A. Batt Insulation: ASTM C665, preformed glass fiber batt, conforming to the following:
   1. Thermal Resistance: as indicated.
   2. Facing: Unfaced

2.3 ACCESSORIES

A. Vapor Retarder: polyethylene film, 6 mil thick.

B. Tape: 3M 8086 self-adhering tape.

3 PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify that substrate, adjacent materials, and insulation are dry and ready to receive insulation.

3.2 INSTALLATION - BATT INSULATION

A. Install insulation and vapor retarder in accordance with insulation manufacturer's instructions.

B. Install in exterior walls spaces without gaps or voids.

C. Fit insulation tight in spaces. Leave no gaps or voids.

D. Install friction fit insulation tight to framing members, completely filling prepared spaces.

E. Place vapor retarder on warm side of insulation by securing in place. Extend vapor retarder tight to full perimeter of adjacent window and door frames and other items interrupting the plane of membrane. Tape seal in place.

END OF SECTION

SECTION 07241

EXTERIOR INSULATION AND FINISH SYSTEM CLASS PB

1 PART 1 GENERAL

1.1 SUMMARY

A. This section is based on the following proprietary system to establish performance and appearance characteristics and quality standards. Equivalent products of other manufacturers may be considered as judged solely by Architect:

1. Dryvit Outsulation System.

1.2 SYSTEM DESCRIPTION

A. The Dryvit Outsulation System is an Exterior Insulation and Finish System (EIFS), Class PB, consisting of an adhesive, insulation board, base coat with reinforcing mesh(es) and finish.

1. Design Requirements:

a. Acceptable Substrates shall include:

1) Exterior Grade Gypsum Sheathing meeting ASTM C 79 requirements for water resistant core or Type X core at the time of application.
2) Silicone treated gypsum core sheathing surfaced with inorganic fiberglass mats meeting ASTM C 1177.
3) Unglazed brick, cement plaster, concrete or concrete masonry.
4) APA Exterior or Exposure 1 rated Plywood, Grade C-D or better nominal 13mm (1/2 in.), minimum 4 ply.

b. Deflection of the substrate systems shall not exceed 1/240 times the span.

c. The substrate shall be flat within 6.4 mm (1/4 in) in a 1.2 m (4 ft) radius.

d. The slope of inclined surfaces shall not be less than 6:12, and the length shall not exceed 305 mm (12 in).

e. The length of inclined surfaces shall not exceed 305 mm (12 in.).

f. Expansion Joints:

1) As a minimum, expansion joints are required at the following locations:
   (i) Where expansion joints occur in the substrate system
   (ii) Where building expansion joints occur.
   (iii) At floor lines of buildings where significant movement is expected
   (iv) Where the EIFS abuts dissimilar materials
   (v) Where the substrate changes
   (vi) In continuous elevations at intervals not exceeding 23 m (75 ft) measured horizontally.
   (vii) Where significant structural movement occurs such as changes in roofline, building shape or structural system.

g. Terminations

1) 1) The system shall be held back from adjoining materials around penetrations such as windows, doors, and mechanical equipment a minimum of 19 mm (3/4 in) for sealant application.

2) 2) The system shall be terminated a minimum of 200 mm (8 in) above finished grade.

h. Sealants

1) Comply with section 07900.

2) Shall be compatible with the EIFS materials and approved by EIFS manufacturer.

3) Sealant backer rod shall be closed cell.

2. Performance Requirements

a. The EIFS shall have been tested for durability as follows:

1) Abrasion Resistance: ASTM D 968; no deleterious effects after 500 liters (132 gal).

2) Absorption, Freeze-Thaw: 60 cycles, soak at 20 °C (68 °F) for four days, then –10 °C (14 °F) for two hours, then 20 °C (68 °F) for two hours; no checking, cracking, or splitting.

3) Accelerated Weathering: ASTM G 23 (Federal Test Standard 141A Method 6151); 2000 hours. No deterioration.

4) Mildew Resistance: Mil Standard 810B; passes.

5) Moisture Resistance: ASTM D 2247 (Federal Test Standard 141A Method 6201); no deleterious effects after 14 days.

6) Salt Spray Resistance: ASTM B 117 Federal Test Standard 141A Method 6061); 5% concentration for 300 hours. No deleterious effects.

7) Air Leakage: ASTM E 283; less than 0.301 l/min/m2 (.001 cfm/ft2) classified as a Type III air barrier as defined by the National Research Council of Canada.

8) Water Penetration: ASTM E 331; no water penetration to the inner most surface of the test specimen.

9) Water Vapor Transmission: ASTM E 96 Procedure B; Standard lamina: 10 g/hr•m2 (14 gr/hr•ft2).

b. The EIFS shall have been tested for structural performance as follows:

1) Tensile Bond Strength: ASTM C 297; minimum 132 kPa (19.1 psi); failure in the substrate or insulation board.

2) Full Scale Structural Tests: ASTM E 330; minimum failure load under positive or negative load of 4.3 kPa (90 psf) unless otherwise specified; substrate failure.

3) Impact Resistance: In accordance with EIMA Standard 101.86. Refer to table below:

c. The EIFS shall have been tested for fire performance as follows:

1) Flame Spread - ASTM E 84:

(i) The EPS insulation board shall have a Flame Spread index not exceeding 25 and a Smoke Developed index not exceeding 450.

(ii) The adhesives and coatings shall have a Flame Spread index not exceeding 20 and a Smoke Developed index not exceeding 10.

2) ASTM E 108 (Modified) Full Scale Fire Test; passed.

3) ASTM E 119 One- and Two-Hour Assemblies.

4) UBC 26-9 Intermediate Scale Multi-Story Test (ISMA); passed.

5) Ignitability Characteristics: BOCA National Building Code Radiant Heat Exposure Test of Exterior Wall Assemblies; passed.

Reinforcing Mesh/Weight	EIMA Impact Class.	EIMA Impact Range		Impact Test Results	
g/m^2 (oz/yd^2)		Joules	(in-lbs)	Joules	(in-lbs)
Standard 146 (4.3)	Level 1	3-6	(25-49)	4	(36)
Medium 203 (6)	Level 2	6-10	(50-89)	6	(56)
High 407 (12)	Level 3	10-17	(90-150)	12	(108)
Ultra High 509 (15)	Level 4	>17	(>150)	18	(162)
Ultra High 695 (20.5)	Level 4	>17	(>150)	40	(352)

1.3 SUBMITTALS

A. Product Data: Submit to the owner/architect the Manufacturer's product data describing the products, which will be used on the project.

B. Samples: Submit to the owner/architect two (2) samples of the EIFS for each finish, texture and color to be used on the project. Samples shall be of sufficient size to accurately represent each color and texture being utilized on the project.

C. Test Reports: Submit to the owner/architect copies of selected test reports verifying the performance of the EIFS.

1.4 QUALITY ASSURANCE

A. Qualifications

1. System Manufacturers:
   a. Dryvit Systems, Inc.
   b. Senergy.
   c. STO Corp.
2. Material shall be manufactured at a facility covered by a current ISO 9001 certification. Certification of the facility shall be done by a registrar accredited by the American National Standards Institute, Registrar Accreditation Board (ANSI-RAB).
3. Contractor: Shall be knowledgeable, experienced and competent in the installation of Exterior Insulation and Finish Systems. Additionally, the contractor shall possess a current Contractor Certificate issued by manufacturer.
4. Insulation Board Manufacturer: Approved by EIFS manufacturer.

B. Mock-Up

1. Provide the Owner/Architect with a mock-up for approval prior to beginning work.
2. The mock-up shall be of suitable size as required to accurately represent each color and texture to be utilized on the project.
3. The mock-up shall be prepared with the same products, tools, equipment and techniques required for the actual applications. The finish used shall be from the same batch as that being used for the project.
4. The approved mock-up shall be available and maintained at the jobsite.

1.5 DELIVERY, STORAGE AND HANDLING

A. All materials shall be delivered to the job site in the original, unopened packages with labels intact. Questionable materials shall not be used.

B. Minimum storage temperature shall be 7°C (45°F).

C. Protect all products from weather and direct sunlight.

1.6 PROJECT CONDITIONS

A. Application of wet materials shall not take place during inclement weather unless appropriate protection is provided. Protect materials from inclement weather until they are completely dry.

B. Application of wet materials shall be at a minimum ambient temperature of 7°C (45°F), or as recommended by manufacturer, depending on product, and rising. These temperatures shall be maintained for a minimum of 24 hours thereafter, or until completely dry.

1.7 SEQUENCING AND SCHEDULING

A. Installation of the EIFS shall be coordinated with other construction trades.

1.8 WARRANTY

B. Provide a written ten (10) year moisture drainage and limited material warranty from manufacturer against defective material.

C. Provide separate warranty for workmanship from the applicator

2 PART 2 PRODUCTS

2.1 MANUFACTURER

A. All components of the EIFS shall be obtained from the manufacturer or its authorized distributors.

2.2 MATERIALS

A. Portland Cement: Type I, I-II or II, meeting ASTM C 150, white or gray in color, fresh and free of lumps.

B. Adhesives/Base Coats: Used to adhere the insulation board to the air barrier and to embed the reinforcing mesh on the face of the insulation board, shall be one of the following:

1. Cementitious: A liquid polymer based material, which is field mixed with Portland cement for use over non wood-based substrates.
2. Non-cementitious: A factory mixed, fully formulated water based adhesive for use over wood-based substrates.

C. Insulation Board: Expanded Polystyrene meeting the manufacturer's specification for Insulation Board, with the following conditions:

1. Thickness of insulation board shall be minimum 50 mm (2 in).
2. The insulation board shall be manufactured by a board supplier licensed by the manufacturer.

D. Base Coat: Compatible with EIFS insulation board and reinforcing mesh(es).

1. Cementitious: Liquid polymer based material, which is field mixed with Portland cement.
2. Non-cementitious: A factory mixed, fully formulated, water based product.

E. Coatings: Water-based, acrylic coating with integral color and/or texture.

F. Reinforcing Mesh: Shall be a balanced, open weave, glass fiber fabric treated for compatibility with other system materials. Note: Reinforcing meshes are classified by impact resistance and specified by weight and tensile strength as listed in Section 1.02.A.2.b.3.

G. Finish: Shall be the type, color and texture as selected by the Owner/Architect from full range of manufacturer's finishes.

3 PART 3 EXECUTION

3.1 EXAMINATION

A. Prior to installation of the EIFS, the Contractor shall verify that the substrate:

1. Is of an acceptable type.
2. Is flat within 6.4 mm (1/4 in) in a 1.2 m (4 ft) radius.
3. Is sound, connections are tight, there are no surface voids, projections, or other conditions that may interfere with the EIFS installation.
4. The Contractor shall notify the General Contractor, and Architect/Owner of all discrepancies.
5. Prior to the installation of the EIFS, ensure that all needed flashings and other waterproofing details have been completed, if such completion is required prior to the EIFS application.

3.2 PREPARATION

A. Preparation:

1. The substrate shall be prepared as to be free of foreign materials such as oil, dust, dirt, form-release agents, efflorescence, paint, wax, water repellants, moisture, frost, and any other condition that may inhibit adhesion.

B. Protection:

1. The EIFS materials shall be protected by permanent or temporary means from weather and other damage prior to, during, and following application until dry.
2. Protect adjoining work and property during EIFS installation.

3.3 INSTALLATION

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

B. The overall minimum base coat thickness shall be sufficient to fully embed the mesh. The recommended method is to apply the base coat in two (2) passes.

C. EIFS surfaces in contact with sealant shall be coated with manufacturer's recommended coating. Sealant shall not be applied directly to textured finishes or base coat surfaces.

3.4 FIELD QUALITY CONTROL

A. The Contractor shall be responsible for the proper application of the EIFS.

3.5 CLEANING

A. All excess EIFS materials shall be removed from the job site by the contractor in accordance with contract provisions and as required by applicable law.

B. All surrounding areas, where the EIFS has been applied, shall be left free of debris and foreign substances resulting from the Contractor's work.

3.6 PROTECTION

A. The EIFS shall be protected from weather and other damage until permanent protection in the form of flashings, sealants, etc. are installed.

END OF SECTION

SECTION 07242

EXTERIOR INSULATION AND FINISH DRAINAGE SYSTEM CLASS PB

1 PART 1 GENERAL

1.1 SUMMARY

A. This section is based on the following proprietary system to establish performance and appearance characteristics and quality standards. Equivalent products of other manufacturers may be considered as judged solely by Architect:

1. Dryvit Outsulation MD System.

1.2 SYSTEM DESCRIPTION

A. The Dryvit Outsulation MD System is an Exterior Insulation and Finish System (EIFS), Class PB, utilizing a cavity wall concept with capability for moisture drainage. The System consists of a secondary weather resistive barrier, adhesive, grooved expanded polystyrene insulation board, internal vinyl tracks, vent, starter strip, base coat, reinforcing mesh, and finish.

1. Design Requirements:

a. Acceptable Substrates include:

1) Exterior Grade Gypsum Sheathing meeting ASTM C 79 requirements for water resistant core or Type X core at the time of application.
2) Silicone treated gypsum core sheathing surfaced with inorganic fiberglass mats meeting ASTM C 1177.
3) Unglazed brick, cement plaster, concrete or concrete masonry.

b. Deflection of the substrate systems shall not exceed 1/240 times the span.

c. The substrate shall be flat within 6.4 mm (1/4 in) in a 1.2 m (4 ft) radius.

d. The slope of inclined surfaces shall not be less than 6:12, and the length shall not exceed 305 mm (12 in).

e. Expansion Joints:

1) As a minimum, expansion joints are required at the following locations:
(i) Where expansion joints occur in the substrate system
(ii) Where building expansion joints occur.
(iii) At floor lines of buildings where significant movement is expected
(iv) Where the EIFS abuts dissimilar materials
(v) Where the substrate changes
(vi) In continuous elevations at intervals not exceeding 23 m (75 ft) measured horizontally.
(vii) Where significant structural movement occurs such as changes in roofline, building shape or structural system.

f. Terminations

1) 1) The system shall be held back from adjoining materials around penetrations such as windows, doors, and mechanical equipment a minimum of 19 mm (3/4 in) for sealant application.

2) 2) The system shall be terminated a minimum of 200 mm (8 in) above finished grade.

g. Sealants

1) Comply with section 07900.

2) Shall be compatible with the EIFS materials and approved by EIFS manufacturer.

3) Sealant backer rod shall be closed cell.

2. Performance Requirements

a. The EIFS shall have been tested for durability as follows:

1) Abrasion Resistance: ASTM D 968; no deleterious effects after 500 liters (132 gal).

2) Absorption, Freeze-Thaw: 60 cycles, soak at 20 °C (68 °F) for four days, then –10 °C (14 °F) for two hours, then 20 °C (68 °F) for two hours; no checking, cracking, or splitting.

3) Accelerated Weathering: ASTM G 23 (Federal Test Standard 141A Method 6151); 2000 hours. No deterioration.

4) Mildew Resistance: Mil Standard 810B; passes.

5) Moisture Resistance: ASTM D 2247 (Federal Test Standard 141A Method 6201); no deleterious effects after 14 days.

6) Salt Spray Resistance: ASTM B 117 Federal Test Standard 141A Method 6061); 5% concentration for 300 hours. No deleterious effects.

7) Air Leakage: ASTM E 283; less than 0.301 l/min/m2 (.001 cfm/ft2) classified as a Type III air barrier as defined by the National Research Council of Canada.

8) Water Penetration: ASTM E 331; no water penetration to the inner most surface of the test specimen.

9) Moisture Drainage Efficiency: Modified ASTM E 331, 95% efficiency.

10) Water Vapor Transmission: ASTM E 96 Procedure B; Standard lamina: 10 g/hr•m2 (14 gr/hr•ft2).

b. The EIFS shall have been tested for structural performance as follows:

1) Tensile Bond Strength: ASTM C 297

(i) Backstop to exterior grade gypsum sheathing: 67.7 kPa (9.1 psi), sheathing facer failure.

(ii) Backstop to Dens Glass Gold: 198.6 kPa (28.8 psi), sheathing facer failure.

(iii) Primus to Backstop: Minimum 86.9 kPa (12.6 psi).

(iv) Genesis to Backstop: Minimum 104 kPa (15.1 psi).

2) Full Scale Structural Tests: ASTM E 330; minimum failure load under positive or negative load of4.3 kPa (90 psf) unless otherwise specified; substrate failure.

3) Impact Resistance: In accordance with EIMA Standard 101.86. Refer to table below:

c. The EIFS shall have been tested for fire performance as follows:

1) Flame Spread - ASTM E 84:

(i) The EPS insulation board shall have a Flame Spread index not exceeding 25 and a Smoke Developed index not exceeding 450.

(ii) The adhesives and coatings shall have a Flame Spread index not exceeding 20 and a Smoke Developed index not exceeding 10.

2) ASTM E 108 (Modified) Full Scale Fire Test; passed.

3) UBC 26-9 Intermediate Scale Multi-Story Test (ISMA); passed.

4) Ignitability Characteristics: BOCA National Building Code Radiant Heat Exposure Test of Exterior Wall Assemblies; passed.

Reinforcing Mesh/Weight	EIMA Impact Class.	EIMA Impact Range		Impact Test Results	
g/m^2 (oz/yd^2)		Joules	(in-lbs)	Joules	(in-lbs)
Standard™ - 146 (4.3)	Level 1	3-6	(25-49)	4	(36)
Standard Plus™ - 203 (6)	Level 2	6-10	(50-89)	6	(56)
Intermediate® - 407 (12)	Level 3	10-17	(90-150)	12	(108)
Panzer® 15 * - 509 (15)	Level 4	>17	(>150)	18	(162)
Panzer 20 * - 695 (20.5)	Level 4	>17	(>150)	40	(352)
Detail® Short Rolls - 146	n/a	n/a	n/a	n/a	n/a
Corner Mesh - 244 (7.2)	n/a	n/a	n/a	n/a	n/a

* Shall be used in conjunction with Standard Mesh

1.3 SUBMITTALS

A. Product Data: Submit to the Owner/Architect the Manufacturer's product data describing the EIFS products, which will be used on the project.

B. Samples: Submit to the Owner/Architect two (2) samples of the EIFS for each finish, texture and color to be used on the project. Samples shall be of sufficient size to accurately represent each color and texture being utilized on the project.

C. Test Reports: Submit to the Owner/Architect copies of selected test reports verifying the performance of the EIFS.

1.4 QUALITY ASSURANCE

A. Qualifications

1. System Manufacturers:
   a. Dryvit Systems, Inc.
   b. Senergy.
   c. STO Corp.
2. Material shall be manufactured at a facility covered by a current ISO 9001 certification. Certification of the facility shall be done by a registrar accredited by the American National Standards Institute, Registrar Accreditation Board (ANSI-RAB).
3. Contractor: Shall be knowledgeable, experienced and competent in the installation of Exterior Insulation and Finish Systems. Additionally, the contractor shall possess a current Contractor Certificate issued by manufacturer.
4. Insulation Board Manufacturer: Approved by EIFS manufacturer.

B. Mock-Up

1. Provide the Owner/Architect with a mock-up for approval prior to beginning work.
2. The mock-up shall be of suitable size as required to accurately represent each color and texture to be utilized on the project.
3. The mock-up shall be prepared with the same products, tools, equipment and techniques required for the actual applications. The finish used shall be from the same batch as that being used for the project.
4. The approved mock-up shall be available and maintained at the jobsite.

1.5 DELIVERY, STORAGE AND HANDLING

A. All materials shall be delivered to the job site in the original, unopened packages with labels intact. Questionable materials shall not be used.

B. Minimum storage temperature shall be 7°C (45°F).

C. Protect all products from weather and direct sunlight.

1.6 PROJECT CONDITIONS

A. Application of wet materials shall not take place during inclement weather unless appropriate protection is provided. Protect materials from inclement weather until they are completely dry.

B. Application of wet materials shall be at a minimum ambient temperature of 7 °C (45 °F), or as recommended by manufacturer, depending on product, and rising. These temperatures shall be maintained for a minimum of 24 hours thereafter, or until completely dry.

1.7 SEQUENCING AND SCHEDULING

A. Installation of the EIFS shall be coordinated with other construction trades.

1.8 WARRANTY

B. Provide a written ten (10) year moisture drainage and limited material warranty from manufacturer against defective material.

C. Provide separate warranty for workmanship from the applicator

2 PART 2 PRODUCTS

2.1 MANUFACTURER

A. All components of the EIFS shall be obtained from the manufacturer or its authorized distributors.

2.2 MATERIALS

A. Air/Weather Barrier: Shall provide an air and secondary weather barrier for the substrates listed in Section 1.02.1.a, and include the following components:

1. Backstop: A 100% acrylic product, which is field mixed with Portland cement in a 1:1 ratio by weight.
2. Grid Tape: An open weave fiberglass mesh tape with pressure sensitive adhesive.
3. Flashing Tape: A high density, polyethylene backed, tape with a rubberized asphalt adhesive.
4. Flashing Tape Surface Conditioner: A water-based surface conditioner and adhesion promoter for the Dryvit Flashing Tape.

B. Adhesives/Base Coats: Used to adhere the insulation board to the air barrier and to embed the reinforcing mesh on the face of the insulation board, shall be one of the following:

1. Cementitious: A fiber-reinforced, acrylic modified product, which is field mixed with Portland cement in a 1:1 ratio.
2. Non-cementitious: A dry mix, polymer-based, fiber-reinforced product, which is field mixed with water.
3. Primus: An acrylic polymer-based product, which is field mixed with Portland cement in a 1:1 ratio.

C. Insulation Board: Expanded Polystyrene meeting the manufacturer's specification for Insulation Board, with the following conditions:

1. Thickness of insulation board shall be minimum 50 mm (2 in).
2. The backside of the insulation board shall have 6 mm x 25 mm (1/4 in x 1 in) grooves running vertically and spaced 305 mm (12 in) on center.
3. The insulation board shall be manufactured by a board supplier licensed by the manufacturer.

D. Insulation Board Closure Blocks: Expanded Polystyrene meeting the manufacturer's specifications for Insulation Board. The Closure Blocks shall measure a minimum of 0.15 m (6 in) in height.

E. Starter Strip: Expanded Polystyrene meeting the manufacturer's specification for Insulation Board. The Starter Strip shall measure 0.15 m (6 in) in height and configured to receive the Track

F. Vent Assembly: A formed aggregate matrix material encased in a piece of insulation board, which provides drainage capability.

G. Track: A "J" shaped track complying with ASTM D 1784 and ASTM C 1063 located above the Starter Strip, at the heads of all penetrations.

H. Vent Track: A "J" shaped track complying with ASTM D 1784 and ASTM C 1063 containing a slot for drainage and located above the Vent Assembly, along the base of walls.

I. Adhesive: A moisture cure urethane-based adhesive used to attach the Track and Vent Track to the Backstop.

J. Reinforcing Mesh: Shall be a balanced, open weave, glass fiber fabric treated for compatibility with other system materials. Note: Reinforcing meshes are classified by impact resistance and specified by weight and tensile strength as listed in Section 1.02.A.2.b.3.

K. Finish: Shall be the type, color and texture as selected by the Owner/Architect from full range of manufacturer's finishes.

3 PART 3 EXECUTION

3.1 EXAMINATION

A. Prior to installation of the EIFS, the Contractor shall verify that the substrate:

1. Is of an acceptable type.
2. Is flat within 6.4 mm (1/4 in) in a 1.2 m (4 ft) radius.
3. Is sound, connections are tight, there are no surface voids, projections, or other conditions that may interfere with the EIFS installation.
4. The Contractor shall notify the General Contractor, and/or Architect and/or owner of all discrepancies.
5. Prior to the installation of the EIFS, the Architect, or General Contractor shall insure that all needed flashings and other waterproofing details have been completed, if such completion is required prior to the EIFS application.

3.2 PREPARATION

A. Preparation:

1. The substrate shall be prepared as to be free of foreign materials such as oil, dust, dirt, form-release agents, efflorescence, paint, wax, water repellants, moisture, frost, and any other condition that may inhibit adhesion.

B. Protection:

1. The EIFS materials shall be protected by permanent or temporary means from weather and other damage prior to, during, and following application until dry.
2. Protect adjoining work and property during EIFS installation.

3.3 INSTALLATION

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

B. The overall minimum base coat thickness shall be sufficient to fully embed the mesh. The recommended method is to apply the base coat in two (2) passes.

C. EIFS surfaces in contact with sealant shall be coated with manufacturer's recommended coating. Sealant shall not be applied directly to textured finishes or base coat surfaces.

3.4 FIELD QUALITY CONTROL

A. The Contractor shall be responsible for the proper application of the EIFS.

3.5 CLEANING

A. All excess EIFS materials shall be removed from the job site by the contractor in accordance with contract provisions and as required by applicable law.

B. All surrounding areas, where the EIFS has been applied, shall be left free of debris and foreign substances resulting from the Contractor's work.

3.6 PROTECTION

A. The EIFS shall be protected from weather and other damage until permanent protection in the form of flashings, sealants, etc. are installed.

END OF SECTION

SECTION 07530

ELASTOMERIC SHEET ROOFING

1 PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract including General and Supplementary Conditions and Division 1 specification sections, apply to work of this section.

1.2 SECTION INCLUDES

A. Elastomeric Sheet Membrane Conventional Roofing System complete with fully adhered roofing membrane, tapered insulation, expansion joints, flashings and accessories.

1.3 SYSTEM DESCRIPTION

A. Elastomeric sheet membrane roof assembly including insulation and accessories to conform to requirements for a UL Class A fire rated assembly, and FM I 90 requirements for wind uplift resistance.

B. Wind Speed Rating: Provide roof system capable of meeting requirements of International Building Code for wind speed of 100 mph.

1.4 SUBMITTALS

A. Product Data: Provide characteristics on membrane materials, flashing materials, insulation, vapor retarders and walkway pads.

B. Shop Drawings: Provide shop drawings of installation details recommended by membrane manufacturer, and of tapered insulation layout.

C. Warranty: Provide warranty signed by roof membrane manufacturer and installer.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with UL 790 (Underwriters Laboratories Inc.) Class A Fire Hazard Classification. FM 4470 (Factory Mutual Engineering Corporation) - Roof assembly Classification wind uplift requirement of I-90, FM Construction Bulletin 1-28, Class 1 A Construction.

B. Owner will engage an independent roofing consultant to monitor and inspect the roofing installation.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Do not install membrane during inclement weather or when air temperature may fall below 40 degrees F, or as required by manufacturer's instructions.

1.7 WARRANTY

A. Provide fifteen (15) year total system warranty under provisions of Section 01001.

2 PART 2 PRODUCTS

2.1 MEMBRANE MATERIALS

A. Manufacturers:
1. Carlisle Syntec Systems.
2. Celotex Corp.
3. Dunlop Construction Products Co.
4. Firestone Building Products Co.
5. Goodyear Tire and Rubber Co.
6. Schuller Roofing Systems.

B. Membrane: Reinforced EPDM; 0.060 inch thick.

C. Seaming Materials: As recommended by membrane manufacturer.

2.2 FASTENING

A. Insulation Adhesive: Type recommended by insulation manufacturer.

B. Mechanical Fasteners: Manufacturer's standard type for application intended.

2.3 INSULATION MATERIALS

A. Manufacturers:

1. As approved by roof membrane manufacturer.

B. Insulation: ASTM C 1289-95 Type II, polyisocyanurate closed cell foam core with manufacturer's standard facing; thicknesses as indicated, square edges, R value of 6.0 per inch thickness.

C. Separation Sheet: As recommended by roofing membrane manufacturer for application intended.

D. Insulation Adhesive: As recommended by insulation manufacturer.

2.4 ACCESSORIES

A. Flexible Flashings: Same materials as membrane; black color; manufactured by roofing membrane manufacturer.

B. Prefabricated Control or Expansion Joint Flashing: Sheet EPDM with foam filler, and metal edge flashings.

C. Fiber Cant Strips: Asphalt impregnated wood fiberboard.

D. Roofing Fasteners: Galvanized or non-ferrous type as recommended by membrane manufacturer.

E. Sealants: As recommended by membrane manufacturer.

F. Walkway Pads: As recommended by membrane manufacturer

G. Fascia System: Two part prefinished fascia system as indicated with extruded aluminum anchors and snap on cover, 24 ga. steel with Kynar finish, as recommended by membrane manufacturer.

3 PART 3 EXECUTION

3.1 COORDINATION

A. Prior to beginning roofing work, conduct preconstruction conference with all affected trades and roof membrane manufacturer's representative.

B. At a minimum, discuss procedures for removal of existing roofing, temporary protection of building and installation of new roofing system.

C. Document conference and distribute copies to all parties, including Owner and Architect.

3.2 REMOVALS

A. Remove complete existing roofing system, including ballast, membrane, insulation, fascias, flashings and accessories.

B. Provide temporary protection from water infiltration to building during roofing operations.

3.3 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work; deck is clean and smooth, free of snow or ice; properly sloped to drains.

B. Verify roof openings, curbs, and protrusions through roof are solidly set; wood cant strips and reglets are in place.

3.4 PREPARATION

A. Fill concrete surface honeycomb and variations with latex filler.

3.5 INSULATION APPLICATION

A. Embed into insulation adhesive on deck in accordance with insulation manufacturer's instructions.

B. Lay second and any succeeding layers of insulation with joints staggered from previous layer.

C. Minimum Total Insulation Thickness: As required to achieve an insulation R value of 34

D. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

3.6 MEMBRANE APPLICATION

A. Apply membrane in strict accordance with manufacturer's instructions.

B. Roll out membrane. Work out air bubbles, wrinkles, and fishmouths. Adhere fully to substrate.

C. Overlap edges and ends and solvent seal watertight.

D. Seal membrane to adjoining surfaces.

E. Shingle joints on sloped substrate in direction of drainage. Apply joint sealant.

F. Continue membrane up vertical surfaces minimum 8 inches unless otherwise noted. Reinforce membrane with multiple thickness of membrane material over joints.

G. Seal items penetrating membrane with counterflashing membrane material. Install membrane flashings. Seal watertight to membrane.

H. Place walkway units at locations noted.

3.7 FLASHINGS AND ACCESSORIES

A. Apply flexible flashings to seal membrane to vertical elements.

B. Install prefabricated roofing expansion control joints to isolate roof into areas as indicated in accordance with manufacturer's instructions.

C. Coordinate installation of roof drains sumps and related flashings.

D. Seal flashings and flanges of items penetrating membrane.

E. Install fascias in accordance with manufacturer's instructions.

F. Replace existing roof drain domes with cast aluminum domes.

3.8 INSPECTION

A. Upon completion of roofing work, conduct inspection of roof installation with manufacturer's representative and Owner's roofing consultant. Correct any deficiencies noted and have roof reinspected.

END OF SECTION

SECTION 07820

METAL FRAMED SKYLIGHT STRUCTURES

1 PART 1 GENERAL

1.1 SECTION INCLUDES

A. Metal framed skylight structure (greenhouse type) with vertical and sloped glazing portions in lean-to shape.

B. Engineering, design, drafting and structural calculations of the entire skylight system.

C. Fabrication, installation, and warranty of the skylight assembly.

D. Skylight glass and glazing materials.

E. Skylight related flashings, anchors, brackets and insulation.

F. Metal finishes.

G. Work does not include support curbs, counter-flashing, wood blocking, final cleaning nor protection after installation.

1.2 RELATED SECTIONS

A. Section 01001: Basic Requirements

B. Section 07900: Sealants

1.3 REFERENCES

A. The Aluminum Association, Inc. (AA)

1. DAF-45: Designation System for Aluminum Finishes.
2. SAS-30: Specification for Aluminum Structures.

B. American Architectural Manufacturers Association (AAMA):

1. 501.1: Standard Test Method for Metal Curtain Walls for Water Penetration Using Dynamic Pressure.
2. 501.2: Field Check of Metal Curtain Walls for Water Leakage.
3. 606.1: Voluntary Guide Specification and Inspection Methods for Integral Color Anodic Finishes for Architectural Aluminum.
4. 809.2: Voluntary Specification for Non-Drying Sealants.

C. American National Standards Institute, Inc. (ANSI)

1. A58.1: Building Code Requirements for Minimum Design Loads in Building and Other Structures.
2. Z97.1: American National Standard Performance Specifications and Methods of Test for Safety Glazing Materials Used in Buildings.

D. American Society of Testing and Materials (ASTM)

1. A 193: Specification for Ally-Steel and Stainless Steel Bolting Materials for High Temperature Service.
2. A 307: Specification for Carbon Steel Externally Threaded Standard Fasteners.
3. B 209: Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
4. B 211: Specification for Aluminum and Aluminum-Alloy Bar, Rod, and Wire.
5. B 221: Specification for Aluminum and Aluminum-Alloy Extruded Bar, Rod, Wire, Shape, and Tube.
6. C 1036: Specification for Flat Glass.
7. C 1048: Specification for Heat-Treated Flat Glass.
8. E 283: Test Method for Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors.
9. E 330: Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
10. E 331: Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
11. E 773: Test Method for Seal Durability of Sealed Insulating Glass Units.
12. E 774: Specification for Sealed Insulating Glass Units.

E. Flat Glass Manufacture's Association (FGMA): Glazing Manual.

F. Insulating Glass Certification Council (IGCC): Classification of Insulating Glass Units.

G. U.S. Consumer Product Safety Commission (CPSC): 16 CFR 1202 Architectural Glazing Standards and Related Materials.

1.4 SYSTEM DESCRIPTION

A. Design Requirements:

1. Extruded aluminum framing members shall have an integral gutter system for positive drainage of condensation.
2. The skylight system shall utilize flush glazed exterior joints on all horizontal purlins.
3. Rafters and mullions shall employ a series of alternate serrations as a screw slot for the attachment of exterior retainer bars.
4. The framing system shall utilize extruded hinged components at the sill, hip and/or ridge locations.

B. Performance Requirements:

1. Structural members shall be designed in accordance with ANSI A58.1 and AA SAS-30. They shall be of sufficient size to support all dead loads as well as the following load requirements:

   a. 46 PSF LIVE LOAD
   b. 46 PSF SNOW LOAD
   c. 42 PSF POSITIVE WIND LOAD
   d. 42 PSF NEGATIVE WIND LOAD

2. The deflection of any structural member in the plane normal to glass surface when subjected to the specified loads shall not exceed L/175 of it clear span. Deflection of any framing member shall not exceed 3/4" within any glass panel.

3. Parallel to glazing plane deflection of a framing member when carrying full design load shall not exceed an amount reducing the glazing unit bite below 75% of the design dimension and shall not reduce the edge clearance to less than 1/8" nor shall it damage or impair the function of any joint seals.

4. Provide for expansion and contraction of components resulting from an ambient temperature change of 180 deg. F. (+/- 90 deg. F.) without causing buckling, excessive stresses on glazing, structural elements or fasteners, failure of seals, reduction of performance or other detrimental effects.

5. No water penetration shall occur when system is tested in accordance with [ASTM E 331 using a differential static air pressure of 20% of inward acting (positive) design wind load, but not less than 6.24psf. nor more than 15 psf.]. Water penetration is defined as the appearance of uncontrolled water other than condensation occurring on the interior surface of any part of the skylight.

6. Air infiltration shall be limited to not more than 0.01 cfm. per square ft. of assembly when tested in accordance with ASTM E 283 at 6.24 psf. static air pressure difference.

7. Where permitted by code, a 1/3 increase in allowable stress for wind or seismic load shall be acceptable, but not in combination with any reduction applied to combined loads. In no case shall the allowable values exceed the yield stress.

8. Assume thermal breaks to have no ability to transfer shear stress for composite action of flexural members. Assume elements joined by a thermal break to act separately.

1.5 SUBMITTALS

A. Submit one set of sepias and 3 copies of shop drawings showing plans, elevations and details required to fully describe the skylight construction for Architect's review and approval before starting fabrication.

B. Submit structural calculations prepared in accordance with ANSI A58.1 and with AA SAS-30, bearing the seal of a structural engineer qualified in the design of self supporting skylight assemblies and licensed in the jurisdiction where the project is located.

C. Submit results of infiltration tests as described in section 1.04 B (5) & (6) stated above.

D. Submit 12" X 12" samples of each type of glass.

E. Submit manufacturer's samples of each type of sealant.

F. Submit 6" long samples of principal extrusions.

G. Submit manufacturers sample of each type of aluminum finish.

H. Submit 2 sets of as-built drawings and maintenance and cleaning instructions upon completion of the skylight installation.

1.6 QUALITY ASSURANCE

A. Work of this section is to be designed, fabricated and installed by a company with a minimum of five (5) years of experience in work of similar scope and magnitude.

1.7 WARRANTY

A. Submit a written warranty, executed by the skylight manufacturer, certifying that the skylight is to be free of defects in design, materials and construction, and that the skylight is to be free of water leakage for a period of ten (10) years from the date of substantial completion.

B. Glass is to be warranted for ten (5) years against defective materials, seal failure and defects in manufacturing and for five (5) years against delamination according to the glass manufacturer's warranties.

C. Warrant finishes for a period of five (5) years against peeling, checking, cracking, flaking or blistering according to the coating manufacturer's standard warranty.

D. Warrant structural sealants for a period of ten (10) years per manufacturer's standard warranties.

2 PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on the System 2000^{tm} skylight framing system by Architectural Skylight Co., Inc. Waterboro, Maine USA.

B. Substitute manufacturers will be considered under the provisions of section 01001 and when the following conditions have been met:

1. Substitute manufacturers prequalify in writing no later than ten (10) days prior to the bid closing date.
2. Skylight details are submitted to the Architect.
3. Complete specifications and structural calculations showing member sizes design loads and loads applied the supports are submitted for review.
4. Submit certification that the substitute manufacturer has successfully performed in the design, manufacture and installation of skylight projects similar in scope over the previous five years.
5. Provide proof of financial capability.

2.2 MATERIALS

A. Principal framing members: Extruded aluminum, ASTM B 221 6063-T5 or -T6 alloy and temper, 0.109" minimum thickness.

B. Snap on covers and non-supporting trim: Extruded aluminum, ASTM B 221 6063-T6 alloy and temper, .060" minimum thickness.

C. Structural formed metal members shall be ASTM B 209 5052-H34 or ASTM B 221 6061-T6 aluminum.

D. Gaskets shall be continuous and shall be an extruded E.P.D.M., silicone compatible rubber, shore A hardness of 70 (+/- 5), tensile strength: 950 PSI, % of elongation: 200 min. compression set: 30% max., color: black

E. Setting blocks shall be a silicone compatible rubber, shore A hardness: 85 (+/- 5), color: black.

F. Fasteners:

1. Fasteners for attachment of exterior retainer bars shall be ASTM A 193 B8 300 series stainless steel screws.

2. Fasteners used to connect framing members shall be ASTM A 193 B8 300 series stainless steel or ASTM B 211 2024-T4 aluminum.

3. Fasteners used to anchor the skylight to the support structure shall be ASTM A 193 B8 300 series stainless steel screws.

G. Flashing shall be ASTM B 209 5005-H34 or 5052-H34 aluminum, 0.030" minimum thickness.

H. Exposed metal finish shall comply with the following:

1. Anodized finishes:

a. Architectural Class I Integral Color Anodic Coating 0.7 mil and greater in thickness, AAMA606.1, Type AA-M10C22A42. Color: dark bronze.

I. Sealants:

1. Structural flush glazed joints shall be a higher performance silicone sealant applied in accordance with the sealant manufacturer's instructions. Color: black.
2. Weatherseal joints shall be a neutral cure medium modulus silicone sealant applied in accordance with the sealant manufacturer's instructions. Color: black.
3. Unexposed, low movement flashing joints shall be non-drying, non-skinning, non-oxidizing, non-bleeding curtain wall sealant meeting AAMA 809.2.

J. Glass:

1. Standard certification requirements:
   a. Float Glass: ASTM C 1036
   b. Heat Treated Glass: ASTM C 1048, with surface stress of 5000 psi, +/- 1500 psi.
   c. Laminated Glass: Two lites of equal thickness bonded with a polyvinyl butyral (PVB) interlayer, meeting criteria of ANSI Z97.1-1984 and CPSC 16 CFR 1201 for safety glazing. Provide a PVB interlayer of [0.030" or 0.060"] thickness
   d. Insulating Glass: CBA rated by the Insulating Glass Certification Council when tested in accordance with ASTM E 773 and E 774. Dual edge seals with silicone secondary seal. Exterior lite is to be heat strengthened; interior lite to be laminated glass.
2. Performance Requirements:
   a. Probability of breakage not to exceed 8/1000 for vertical glass and 1/1000 for sloped glass upon first application of design pressures or due to anticipated thermal stresses.
3. Glazing Unit Composition: minimum 1" clear insulating glass at vertical and sloped portions.

2.3 FABRICATION

A. The skylight shall be factory fitted and assembled (where practical), piece marked and shipped knocked down for the final assembly at the jobsite.

B. All welding shall be done by the heliarc process and all exposed welds ground to minimum 100 grit finish.

C. Retainer bars shall be attached with gasketed stainless steel fasteners spaced at a maximum of 9" on center.

D. Setting blocks and spacers shall be located and sized in accordance with the FGMA Glazing Manual. At no point shall the glazing come in contact with the frame of fasteners.

E. The skylight shall have properly located condensation gutters and weepholes provided for drainage of condensation of the exterior.

3 PART 3 EXECUTION

3.1 EXAMINATION

A. Prior to installation, inspect the support and adjacent construction to verify that they are properly prepared to receive the work. Report in writing any error in the work. No work shall proceed until all errors and deviations are corrected.

3.2 PREPARATION

A. Surface contact between aluminum and dissimilar materials shall receive a protective coating of asphaltic paint or elastomeric isolator to prevent electrolytic action.

3.3 INSTALLATION

B. Install all items plumb, straight, square, level and in their elevation, plane and location, and in proper alignment with other work.

C. The skylight shall be erected and glazed by the manufacturer or an experienced installer authorized by the manufacturer familiar with the manufacturer's systems and installation procedures.

D. The skylight shall be designed to accommodate tolerances of the building structural members and clearances shown on final approved shop drawings. All parts of the erected work, when completed, shall be within the following tolerances:

1. Maximum variation from plane or location shown on final shop drawings: 1/8" per 12 ft. or 1/2" on any total length.

2. Maximum offset from true alignment between two identical members butting end to end in line: 1/32".

E. Anchorage to the structure shall be in accordance with final shop drawings. Supporting brackets shall be so designed as to provide three dimensional adjustment and accurate location of the components.

F. Sealant materials shall be used in accordance with the manufacturer's printed instructions and shall be applied by mechanics specially trained and experienced in their use. Before applying sealant, all dirt, dust moisture and all foreign mater shall be completely cleaned from surfaces it will contact. Adjoining surfaces must be masked to obtain a clean and neat appearance. Sealants shall be tooled to fill the joint and provide a smooth finished surface.

3.4 FIELD WATER TEST

A. Field test for water leakage in accordance with AAMA 5012, in areas as indicated on the contract drawings. There shall be no uncontrolled water leakage as defined in AAMA 501.

3.5 PROTECTION AND CLEANING

A. Protect all materials against damage from mechanical abuse and foreign matter during installation.

B. Remove all manufacturer's seals, labels, etc. Install metal without soiling or smudging finish. Clean glass, inside and out with cleaners recommended by the glass manufacturer at time of installation.

END OF SECTION

SECTION 07900

JOINT SEALERS

1 PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract including General and Supplementary Conditions and Division 1 specification sections, apply to work of this section.

1.2 SECTION INCLUDES

A. Sealants and joint backing.

1.3 SUBMITTALS

A. Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations and color availability.

1.4 ENVIRONMENTAL REQUIREMENTS

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

2 PART 2 PRODUCTS

2.1 SEALANTS

A. Type 1 - General Purpose Exterior Sealant: Polyurethane; ASTM C920, Grade NS, Class 25, Uses M, G, and A; single or multi- component.

1. Color as selected by Architect.
2. Applications: Use for:

a. Control, expansion, and soft joints in masonry.
b. Joints between concrete and other materials.
c. Joints between metal frames and other materials.
d. Joints in exterior insulation and finish systems.
e. Other exterior joints for which no other sealant is indicated.

B. Type 2 - Exterior Metal Lap Joint Sealant: Butyl or polyisobutylene, nondrying, non-skinning, non-curing.

1. Applications: Use for:

a. Concealed sealant bead in sheet metal work.

C. Type 3 - General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, single component, paintable.

1. Colors as selected by Architect.

2. Applications: Use for:

a. Interior wall and ceiling control joints.
b. Joints between door and window frames and wall surfaces.
c. Other interior joints for which no other type of sealant is indicated.

D. Type 4 - Acoustical Sealant: Butyl or acrylic sealant; ASTM C920, Grade NS, Class 12-1/2, Uses M and A; single component, solvent release curing, non-skinning.

1. Applications: Use for concealed locations only:

a. Sealant bead between top stud runner and structure and between bottom stud track and floor.

2.2 ACCESSORIES

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

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

C. Joint Backing: Round foam rod compatible with sealant; D1667, closed cell PVC oversized 30 to 50 percent larger than joint width.

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

3 PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify that substrate surfaces and joint openings are ready to receive work.

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

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

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

E. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

3.2 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Perform acoustical sealant application work in accordance with ASTM C919.

D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer , except where specific dimensions are indicated.

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

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

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

H. Tool joints concave shaped.

END OF SECTION

Division 8

Doors and Windows

SECTION 08210

WOOD HINGED INSWING PATIO DOORS

1 PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wood hinged patio doors.
2. Glazing.
3. Door hardware.
4. Accessories.

B. Related Sections:

1. Section 04200 - Unit Masonry: Openings in masonry.
2. Section 05400 - Cold Formed Metal Framing: Framed openings.
3. Section 06100 - Rough Carpentry: Framed openings.
4. Section 06200 - Finish Carpentry: Interior wood casing.
5. Section 07210 - Building Insulation: Batt insulation at patio door perimeter.
6. Section 07900 - Joint Sealers: Perimeter joint sealant and backer rod.
7. Section 09900 - Painting: Finishing interior wood.

1.2 REFERENCES

A. American Architectural Manufacturers Association (AAMA):

1. AAMA 603.8, Voluntary Performance Requirements and Test Procedures for Pigmented Organic Coatings on Extruded Aluminum.
2. AAMA 1303.5, Voluntary Specifications For Forced Entry Resistant Aluminum Sliding Glass Door.

B. American National Standards Institute (ANSI):

1. ANSI Z97.1, Safety Performance Specifications and Methods of Test for Safety Glazing Material Used In Buildings.

C. American Society for Testing and Materials (ASTM):

1. ASTM A 36, Specification for Structural Steel.
2. ASTM C 1036, Specification for Flat Glass.
3. ASTM C 1048, Specification for Heat Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass.
4. ASTM D 3647, Practice for Classifying Reinforced Plastic Pultruded Shapes According to Composition.
5. ASTM D 4216, Specification for Rigid Poly (Vinyl Chloride) (PVC) and Related Plastic Building Products Compounds.
6. ASTM E 90, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.
7. ASTM E 283, Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors.

8. ASTM E 330, Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
9. ASTM E 413, Classification for Rating Sound Insulation.
10. ASTM E 547, Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Cyclic Static Air Pressure Differential.
11. ASTM E 773, Test Method for Seal Durability of Sealed Insulating Glass Units.
12. ASTM E 774, Specification for Seal Durability of Sealed Insulating Glass Units.
13. ASTM F 476, Test Methods for Security of Swinging Door Assemblies.

D. Consumer Product Safety Commission (CPSC):

1. CPSC 16CFR-1201, Safety Standard for Architectural Glazing Materials.

B. National Fenestration Rating Council (NFRC)

1. NFRC 100, Procedure for Determining Fenestration Product Thermal Properties.
2. NFRC 200, Procedure for Determining Solar Heat Gain Coefficient.

F. Window & Door Manufacturers Association (WDMA):

1. AAMA/NWWDA 101/I.S. 2, Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood windows and Glass Doors..
2. WDMA Industry Standard I.S. 4, Industry Standard for Water-Repellent Preservative Treatment for Millwork.
3. WDMA Industry Standard I.S. 8, Industry Standard for Wood Swinging Patio Doors.

1.3 SYSTEM DESCRIPTION

A. Performance Requirements: Wood patio doors to comply with the minimum performance requirements specified in AAMA/NWWDA I.S 2.-97 DP40, WDMA Industry Standard I.S. 8, DP 40.

1. Air Infiltration: When tested in accordance with ASTM E 283 at a static pressure of 1.57 psf, total air infiltration to average less than or equal to 0.04 cfm per square foot of unit.
2. Water Penetration: No water penetration beyond the interior face of patio door unit when tested in accordance with ASTM E 547 at a static pressure of 6.00 psf.
3. Structural Performance: No glass breakage, damage to hardware, or permanent deformation (set) which would cause any malfunction or impair the operation of the unit, or residual deflection greater than 0.1% of stile length when tested in accordance with ASTM E 330 at a positive and negative test pressure of 60 psf.
4. Design Criteria: Design and size patio door members to withstand positive and negative loads imposed by wind to a pressure of 42 psf at midwall locations, and 53 psf at corner locations when measured in accordance with ASTM E 330. Limit deflection to L/175.
5. Thermal Performance: Fenestration U-Factor: Fenestration products shall be rated, certified and labeled in accordance with NFRC 100. U-Factors shall be as follows
   a. Residential size (38" x 82"): High-Performance™ glass 0.33; High-Performance Sun™ glass, 0.34.
6. Fenestration Solar Heat Gain Coefficient (SHGC): Fenestration products shall be rated, certified and labeled in accordance with NFRC 200. SHGC shall be as follows:
   a. Residential size (38" x 82"): High-Performance™ glass 0.27.
7. Sound Transmission Ratings: Patio doors to provide a sound transmission class (STC) of 32 when tested in accordance with ASTM E 90 and ASTM C 423.
8. Forced Entry Resistance: Patio units to comply with requirements for Grade 30 performance when tested in accordance with ASTM F 476.

1.4 SUBMITTALS

A. Product Data, Installation Instructions, Detail Drawings and Samples: Submit the following under provisions of Section 01300 - Submittals:

1. Product Data: Submit manufacturer's product literature for all products and accessories furnished.
2. Installation Instructions: Submit manufacturer's installation instruction sheets for all products and accessories furnished.
3. Detail Drawings: Submit detail drawings indicating direction of swing, active and fixed panels, location and type of glazing material, and typical jamb, head and sill details.

B. Quality Control Submittals: Submit the following under provisions of Section 01400 -Quality Control:

1. Reference List: Submit reference lists as specified under Quality Assurance article.

C. Contract Closeout Submittals: Submit the following under provisions of Section 01700 - Contract Closeout:

1. Owner's Manual: Submit bound manual clearly identified with project name, location and completion date. Identify type and size of patio door units installed. Provide recommendations for periodic inspections, care and maintenance. Identify common causes of damage with instructions for temporary patching until permanent repair can be made.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company having at least 25 years experience in the manufacture of wood patio door products. Provide a reference list of at least 3 projects of similar scale and complexity successfully completed during the past three years. Provide project names, locations, completion dates, names and telephone numbers of general contractor's and owners contact person.

B. Installer Qualifications: Company experienced in the installation of wood patio door products. Installer to provide a reference list of at least 3 projects of similar scale and complexity successfully completed during the past three years. Provide project names, locations, completion dates, names and telephone numbers of general contractor's and owners contact person.

C. Safety Glazing: Comply with safety glazing requirements of ANSI Z97.1 and CPSC 16CFR 1201.

D. Insulating Glass Units: Provide insulating glass units permanently marked with certification label of Insulating Glass Certification Council (IGCC) indicating compliance with Class CBA.

1.6 DELIVERY, STORAGE AND HANDLING

A. In addition to general delivery, storage and handling requirements specified in Section 01600, comply with the following:

1. Deliver materials to job site in sealed, unopened cartons. Protect uncartoned units from damage.
2. Identify each carton with material name, date of manufacture and lot number.
3. Store patio doors and accessories off ground, under cover, protected from weather and construction activities.

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify actual measurements for openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

B. Install patio doors in strict accordance with safety and weather conditions specified by manufacturer's product literature.

C. Extra caution must be exercised when temperature drops below 32 degrees F. and extreme care below 0 degrees F.

2 PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Andersen® Frenchwood® hinged patio door units as manufactured by Andersen Corporation, Bayport, Minnesota.

1. Color: Terratone® color.

2.2 MATERIALS

A. Wood Members: Fabricated from a wood species approved in WDMA Industry Standard I.S. 8.

B. Vinyl Cladding for Accessories: Rigid vinyl (PVC) complying with the requirements of ASTM D 4216, class 144434331111.

C. Reinforced Engineered Plastic: Comply with the requirements of ASTM D 3647.

D. Polyester Urethane Coating: High durability polyester urethane coating conforming to the requirements of AAMA 603.8.

E. Weather-stripping: Flexible Santoprene® bulb compression type with welded corners.

F. Sill Cover: Zinc chromate and Polane® coated aluminum extrusion.

G. Fastener Covers: Aluminum extrusion with urethane coating.

H. Sub-sill: Fibrex™ material.

2.3 GLAZING

A. General: Tempered insulating glass units certified through the Insulating Glass Certification Council as conforming to the requirements of IGCC Class CBA when tested in accordance with ASTM E 773 and E 774. Provide dual sealed units consisting of polyisobutylene primary seal and silicone secondary seal. Metal spacers to have bent or soldered corners. Glass to be permanently labeled as conforming to the safety glazing requirements CPSC 16 CFR 1201.

B. High-Performance™ Low Emissivity, Argon Blend Filled Insulating Glass Units:

1. Glass: Insulating glass units to consist of an inboard and outboard lite of clear, tempered glass conforming to ASTM C 1048, Type 1, Class 1, q3, Kind FT.
2. High-Performance™ LoE2 Coating: MSVD (magnetron sputtering vapor deposition) LoE2 coating applied to the No. 2 surface.
3. Filling: Fill space between glass lites with an argon gas blend to reduce heat loss.
4. Performance Characteristics for the center of glass: The following performance characteristics are based on NFRC validated spectral data files for the respective glazing. The values are for center of glass only. (See section 1.04 for whole fenestration performance values.)
   a. U-Factor: 0.28.
   b. Solar Heat Gain Coefficient (SHGC): 0.42.
   c. Visible Light Transmittance (Vtc): 72%.
   d. Ultra-Violet Transmittance (Tuv): 15%.
   e. Krochmann Damage Weighted Fading Function (Tdw): 32%.

2.4 HARDWARE

A. Hinges: Ball bearing style adjustable, captured hinge design with cover plate. Hinge to allow vertical and rack panel adjustment. Zinc die-cast adjustable, captured hinge design with ball bearing pivots with brass colored finish.

B. Locks: Steel locking mechanism consisting of a lever handle operated latch and three point deadbolt lock mechanism. Three point locking mechanism to consist of a thumb turn operated 0.787" metal deadbolt which when projected will cause two additional hook bolts to engage inactive panel.

C. Lever handle trim: Estate™ style forged brass lever handle hardware with brass escutcheon plate interior and exterior bright brass High-Performance™ bright brass finish.

2.5 JOINING SYSTEMS

A. Joining Systems:

1. Narrow Wood Fillers: Wood members treated with water repellent preservative after machining in accordance with WDMA I.S. 4.
2. Steel Reinforcement Members: 4" x 3/16" thick hot rolled steel plate conforming to ASTM A 36 with zinc plating and yellow chromate conversion coat. Predrill holes for attachment to door frames.
3. Gusset Plates: Galvanized steel plates as recommended by patio door manufacturer for specific application.
4. Fasteners: Corrosion resistant screws as provided by patio door manufacturer for fastening reinforcement members and gusset plates to wood frame. All other fasteners are provided by patio door installer.
5. Head Flashing: 8" long sheet vinyl. Color to match patio door exterior.
6. Silicone Sealant: Silicone sealant as recommended by patio door manufacturer.
7. Vinyl Trim Strips: As recommended by patio door manufacturer for each joining method used. Color to match patio door unit exterior color.

2.6 ACCESSORIES

A. Insect Screens: Provide hinged patio doors with an insect screen installed on the exterior.

1. Gliding Insect Screen Door Frame: 0.040" roll formed aluminum frame with chromate conversion coating.
2. Insect Screen Cloth: 18 x 16 glass fiber mesh, charcoal finish.

3. Frame Finish: Terratone™ color high-bake fluorocarbon finish.
4. Rollers: Insect screen doors to operate on Delrin® injection molded bottom rollers with self contained leveling adjusters engaged in sill track. Provide Delrin® injection molded, self-adjusting rollers on top rail.
5. Gliding Insect Screen Operating Handles: Polycarbonate operating handles to receive locking mechanism. Color: stone.

B. Exterior Trim:

1. Where indicated on Drawings provide vinyl sheathed plywood conforming to U.S. Product Standards P.S. 1 and rigid vinyl channels. Color to match patio door framing.
   a. Trim: Andersen® Vinyl laminated board to have 0.045" thick vinyl with smooth surface laminated with adhesive to 1/2" thick plywood.
   b. Trim Channels: Rigid vinyl extrusions supplied by patio door manufacturer for use on same product line.
2. Support Mullion Trim: 2" wide wood filler and vinyl trim strip. Color to match patio door unit exterior color.

C. Sill Extender and sill support: Zinc chromate and Polane coated aluminum extrusion.

D. Extension Jambs: Solid or veneered ponderosa pine. Pre-drilled extension jambs for application.

2.7 FABRICATION

A. Preservative Treatment: Treat wood frame and door panel wood members after machining with a water repellent preservative in accordance with WDMA I.S. 4.

B. Frame Components:

1. Attach reinforced engineered plastic frame cover to wood sub-frame.
2. In-line wash and sensitize reinforced engineered plastic frame with a solvent base conductive preparation solution.
3. Factory apply urethane coating (2.6 mil. minimum dry film thickness) to exterior exposed surfaces of sensitized reinforced engineered plastic frame cover.

C. Door Panels:

1. Stiles and Top Rails: Finger jointed and edge glued wood core 1-1/2" thick before milling. Provide solid wood edge strips, phenolic interior and exterior outer substrate, and veneered interior surface.
2. Bottom Rails: Laminated construction consisting of spliced veneer interior surface over a finger jointed and edge glued wood core with a phenolic overlay interior and exterior outer substrate.
3. Door Panel Finish:
   a. Interior: Unfinished natural exposed interior wood to receive paint or stain finish as specified in Section 09900.
   b. Exterior: Factory applied high durability urethane coating.

D. Corner Fastening: Double blind mortise and tenon joints secured with hardwood dowel and water-resistant structural adhesive.

E. Sill: Zinc chromate and Polane® coated aluminum extrusion. Aluminum sill attached to composite Fibrex™ material frame.

F. Weather-stripping: Factory applied gasket type weather-stripping to full perimeter of panels.

G. Glazing: Factory glaze with high quality glazing sealant and wood interior trim stops.

3 PART 3 EXECUTION

3.1 INSPECTION

A. Inspect opening before installation is commenced.

1. Verify rough opening or masonry opening is square and dimensions are correct. Verify sill plate is level.
2. Verify wood frame walls are dry, clean, sound and well nailed, and/or glued, free of voids and without offsets at joints. Ensure that nail heads are driven flush with all surfaces in opening and within 3" of rough opening.

3.2 PREPARATION

A. Open carton and remove patio door unit, parts and accessories. Inspect patio door. Verify that patio door unit is not damaged and all parts are included before disposing of carton.

B. Store patio door units in a safe place until installed.

C. For maximum protection, finish interior wood surfaces prior to or immediately after installation.

3.3 JOINING SYSTEMS

A. Assemble joining system where required for patio door and window combinations according to patio door manufacturer's instructions.

B. Apply corrosion resistant coating to cut ends and field drilled holes in steel reinforcement member.

C. Apply head flashing with silicone sealant at each vertical mullion head joint.

D. Attach gusset plates to rough opening as recommended by patio door manufacturer.

3.4 INSTALLATION

A. Install patio door units and accessories according to patio door manufacturer's installation instruction sheets.

B. Set units plumb, level true to line, without warp or rack in frames or panels.

C. Install batt insulation in shim space around perimeter of patio door to maintain continuity of building insulation. Do not use expanding foam insulation.

D. Extend vapor barrier to interior face of patio door frame and attach.

E. Install door hardware according to manufacturer's installation instructions. Check patio door for proper operation of locking mechanism.

F. Check door and insect screen operation. Adjust as recommended by patio door manufacturer to provide smooth operation without binding.

3.5 EXTERIOR FINISHING

A. Hold back exterior siding or other finish materials from edge of window 1/4" to allow for expansion and contraction and the installation of a proper sealant joint with backing materials.

B. Seal perimeter of patio door after exterior finish is applied in accordance with the requirements of Section 07900.

C. Application of vinyl trim strip to wood filler for support mullion:

1. Install according to patio door manufacturer's installation instruction sheets.

D. Application of vinyl trim board and vinyl laminated board and rigid channels:

1. Install according to patio door manufacturer's instructions.

3.6 ACCESSORIES

A. Grilles: Install grilles according to patio door manufacturer's installation instructions.

B. Insect Screens: Install insect screens according to patio door manufacturer's installation instructions.

C. Extension Jambs: Install extension jambs according to patio door manufacturer's installation instructions.

3.7 INTERIOR FINISHING

A. Finish patio door interior wood components according to patio door manufacturer's instructions and requirements specified in Section 09900.

1. Finish patio door prior to installing trim set handle onto the locking mechanism.

3.8 CLEANING

A. Clean surfaces to remove dirt. Use cleaning materials specifically recommended by patio door manufacturer.

B. Protect glass and hardware from masonry cleaning solutions. Contact with the solution could etch the glass and cause seal failure of the insulating glass unit.

C. Remove debris from work site.

D. Leave patio door unit in a closed and locked position.

E. Protect interior and exterior of patio door units until structure is sealed from the weather.

END OF SECTION

SECTION 08410

METAL-FRAMED STOREFRONTS

1 PART 1 GENERAL

1.1 SUMMARY

A. Section includes aluminum-framed storefronts including aluminum frames, and glass.

1.2 SYSTEM DESCRIPTION

A. Aluminum-Framed Storefront System: Tubular aluminum sections with supplementary internal support framing, factory fabricated, factory finished, glass infill, related flashings, anchorage and attachment devices.

B. System Assembly: Site assembled.

C. System Design: Provide for expansion and contraction within system components caused by temperature cycling. Design and size members to withstand loads caused by pressure and suction of wind.

D. Air Infiltration: Limit air leakage through assembly to 0.06 cfm/min/sq ft of wall area, measured at reference differential pressure across assembly of 1.57 psf as measured in accordance with AAMA 501.

E. Water Leakage: None when measured in accordance with ASTM E331.

F. System Internal Drainage: Drain water entering framing system to exterior.

1.3 SUBMITTALS

A. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work and expansion and contraction joint location and details.

B. Product Data: Submit component dimensions; describe components within assembly, anchorage and fasteners, glass and infill, door hardware, and internal drainage details.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with AAMA SFM-1 and AAMA MCWM-1 - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual.

B. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience, and with service facilities within 20 miles of Project.

C. Installer: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

D. Design wind loading under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of Maine.

1.5 WARRANTY

A. Furnish ten year manufacturer warranty for insulated glass and factory finishes.

2 PART 2 PRODUCTS

2.1 ALUMINUM-FRAMED STOREFRONTS

A. Manufacturers:
1. EFCO Corp.
2. Kawneer Co., Inc.
3. Traco
4. Tubelite Inc.
5. Vistawall Architectural Products
6. YKK AP America

B. Product Description: Aluminum-framed storefronts, extruded aluminum, including interior systems, with glazing.

2.2 COMPONENTS

A. Frames: Thermally broken extruded aluminum; flush glazing stops. Frames for interior glazing need not to be thermally broken.

B. Reinforced Mullion: Profile of extruded aluminum cladding with internal reinforcement of shaped structural steel section.

C. Glass and Glazing Materials:
1. Glass in Exterior Lights: 1" clear tempered insulating float glass.
2. Glass in Interior Lights: ¼" clear tempered float glass.
3. Glazing Materials: Storefront manufacturer's standard types to suit application and to achieve weather, moisture, and air infiltration requirements.

D. Flashings: Minimum 0.32 inch thick aluminum, to match mullion sections where exposed.

E. Steel Sections: ASTM A36/A36M, Structural shapes to suit mullion sections; galvanized at exterior units, prime painted at interior units.

F. Primer: Zinc chromate for factory application and field touch-up.

G. Fasteners: Stainless steel.

H. Perimeter Sealant and Backing Materials: Specified in Section 07900.

2.3 FABRICATION

A. Fabricate doors and frames allowing for minimum clearances and shim spacing around perimeter of assembly.

B. Accurately and rigidly fit and secure joints and corners, flush, hairline, and weatherproof.

C. Arrange fasteners, attachments, and jointing to ensure concealment from view.

2.4 SHOP FINISHING

A. Color Anodized Aluminum Surfaces: AA-M12C22A44, Architectural Class I.0.7 mils dark bronze anodized coating conforming to AAMA 611.

B. Concealed Steel Items: ASTM A123/A123M Galvanize to 2.0 oz/sq ft.

C. Apply bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar metals.

3 PART 3 EXECUTION

3.1 EXAMINATION

A. Verify wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

3.2 INSTALLATION

A. Install frames, glazing, and flashings in accordance with AAMA MCWM-1 - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual.

B. Use anchorage devices to securely attach frame assembly to structure.

C. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

D. Coordinate attachment and seal of air and vapor barrier materials. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

E. Coordinate installation of hardware with Section 08710.

F. Install hardware using templates provided.

G. Install glass in accordance with manufacturer's instructions.

H. Coordinate installation of perimeter sealants with Section 07900.

I. Tolerances
1. Variation from Plane: 1/8 inch per foot maximum or 1/4 inch per 30 feet; whichever is less.

3.3 SCHEDULES

A. Main Entrance and Doors (Opening No. M101): 1-3/4 x 4-1/2 inch sections, flush glazing, thermally broken, Dark Bronze anodized finish.

END OF SECTION

SECTION 08460

AUTOMATIC SLIDING DOORS

1 PART 1 GENERAL

1.1 SECTION INCLUDES

A. Automatic sliding doors with operator and motion/presence sensor control device.

1.2 RELATED SECTIONS

A. Section 08410 - Aluminum-Framed Storefronts.

B. Section 08700 - Hardware.

C. Section 08800 - Glazing.

D. Section 16000 - Electrical.

1.3 REFERENCES

A. ANSI Z97.1 - Safety Glazing Material Used in Buildings.

B. ANSI/BHMA 156.10 - Power Operated Pedestrian Doors.

C. ANSI/UL 325 - Door, Drapery, Gate, Louver, and Window Operators and Systems.

1.4 SYSTEM DESCRIPTION

A. Doors Powered to Open Position:

1. Doors powered by DC electric motor and mechanical gear assembly transmitted to active leaves by fiberglass-reinforced tooth drive belt for silent operation. Doors using roller chain, cable, or hydraulic devices shall not be accepted.

2. Power door to open position by signals received by microprocessor from the actuation controls.

3. The last portion of the opening cycle shall be controlled by a microprocessor generated signal that electronically reduces voltage to motor until door is fully open. Door systems that use microswitches shall not be accepted.

4. To permit safe passage if an obstruction is detected between opening doors and surrounding walls or interior fittings, the doors shall immediately stop and after a delay go to the full closed position. Door systems that only monitor the door travel while closing shall not be acceptable.

B. Doors Powered to Closed Position:

1. The active leafs will only be powered to closed position when all actuating devices are cleared and after remaining in the open position for a preset time delay (per ANSI standards).

2. The last portion of the closing cycle shall be controlled by a microprocessor generated signal that electronically reduces voltage to the motor until door is fully closed.

3. To permit safe passage between closing doors, the doors immediately reverse to open position if an obstruction is detected, then resume their interrupted movement at low speed to check whether the obstruction has disappeared or not. Door systems that only monitor the door travel while opening shall not be acceptable.

C. Emergency Breakaway:

1. Fixed Sidelite System: Exterior sliding active leaves swing out from any position in sliding mode.

2. Breakaway Pressure: Field adjustable to building code requirements and in accordance with ANSI/BHMA 156.10 maximum of 50 pounds.

D. Watchdog Monitoring:

1. Microprocessor Software: Constantly monitor drive train system operations.

2. Watchdog Control Circuit: Assume command of system and shut down automatic function by holding doors open, should door speed, motor function, or drive train operations deviate from design criteria ranges.

3. Secondary Supervisory Circuit: Monitor main Watchdog control circuit every 255 door cycles, ready to perform as a backup.

E. Energy Saving Device:

1. Switch: Recessed in interior header cover.

2. Door Opening Settings: Off, exit only, 2-way traffic, partial opening, and hold fully open.

3. Partial Opening Mode: Switch reduces total door opening to reduce conditioned air loss.

a. Microprocessor Programmed Intelligence: Door opening automatically resumes full-open position whenever traffic flow exceeds preset volumes.
b. Door returns to reduced opening mode when traffic subsides.

4. Heavy Weather Pile: Between doors and sidelites and between emergency breakaway hardware and door stiles.

1.5 PERFORMANCE REQUIREMENTS

A. General: Provide doors that have been designed and fabricated to comply with specified performance requirements, as demonstrated by testing manufacturer's corresponding standard systems.

B. Compliance:

1. ANSI/BHMA 156.10.

2. ANSI/UL 325 listed.

3. UL Canada approved.

4. Air Infiltration per ASTM E283-91 – Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across Specimen.

   a. Fixed sidelite: static pressure air infiltration conducted at 0.57 psf (15 mph) with a 0.6 cfm/ft^2 result and 1.57 psf (25 mph) with a 1.1 cfm/ft^2 result.
   b. Full breakout: static pressure air infiltration conducted at 0.57 psf (15 mph) with a .07 cfm/ft^2 result and 1.57 psf (25 mph) with a 1.3 cfm/ft^2 result.

5. Structural Performance (wind load) per ASTM E330-07 – Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, Doors by Uniform Static Air Pressure Difference. Testing conducted at positive and negative loads.

   a. Fixed sidelite: 50 psf (150 mph)
   b. Full breakout: 37 psf (120 mph)

6. Forced Entry Resistance per AAMA 1303.5 – Voluntary Specifications for Forced Entry Resistant Aluminum Sliding Glass Doors.

C. Automatic door equipment accommodates medium to heavy pedestrian traffic.

D. Automatic door equipment accommodates up to following weights for active leaf doors:

1. Bi-Part Doors: 220 pounds (100 kg) per active leaf.

2. Single Slide Doors: 440 pounds (200 kg) per active leaf.

E. Operating Temperature Range: -35 degrees F to 122 degrees F (-30 degrees C to 50 degrees C).

F. Motion and Presence Detection System: Uses planar K-band microwave technology to detect motion and focused active infrared technology to detect presence, in a single housing.

G. Systems With Transom Over 16'-0" (4,877 mm) or With Heavy Glass: System can span up to 16 feet without overhead support. Systems at 16'-0", with transoms, or with heavy glass shall install anti-sag rods through transom verticals.

1.6 SUBMITTALS

A. Comply with Section 01001 - Submittal Procedures.

B. Product Data: Submit manufacturer's product data, including description of materials, components, fabrication, finishes, and installation.

C. Shop Drawings: Submit manufacturer's shop drawings, including elevations, sections, and details, indicating dimensions, materials, and fabrication of doors, frames, sidelites, operator, motion/presence sensor control device, anchors, hardware, finish, options, and accessories.

D. Samples: Submit manufacturer's samples of aluminum finishes.

E. Test Reports: Submit certified test reports from UL, CUL, and ICBO indicating doors comply with specified performance requirements.

F. Manufacturer's Project References: Submit list of successfully completed projects including project name and location, name of architect, and type and quantity of doors manufactured.

G. Manufacturer's Field Reports: Submit manufacturer's field reports from AAADM certified technician of inspection and approval of doors for compliance with ANSI/BHMA 156.10 after completion of installation.

H. Operation and Maintenance Manual:

1. Submit manufacturer's operation and maintenance manual.

2. Include spare parts list.

I. Warranty: Manufacturer's standard warranty shall be one year from date of installation.

1.7 QUALITY ASSURANCE

A. Manufacturer's Qualifications:

1. Continuously engaged in manufacturing of doors of similar type to that specified, with a minimum of 10 years successful experience.

2. Member: American Association of Automatic Door Manufacturers (AAADM).

3. Door, frame, operator, and sensor components from same manufacturer.

B. Installer's Qualifications:

1. Minimum of 10 years successful experience in installation of similar doors.

2. Local certified Besam distributor.

3. Approved by manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to site protected from damage.

B. Storage: Store materials in clean, dry area indoors in accordance with manufacturer's instructions.

C. Handling: Protect materials and finish from damage during handling and installation.

1.9 MAINTENANCE SERVICE

A. Manufacturer shall provide factory-owned central-dispatch system for maintenance service.

B. The manufacturer shall maintain a company owned dispatch system that shall be available 24 hours per day, 365 days per year to insure proper service capability.

C. A manufacturer's employee, not an answering service, shall obtain malfunction information and dispatch appropriate service agency to project location.

D. Toll free phone number, 1-877-BESAM-US (1-877-237-2687), shall be prominently displayed on header of each operator.

E. Outside contractors or answering services are not acceptable.

2 PART 2 PRODUCTS

2.1 MANUFACTURER

A. Besam Automated Entrance Systems, Inc., 1900 Airport Road, Monroe, North Carolina 28110. Toll Free (866) BESAM-US. Phone (704)290-5551. Fax (704)290-5555. Web Site www.besam.com. E-Mail marketing@besam-usa.com.

2.2 AUTOMATIC SLIDING DOORS

A. Model: Unislide automatic sliding doors.

1. Aluminum doors and frames with sidelite and active door leaves.

2. Overhead-concealed, electro-mechanical, microprocessor-controlled, sliding door operator.

3. Operator housing, floor rollers, and door carriers.

B. Dimensions:

1. Clear Doorway Opening Width: 60".

2. Overall Frame Width: 144".

3. Masonry Opening Width: 220"+/-. Field measure.

4. Clear Door Opening Height: 88".

5. Overall Frame Height: 96"+/-.

6. Masonry Opening Height: 96" at inner door, 100" at outer door. Field measure.

2.3 ALUMINUM DOORS AND FRAMES

A. Doors and Frames: Extruded aluminum, Alloy 6063-T5.

1. Hydraulic dampers: provide 90 degree stop and cushion door upon opening and closing during emergency breakout conditions.

B. Glass:

1. Glazing Material: ANSI Z97.1.

2. Active Leaves 1-inch (25-mm) clear glass insulating units.

3. Sidelites: 1-inch (25-mm) clear glass insulating units – fixed sidelite units only.

4. Field-glazed or preglazed.

C. Door Carriers:

1. Roller Wheels: 2 steel roller wheels, 1-3/4-inch (44-mm) diameter, per active door leaf for operation over replaceable Delrin track. Single journal with sealed oil-impregnated bearings.

2. 2 self-aligning anti-risers per leaf.

D. Vertical Jambs: 1-3/4 inches (44 mm) by 4-1/2 inches (114 mm).

E. Header:

1. Span: Maximum 16'-0" (4,877 mm) without intermediate supports when using 1/4-inch glass.

2. Size: 7-3/4 inches (187 mm) wide by 6-7/8 inches (175 mm) high.

3. Hinge Point: Allows access for adjustments.

4. Design: Closed header.

F. Stiles: Medium – 4"

G. Pivots: Top and bottom concealed pivots, extruded aluminum.

H. Hardware: Breakaway.

I. Exterior Glazing Stop Extrusion: Non-removable, security-type glazing bead to prevent unauthorized entry.

2.4 SLIDING DOOR OPERATOR

A. Operator:

1. Overhead-concealed or surface-applied, electro-mechanical, microprocessor-controlled.

2. Motor: High-efficiency, energy-efficient, DC motor.

3. Mechanical drive assembly.

4. Microprocessor System: Sets opening and closing speeds based on factory-adjusted configuration settings.

5. Mechanical Limit Switches: Not acceptable.

6. Adjustable Hold Open Time Delay: 0 to 60 seconds.

7. Software: Incorporates self-diagnosing system.

2.5 AIR INFILTRATION

A. Weatherstripping: All active door panel weatherstripping shall be concealed, "finned-pile."

2.6 STRUCTURAL PERFORMANCE (WIND LOAD COMPLIANCE) AND FORCED ENTRY RESISTANCE

A. Locking shall be independent 2 pt- locking system in each active leaf and include exterior

key cylinder and interior thumb turn.

B. Threshold shall be aluminum, ½" x 4-1/2" running full width of package.

2.7 MOTION AND PRESENCE SENSOR CONTROL DEVICE

A. Model: The BEA Wizard Sliding Door Sensing System

1. Uses planar K-band microwave technology to detect motion and focused active infrared technology to detect presence, in a single housing. The focused active infrared presence technology overlaps the motion pattern.

2. The active infrared is comprised of 96 spots of detection made out of four rows of 24 spots of detection each (two rows on each side of the door). The focused presence technology never shuts off during closing cycle of the door.

3. The Wizard is self-monitoring (motion and presence sensor) and has the capability to make adjustments with a universal remote control.

4. The self-monitored Wizard communicates with the Unislide through a monitoring connection. The self-monitoring connection allows the door to go into a failsafe mode in the event of a sensor failure.

5. Operating temperature range of -30° F to 131° F.

B. Switches and Sensor: Field installed and adjusted.

2.8 ELECTRICAL

A. High-Efficiency DC Motor: Maximum of 3 A current draw. Allow for 5 operators to run on one 20 A line.

B. Power: Self-detecting line voltage capable control. 120 V through 240V, 50/60 Hz, 3 A incoming power with solid-earth ground connection for each door system. 5 door systems on one 20 A circuit.

C. Wiring: Separate channel raceway free from moving parts.

D. Brown out/high voltage capability: System has capability to operate at full performance well beyond brown out and high line voltage conditions (85V – 265V) sensing changes and adjusting automatically.

E. Convenience Battery: Shall be concealed in header and capable of full operation with blackout conditions, including sensor capabilities for typically 100 cycles.

2.9 ALUMINUM FINISHES

A. Anodized: Dark Bronze, AA-C23A44

3 PART 3 EXECUTION

3.1 EXAMINATION

A. Examine and measure areas to receive doors. Notify Architect of conditions that would adversely affect installation or subsequent utilization of doors. Do not proceed with installation until unsatisfactory conditions are corrected.

3.2 PREPARATION

A. Ensure openings to receive frames are plumb, level, square, and in tolerance.

B. Ensure proper support has been provided at operator header.

C. Ensure floor is level and smooth.

3.3 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and ANSI/BHMA 156.10.

B. Install doors and beam plumb, level, square, true to line, and without warp or rack.

C. Anchor frames securely in place.

D. Separate aluminum from other metal surfaces with bituminous coatings or other means approved by Architect.

E. Install exterior doors to be weathertight in closed position.

F. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.

G. Remove and replace damaged components that cannot be successfully repaired as determined by Architect.

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Services:

1. Manufacturer's representative shall provide technical assistance and guidance for installation of doors.

2. Before placing doors in operation, AAADM certified technician shall inspect and approve doors for compliance with ANSI/BHMA 156.10. Certified technician shall be approved by manufacturer.

3.5 ADJUSTING

A. Adjust doors for proper operation in accordance with manufacturer's instructions and ANSI/BHMA 156.10.

3.6 CLEANING

A. Clean doors promptly after installation in accordance with manufacturer's instructions.

B. Do not use harsh cleaning materials or methods that would damage glass or finish.

3.7 PROTECTION

A. Protect installed doors and finish to ensure that, except for normal weathering, doors and finish will be without damage or deterioration at time of substantial completion.

END OF SECTION

SECTION 08554

VINYL CLAD TILT-WASH WOOD DOUBLE-HUNG WINDOWS

1 PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Vinyl clad tilt-wash wood double-hung windows.
2. Glazing.
3. Accessories.

B. Related Sections:

1. Section 04200 - Unit Masonry: Openings in masonry.
2. Section 05400 - Cold Formed Metal Framing: Framed openings.
3. Section 06100 - Rough Carpentry: Framed openings.
4. Section 06200 - Finish Carpentry: Interior wood casing.
5. Section 07210 - Building Insulation: Batt insulation at window perimeter.
6. Section 07900 - Joint Sealers: Perimeter joint sealant and backer rod.

1.2 REFERENCES

A. American National Standards Institute (ANSI):

1. ANSI Z97.1, Safety Performance Specifications and Methods of Test for Safety Glazing Material Used In Buildings.

B. American Society for Testing and Materials (ASTM):

1. ASTM A 36, Specification for Structural Steel.
2. ASTM C 1036, Specification for Flat Glass.
3. ASTM C 1048, Specification for Heat Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass.
4. ASTM D 4216, Specification for Rigid Poly(Vinyl Chloride) (PVC) and Related Plastic Building Products Compounds.
5. ASTM E 90, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.
6. ASTM E 283, Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors.
7. ASTM E 330, Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
8. ASTM E 413, Classification for Rating Sound Insulation.
9. ASTM E 547, Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Cyclic Static Air Pressure Differential.
10. ASTM E 773, Test Method for Seal Durability of Sealed Insulating Glass Units.
11. ASTM E 774, Specification for Seal Durability of Sealed Insulating Glass Units.
12. ASTM E 1423, Standard Practice for Determining the Steady State Thermal Transmittance of Fenestration Systems.
13. ASTM E 1425, Practice for Determining Acoustical Performance of Exterior Windows and Doors.

14. ASTM F 588, Test Methods for Resistance of Window Assemblies to Forced Entry Excluding-Glazing.

C. Consumer Product Safety Commission (CPSC):

1. CPSC 16CFR-1201, Safety Standard for Architectural Glazing Materials.

D. National Fenestration Rating Council (NFRC):

1. NFRC 100, Procedure for Determining Fenestration Product Thermal Properties.
2. NFRC 200, Procedure of Determining Solar Heat Gain Coefficient.

E. Window and Door Manufacturers Association (WDMA):

1. AAMA/NWWDA 101/I.S. 2, Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood windows and Glass Doors.
2. WDMA Industry Standard I.S. 4, Industry Standard for Water-Repellent Preservative Non-Pressure Treated for Millwork.

1.3 SYSTEM DESCRIPTION

A. Performance Requirements: Vinyl clad wood windows to comply with the minimum performance requirements specified in AAMA/NWWDA 101/I.S. 2-97, DP 30, except where more stringent requirements are specified.

1. Air Infiltration: When tested in accordance with ASTM E 283 at a static pressure of 1.57 psf, total air infiltration to average less than or equal to 0.20 cfm per square foot of unit.

2. Water Penetration: No water penetration beyond the interior face of window unit when tested in accordance with ASTM E 547 at a static pressure of 4.50 psf.

3. Structural Performance: No glass breakage, damage to hardware, or permanent deformation (set) which would cause any malfunction or impair the operation of the unit, or residual deflection greater than 0.4% of span when tested in accordance with ASTM E 330 at a test pressure of 45 psf.

4. Design Criteria: Design and size window components to withstand loads imposed by wind to a design pressure of 42 psf at midwall locations, and 53 psf at corner locations, when measured in accordance with ASTM E 330. Limit deflection to L/175.

5. Thermal Performance: Fenestration U-Factor: Fenestration Products shall be rated, certified and labeled in accordance with NFRC 100. U-Factors shall be as follows:
   Tilt-Wash
   a. Residential size (36" x 60"): High-Performance™ glass 0.32.

6. Fenestration Solar Heat Gain Coefficient (SHGC): Fenestration Products shall be rated, certified and labeled in accordance with NFRC 200. SHGC shall be as follows:
   Tilt-Wash
   a. Residential size (36" x 60"): High-Performance™ glass 0.32.

7. Sound Transmission Rating: Windows to provide a sound transmission class (STC) of 27 and (OITC) of 23 when tested in accordance with ASTM E 90 and ASTM E 413.

8. Forced Entry Resistance Window units to comply with requirements for Performance Level 20 when tested in accordance with ASTM F 588.

1.4 SUBMITTALS

A. Product Data, Installation Instructions, Detail Drawings and Samples: Submit the following under provisions of Section 01300 - Submittals:

1. Product Data: Submit manufacturer's product literature for all products and accessories furnished.
2. Installation Instructions: Submit manufacturer's installation instruction sheets for all products and accessories furnished.
3. Detail Drawings: Submit elevations indicating location and type of glazing material, typical jamb, head and sill details, and special mullion reinforcement details.
4. Color Samples:
5. Vinyl Cladding: Submit color samples of vinyl cladding.
6. Hardware: Submit samples indicating typical finish on window hardware.

B. Quality Control Submittals: Submit the following under provisions of Section 01400 -Quality Control:

1. Reference List: Submit reference lists as specified under Quality Assurance article.

C. Contract Closeout Submittals: Submit the following under provisions of Section 01700 - Contract Closeout:

1. Owner's Manual: Submit bound manual clearly identified with project name, location and completion date. Identify type and size of window units installed. Provide recommendations for periodic inspections, care and maintenance. Identify common causes of damage with instructions for temporary patching until permanent repair can be made.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company having at least 25 years experience in the manufacture of vinyl clad wood window products. Provide a reference list of at least 3 projects of similar scale and complexity successfully completed during the past three years. Provide project names, locations, completion dates, names and telephone numbers of General Contractor's and Owner's contact person.

B. Installer Qualifications: Company experienced in the installation of vinyl clad wood window products. Installer to provide a reference list of at least 3 projects of similar scale and complexity successfully completed during the past three years. Provide project names, locations, completion dates, names and telephone numbers of General Contractor's and Owner's contact person.

C. Safety Glazing: Comply with safety glazing requirements of CPSC 16CFR 1201. (

D. Insulating Glass Units: Provide insulating glass units permanently marked with certification label of Insulating Glass Certification Council (IGCC) indicating compliance with Class CBA.

1.6 DELIVERY, STORAGE AND HANDLING

A. In addition to general delivery, storage and handling requirements specified in Section 01600, comply with the following:

1. Deliver materials to job site in sealed, unopened cartons. Protect uncartoned set-up multiple units from rubbing.
2. Identify each carton with material name, date of manufacture and lot number.

3. Store windows and accessories off ground, under cover, protected from weather and construction activities.

1.7 PROJECT CONDITIONS

A. Install windows in strict accordance with safety and weather conditions specified by manufacturer's product literature.

B. Extra caution must be exercised when temperature drops below 32 degrees F., and extreme care below 0 degrees F.

2 PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Andersen® 400 Series tilt-wash double-hung units as manufactured by Andersen Corporation, Bayport, Minnesota.

2.2 MATERIALS

A. Frame and Sash Members: Fabricated from a wood species approved in AAMA/NWWDA Industry Standard 101/I.S. 2.

B. Outer Frame Members: Vinyl wrapped wood (PVC) complying with the requirements of ASTM D4216.

1. Color: Terratone®.

C. Sill: Tilt-Wash and Double-Hung Picture: Fibrex™ material sill cover over a wood species approved in AAMA/NWWDA Industry Standard 101/I.S. 2.

D. Weatherstripping:

1. Double-Hung Horizontal Weatherstripping: Gasket type vinyl covered foam in top and bottom rails. Check rail weatherstripping to be Santoprene bulb covered with low friction plastic coating secured to filled polypropylene base. Fin-seal weatherstrip at ends of checkrail.
2. Double-Hung Unit Vertical Weatherstripping: Polypropylene leaf style weatherstripping in contact with side jamb liners.
3. Side Jamb Liner: Back with positive pressure open cell polyurethane foam bonded to polyurethane closed cell edge strip. Seal lower jamb liner with two EPDM closed cell foam plugs. Seal each balance cavity with one closed cell foam plug per ASTM D 1056, 2A2. Provide fin-seal weatherstrip bonded to jamb liner at check rail area of side jamb between sash runs.

E. Design Pressure Upgrade: Provide DP upgrade kit on windows as required to meet design pressure requirements.

2.3 GLAZING

A. General: Insulating glass units certified through the Insulating Glass Certification Council as conforming to the requirements of IGCC Class CBA when tested in accordance with ASTM E 773 and E 774. Provide dual sealed units consisting of polyisobutylene primary seal and silicone secondary seal. Metal spacers to have bent corners.

B. High-Performance™ Low Emissivity, Argon Blend Filled Insulating Glass Units:

1. Glass: Insulating glass units to consist of an outboard lite of clear annealed glass conforming to ASTM C 1036, Type 1, Class 1, q3 and an inboard lite of clear, heat strengthened glass conforming to ASTM C 1048, Type 1, Class 1, q3, Kind HS.
2. High-Performance™ LoE^2 Coating : MSVD LoE^2 coating applied to the No. 2 surface.
3. Filling: Fill space between glass lites with an argon gas blend to reduce heat loss.
4. Performance Characteristics for the center of glass: The following performance characteristics are based on NFRC validated spectral data files for the respective glazing. The values are for center of glass only. (See section 1.03 for whole fenestration performance values.)
   a. U-Factor: 0.28.
   b. Solar Heat Gain Coefficient (SHGC): 0.43.
   c. Visible Light Transmittance (Vtc): 73%.
   d. Ultra-Violet Transmittance (Tuv): 17%.
   e. Krochmann Damage Weighted Fading Function (Tdw): 34%.

2.4 HARDWARE

A. Double-Hung Window Hardware:

1. Sash Locks and Keepers: Provide one sash lock and keeper.

   a. Classic™ Style Locks: Injection molded, glass reinforced polyester sash locks with integral color. Color: white.

2. Sash Lift: Provide two hand lifts per window unit.

   a. Hand Lift: Classic™ zinc cast lift with a baked powder coated finish on chromate protective coating in white color.

3. Balances: Fit top and bottom sash with balances consisting of spring power with block and tackle and 100 lb. test nylon cord. Design balances to assure easy operation of double-hung units.
4. Balance Shoes: Provide four balance shoes for each window unit. Locate one balance shoe at lower corners of both sash. Balance shoes to slide in side jamb liner pockets and be capable of being connected to additional block and tackle balances to accommodate optional, heavier glazing. Balance shoe shall lock sash in both up and down directions when sash has been tilted in for cleaning. Balance shoe shall release after sash is returned to vertical position allowing it to operate up and down freely. Equip balance shoe with sash pivot retainer spring.
5. Sash Pivot: Provide four balance pivots. Mount one sash pivot at lower corners of both sash. Sash pivot is retained in balance shoe assembly until sash retainer spring is depressed allowing sash to be removed.
6. Wash Assists: Provide two wash assists mounted in center pocket of side jamb liners. Depressing wash assists between liner and lower check rail ends will cause lower sash to unhook from side jamb liners. When lower sash is unhooked, lower sash can be easily pulled in for cleaning.
7. Wash Assist Stops: Provide two wash assist stops at side jamb liner center pockets.

2.5 INSECT SCREENS

A. Insect Screens: Provide venting sash with an insect screen, including attachment hardware.

1. Frames: 0.020" rolled aluminum frame with chromate conversion coating. Provide matching corner locks and latch retainers.
2. Insect Screen Cloth: 18 x 16 aluminum mesh, gun metal finish.
3. Frame Finish: White high-bake polyester finish.

2.6 JOINING SYSTEMS

A. Joining Systems:
1. Joining Clips.
2. Gusset Plates: Galvanized steel plates which attach to wood frame.
3. Head Flashing: 6" long sheet vinyl. Color to match window exterior.
4. Silicone Sealant: Silicone sealant recommended by window manufacturer.
5. Vinyl Outside Trim Strips: As recommended by window manufacturer for each joining method used. Color to match window unit exterior color.

2.7 ACCESSORIES

A. Sill Stool: Wood members machined from clear material or veneered finger-jointed material approved in AAMA/NWWDA Industry Standard I.S. 2.

B. Extension Jambs: Wood members machined from clear material or veneered finger-jointed material approved in AAMA/NWWDA Industry Standard I.S. 2. Pre-drill extension jambs for application (Note: 5-1/4" extension jambs not pre-drilled).

C. Exterior Trim:

1. Exterior Trim and Casing: Where indicated on Drawings provide 1/2 inch vinyl sheathed plywood conforming to U.S. Product Standards P.S. 1 and rigid vinyl channels. Color to match window framing.
   a. Andersen® Vinyl laminated board to have 0.045" thick vinyl with smooth surface laminated with adhesive to 1/2" thick plywood.
   b. Trim channels: Rigid vinyl extrusions supplied by window manufacturer for use on same product line.
2. Support Mullion Trim: 2" wide wood filler and vinyl trim strip. Color to match window unit exterior color.

2.8 FABRICATION

A. Preservative Treatment: Treat wood sash and frame members after machining with a water repellent preservative in accordance with WDMA I.S. 4.

B. Frame Units: Outer frame shall be vinyl wrapped treated wood with corners sealed with silicone and vinyl corner flashing. Sill to be fabricated of Fibrex™ material laminated to wood sub-sill core with PVC end caps. Bond outer frame members and sill cover to wood base frame with adhesive. Staple inside stops to jambs and sill base. All wood components are treated with wood preservative.

C. Jamb and Head Liners:

1. Double to wood head member. Provide 0.060" thick, rigid vinyl side jamb liner extrusion secured in pocket of side jamb assembly. Hung Units and Transom: Provide 0.045" thick, rigid vinyl head jamb liner extrusion secured.
2. Stationary Picture Unit: Provide vinyl jamb liners.

D. Sash: Treat sash members with a preservative, water repellent, conductive solution in accordance with WDMA I.S. 4.

1. Double-Hung and Transom Sash: Provide Andersen prefinished white interior.
   a. Stabilizer Coating:
      1.) Apply minimum 1.5 mil dry thickness polyurea stabilizer to all surfaces to be topcoated.
   b. Finish Coating:
      1.) Apply minimum 1.5 mil dry thickness flexacron finish coat over stabilized exterior and interior surfaces.
   c. Glazing: Factory glaze with high quality glazing sealant and snap-in rigid vinyl glazing bead.
      1.) Factory glaze with high quality glazing sealant and snap-in rigid vinyl glazing bead.

E. Glazing: Factory glaze with high quality glazing sealant and snap-in rigid vinyl glazing bead.

F. Factory apply weatherstripping.

3 PART 3 EXECUTION

3.1 INSPECTION

A. Inspect opening before installation is commenced.

1. Verify concrete surfaces are dry and free of excess mortar, rocks, sand and other construction debris.
2. Verify rough opening or masonry opening is square and dimensions are correct. Verify sill plate is level.
3. Verify wood frame walls are dry, clean, sound and well nailed, and/or glued, free of voids and without offsets at joints. Ensure that nail heads are driven flush with all surfaces in opening and within 3" of rough opening.

3.2 PREPARATION

A. Open carton and remove window and all parts. Inspect window. Verify that window is not damaged and all parts are included before disposing of carton.

B. Close and lock operating sash.

3.3 JOINING SYSTEMS

A. Assemble joining system where required for window combinations according to window manufacturer's instructions.

B. Apply head flashing with silicone sealant at each vertical mullion head joint.

3.4 INSTALLATION

A. Install window units, hardware, operators, accessories and other window components according to window manufacturer's installation instruction sheets.

B. Set units plumb, level true to line, without warp or rack in frames or sash.

C. Install loose fitting batt insulation in shim space around window perimeter to maintain continuity of building insulation. Do not use expanding foam insulation.

D. Extend vapor barrier to interior face of window frame and attach.

3.5 EXTERIOR FINISHING

A. Hold back exterior siding or other finish materials from edge of window to allow for expansion and contraction and the installation of a proper sealant joint with backing materials.

B. Seal perimeter of window after exterior finish is applied in accordance with the requirements of Section 07900.

C. Application of vinyl trim strip to wood filler for support mullion:

1. Install according to window manufacturer's installation instruction sheets.

D. Application of Andersen® trim board and vinyl laminated board and rigid channels:

1. Install according to window manufacturer's instructions.

3.6 INTERIOR FINISHING

A. Provide Andersen prefinished white interior.

3.7 ACCESSORIES

A. Grilles: Install grilles according to window manufacturer's instructions.

B. Extension Jambs: Install according to window manufacturer's instructions.

3.8 CLEANING

A. Clean vinyl surfaces to remove dirt. Use cleaning materials specifically recommended by window manufacturer.

B. Protect glass and hardware from masonry cleaning solutions. Contact with the solution could etch the glass and cause seal failure of the insulating glass unit.

C. Remove debris from work site.

D. Leave window units in closed and locked position.

E. Protect interior and exterior of window units until structure is sealed from the weather.

END OF SECTION

PARK DANFORTH RENOVATIONS

Portland, Maine

REVISED MARCH 25, 2003

Window Schedule

Qty. (17)	No.	Window Manufacturer	Unit Type	Model No.	Unit Width (Each)	Unit Height	Infill Existing Opening Below Window	Required Egress	Low "E" Insul-Glass (5)	Pre-finished Interior White	Insect Screen (8)	Pre-finished Grills (10)	Pntd. GWB Return Jamb+Head	Pntd. Wood Sill+Apron (6)	Factory Mulled Pair (11)
79	A	Andersen Corporation	400 Series Tilt Wash DH	(Two) TW28310	2'-9 5/8"	4'-0 7/8"	No	No	Yes	Yes	Yes	No	Yes	Yes	Yes
54	B	Andersen Corporation	400 Series Tilt Wash DH	TW34310	3'-5 5/8"	4'-0 7/8"	Yes	No	Yes	Yes	Yes	No	Yes	Yes	No
41	C	Andersen Corporation	400 Series Tilt Wash DH	TW3442	3'-5 5/8"	4'-4 7/8"	No (12)	No	Yes	Yes	Yes	No	Yes	Yes	No
8	D	Andersen Corporation	400 Series Tilt Wash DH	(Two) TW2852	2'-9 5/8"	5'-4 7/8"	No	No	Yes	Yes	Yes	No	Yes	Yes	Yes
9	E	Andersen Corporation	400 Series Tilt Wash DH	TW3452	3'-5 5/8"	5'-5 1/4"	Yes	No	Yes	Yes	Yes	No	Yes	Yes	No
24	F	Andersen Corporation	400 Series FW Patio Door (15)	FWH6068	5'-11 1/4"	6'-7 1/2"	-	No	Yes	Yes	Yes	No	Yes	No	No
10	G	Andersen Corporation	400 Series Tilt Wash DH	TW34410	3'-5 5/8"	5'-1 1/4"	-	No	Yes	Yes	Yes	Yes	Yes	Yes	No
5	H	Andersen Corporation	400 Series Tilt Wash DH	(Two) TW34410	3'-5 5/8"	5'-1 1/4"	-	No	Yes	Yes	Yes	No	Yes	Yes	Yes
2	J	Andersen Corporation	400 Series DH Transom (16)	DHT3431	3'-5 5/8"	3'-3 5/16"	-	No	Yes	Yes	No	Yes	Yes	Yes	No
1	K	Andersen Corporation	400 Series Tilt Wash DH	(Two) TW34410	3'-5 5/8"	5'-1 1/4"	-	No	Yes	Yes	Yes	No	Yes	Yes	Yes
233															
	1	Alternate Manufactuers:	No alternates.												
	2	Verify New and Existing Rough Openings Prior to Framing and Ordering.													
	3	Insulate Between Window and Rough Opening as recommended by window manufacturer.													
	4	Provide Safety Glazing as Required by CPSC Regulations.													
	5	Provide Insulated Glazing throughout.													
	6	Brosco 8710 Apron w/ 5/4x Sill.													
	7	Prepare openings for window treatments at all residential unit windows (NIC).													
	8	Match Andersen Window Screen Stock.													
	9	Interior and exterior finish color to match Andersen Windows Corp. adjacent colors.													
	10	Andersen Full Divided Light													
	11	1/16" Tilt Wash Narrow Mullion													
	12	Where Type C Units are located at exterior patios, cut sill of existing opening down +/- 4".													
	13	Provide DP (Design Pressure) Upgrade Kits as required to meet minimum DP-50.													
	14	Terratone Exterior Color Typical at all Units.													
	15	Provide iInterior and exterior ADA Threshold.													
	16	Filler Panels/Trim at Window Head to match elevations on SKA-4.													
	17	Quantities indicated are estimates for budget pricing. GC verify.													

Division 9

Finishes

SECTION 09260

GYPSUM BOARD SYSTEMS

1 PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract including General and Supplementary Conditions and Division 1 specification sections, apply to work of this section.

1.2 SUMMARY

A. Gypsum board with joint treatment.

B. Metal stud wall framing.

1.3 SYSTEM DESCRIPTION

A. Conform to applicable code for fire rated assemblies and in conjunction with Section 05400 and as indicated on drawings:

1.4 SUBMITTALS

A. Product Data: Provide for gypsum board, joint treatment, accessories and metal framing.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with ASTM C840. GA-201 - Gypsum Board for Walls and Ceilings. GA-214 - Recommended Specification: Levels of Gypsum Board Finish. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board. GA-600 - Fire Resistance Design Manual.

2 PART 2 PRODUCTS

2.1 GYPSUM BOARD SYSTEM

A. Manufacturers:

1. Domtar Gypsum Co.
2. Georgia Pacific Corp.
3. Gold Bond Building Products /Div. National Gypsum Co.
4. United States Gypsum Co.

B. Studs and Tracks: ASTM C645; GA-216 and GA-600; galvanized sheet steel, 25 gage unless otherwise indicated, C shape.

C. Furring, Framing, and Accessories: ASTM C645. GA-216 and GA-600.

D. Gypsum Board Types: 5/8 inch thick, maximum available length in place; ends square cut, tapered edges; unless noted otherwise as follows:

1. Standard Type: ASTM C36
2. Fire Rated Type: ASTM C36 fire resistive, UL rated.
3. Moisture Resistant Type: ASTM C630
4. Exterior Gypsum Soffit Board: ASTM C1177.
5. Exterior Gypsum Sheathing Board: ASTM C1177, Type X.
6. Gypsum Core Board: ASTM C442 square edges.
7. Gypsum Tile Backing Board: Silicone treated core, glass fiber reinforced, ASTM C1173, 1/2 inch thick.

2.2 ACCESSORIES

A. Acoustic Insulation: ASTM C665, preformed mineral wool, friction fit type, unfaced, 2.5 inch thick.

B. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.

C. Corner Beads: Metal.

D. Edge Trim: GA-201 and GA-216, Type LC bead.

E. Joint Materials: ASTM C475 GA-201 and GA-216, reinforcing tape, joint compound, adhesive, and water.

F. Fasteners: ASTM C1002 Type S12 hardened screws: GA-216.

G. Adhesive: ASTM C557 and GA-216.

H. Textured Finish Materials: Latex based texturing material containing fine aggregate,

3 PART 3 EXECUTION

3.1 INSTALLATION - METAL STUDS

A. Install studding in accordance with ASTM C754. GA-201, GA-216, GA-600 and manufacturer's instructions.

B. Metal Stud Spacing: As indicated on drawings.

C. Partition Heights: Full height to floor or roof construction above. Install additional bracing for partitions extending above ceiling.

3.2 INSTALLATION - GYPSUM BOARD

A. Install gypsum board in accordance with GA-201, GA-216, GA-600, and manufacturer's instructions.

B. Fasten gypsum board to furring or framing with screws.

C. Place control joints consistent with lines of building spaces as directed.

D. Place corner beads at external corners as indicated. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.

E. Seal cut edges and holes in moisture resistant gypsum board and exterior gypsum soffit board with sealant.

3.3 JOINT TREATMENT

A. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes, minimum of three coats.

B. Feather coats onto adjoining surfaces so that camber is maximum 1/32 inch.

C. Sanding and final coat of fill is not required at concealed surfaces above ceilings and in inaccessible spaces.

3.4 TOLERANCES

A. Maximum Variation from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

SECTION 09900

PAINTING

1 PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract including General and Supplementary Conditions and Division 1 specification sections apply to Work of this section.

1.2 SECTION INCLUDES

A. Surface preparation and field application of paints and coatings.

1.3 SUBMITTALS

A. Product Data: Provide data on all finishing products.

B. Samples: Submit coating samples for selection, illustrating range of colors and textures available for each surface finishing product scheduled.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Store and apply materials in environmental conditions required by manufacturer's instructions.

1.5 EXTRA MATERIALS

A. Provide minimum of two (2) gallons of each type and color of coating specified.

2 PART 2 PRODUCTS

2.1 MATERIALS

A. Manufacturers: Products of one or more manufacturers are listed in Finish Schedules to establish appearance, performance and quality characteristics. Products of other manufacturers may be accepted subject to review by Architect.

1. ICI Paint Stores
2. Benjamin Moore and Co.
3. PPG Industries: Pittsburgh Paints
4. Pratt and Lambert

B. Coatings: Ready mixed except field catalyzed coatings of good flow and brushing properties, capable of drying or curing free of streaks or sags.

C. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials required to achieve the finishes specified, as recommended by coating manufacturer..

2.2 FINISHES

A. Refer to schedule at end of section for surface finish schedule.

3 PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify that substrate conditions are ready to receive Work.

B. Measure moisture content of porous surfaces using an electronic moisture meter. Do not apply finishes unless moisture content is less than 12 percent.

C. Correct minor defects and clean surfaces which affect work of this section.

D. Remove electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.

E. Gypsum Board Surfaces: Fill minor defects with latex compounds. Spot prime defects after repair.

F. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

G. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove foreign matter. Remove oil and grease with a solution of tri-sodium phosphate, rinse well and allow to dry.

H. Uncoated Ferrous Surfaces: Remove scale by wire brushing, sandblasting, clean by washing with solvent. Apply treatment of phosphoric acid solution. Prime paint after repairs.

I. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust, hand or power tool clean, clean surfaces with solvent. Prime bare steel surfaces.

J. Interior Wood Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.

K. Interior Wood Items Scheduled to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats.

L. Exterior Wood Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied.

M. Exterior Wood Scheduled to Receive Transparent Finish: Remove dust, grit, and foreign matter; seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes with tinted exterior calking compound after sealer has been applied.

3.2 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Sand transparent finishes lightly between coats to achieve required finish.

C. Where clear finishes are required, tint fillers to match wood.

D. Back prime interior and exterior woodwork scheduled to receive paint finish with primer paint.

E. Back prime interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

F. Minimum Coating Thickness: As recommended by manufacturer.

G. Prime Coats: Prime material as recommended by manufacturer. Recoat primed surfaces as required to cover suction spots or unsealed areas.

H. Pigmented Surfaces: Completely cover to achieve an opaque, smooth surface of uniform finish, color and appearance. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other imperfections will not be accepted.

I. Transparent Finishes: Provide smooth surface of uniform luster, free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes or other imperfections.

3.3 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. Refer to Division 15 and Division 16 sections for schedule of color coding, identification banding of equipment, ductwork, piping, and conduit.

B. Color code items in accordance with requirements indicated. Color band and identify with flow arrows, names, and numbering.

C. Paint shop primed equipment.

D. Remove unfinished louvers, grilles, covers, and access panels and paint separately. Paint dampers exposed behind louvers, grilles, convector and baseboard cabinets to match face panels.

E. Prime and paint insulated and exposed pipes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are prefinished.

F. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint, to limit of sight line.

G. Paint exposed conduit and electrical equipment occurring in finished areas except prefinished surfaces.

H. Paint both sides and edges of plywood backboards.

I. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.4 CLEANING

A. As work proceeds, promptly remove finishes where spilled, splashed, or spattered. Restore adjacent finishes damaged by spillage, splashing or spattering as required.

3.5 SCHEDULE - INTERIOR SURFACES

Surface	Finish	System	Product	Coats
Concrete	Sealer	Sealer	Glid Seal 19228	1
Drywall	Eggshell	Primer	ICI Ultra-Hide PVA Primer Sealer 1030-1200	1
		Finish	ICI Ultra-Hide Latex Eggshell Enamel 1412-XXXX	2
Drywall	Flat	Primer	ICI Ultra-Hide PVA Primer Sealer 1030-1200	1
		Finish	ICI Ultra-Hide Flat Enamel 1210-XXXX	1
Metal	Semigloss	Primer	ICI Devflex Acrylic Primer 4020-1000	1
		Finish	ICI Devflex Acrylic Semi-Gloss Enamel 4208-XXXX	2
Wood	Semigloss	Primer	ICI Ultra-Hide Acrylic Wood Primer 1020-1200	1
		Finish	ICI Ultra-Hide Latex Semi-Gloss Enamel 1416-XXXX	2
Wood	Clear	Primer	ICI Woodpride Urethane Satin 1908 reduced 25%	1
		Finish	ICI Woodpride Urethane Satin 1902	2

3.6 SCHEDULE - EXTERIOR SURFACES

Surface	Finish	System	Product	Coats
Metal	Gloss	Primer	ICI Devflex DTM Flat Primer 4020-1000	1
		Finish	ICI Devflex Acrylic Gloss Finish 4206-XXXX	2
Wood	Satin	Primer	ICI Ultra-Hide Durus Acrylic Latex Primer 2010-1200	1
		Finish	ICI Dulux Professional Finish 2402-XXXX	2
Existing Steel Angles & Imbedded Steel	Gloss	Primer	ICI Pre Prime 167 Penetrating Sealer	1
		Finish	ICI Bar Rust 235 Multipurpose Epoxy Coating	1
New Galvanized Steel	Gloss	Primer	ICI Devran 201 Universal Epoxy Primer	1
		Finish	ICI Devthane 389 Aliphatic Urethane Gloss Enamel	1

...END OF SECTION

Division 10

Specialties
(Not Applicable)

Division 11

Equipment
(Not Applicable)

Division 12

Furnishings
(Not Applicable)

Division 13

Special Construction

(Not Applicable)

Division 14

Conveying Equipment

(Not Applicable)

Division 15

Mechanical

SECTION 15700
HVAC SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work covered by this Section of the specifications includes the furnishing of labor, materials, equipment, transportation, permits, inspections and incidentals and the performing of operations required to install the heating system indicated.

1.02 RELATED DOCUMENTS

A. The drawings and the specifications including SECTION 15000 "SUPPLEMENTAL MECHANICAL GENERAL REQUIREMENTS" are hereby made a part of the work of this section.

1.03 SUBMITTALS

A. Substitutions: Your attention is directed to Section 15000-"Substitutions", relative to competition and the (ONLY) notation. Familiarity with this section should be achieved before reading the PRODUCTS section of this specification.

B. The items for which the submittals paragraph in Section 15000, Supplemental Mechanical General Requirements, apply are as follows:

1. Make-Up Air Units
2. Fans.

PART 2 PRODUCTS

2.01 PACKAGED MAKE-UP AIR UNIT

A. Trane Model GRAA40GDH, filter section, fan, natural gas heat and downflow supply plenum.

B. Unit shall be completely factory assembled, piped, wired and test fired. Unit shall contain duct furnace that is AGA and CGA certified and conforms with the latest ANSI Standards for safe and efficient performance. Unit shall be mounted on metal rails with lifting and anchor holes and shall be suitable for slab of curb mounting. Unit shall be operate on natural gas.

C. Control relays shall be socket mounted with terminal block connections. Control wiring shall terminate at terminal strips (single point connection) and include an identifying marker corresponding to the wiring diagram. Motor and control wiring shall be harnessed with terminal block connections.

D. Casings shall be die-formed, 18-gauge galvanized steel finished with air-dry enamel. Service and access panels shall be provided through easily removable side access panels. Fan sections and supply plenums shall be insulated with fire resistant, odorless. matte-faced

one-inch glass fiber material. Outside air hoods shall be provided with a wire mesh inlet screen and moisture eliminating filters.

E. Heat Exchanger: Type 409 stainless steel package. Heat exchanger tubes and headers shall be 20-gauge type 409 stainless steel. Burners and flue collector shall be 409 stainless steel.

F. Flue Collector: Flue collector construction shall be corrosion resistant aluminized steel.

G. Venting System: Natural vent units shall be provided with a vent cap designed for gravity venting.

H. Burners shall be die-formed, corrosion resistant aluminized steel, with stamped porting and stainless steel port protectors. Burners shall be individually removable for ease of inspection and servicing. The entire burner assembly is easily removed with its slide-out drawer design.

I. Fans: Centrifugal fan shall be belt driven, forward curved, statically and dynamically balanced with double inlet. The blower wheel shall be supported with in-shear vibration isolators, and ball bearing secured.

J. Filters: Filter rack shall be of v-bank design for minimal pressure drop and be constructed of galvanized steel with access through the side service panel. Filters shall be 2" pleated type.

K. Electrical cabinet shall be isolated from the air stream with a non-removable access panel interior to the outer service panel. Motor and control wiring shall be harnessed with terminal block connections.

L. Factory Installed Options:

1. Electronic Modulating Gas Valve: Provides modulated heat output. Ignition is at full fire (100% input), and a discharge air temperature sensing bulb located in the air stream shall modulate the gas input from 40 percent to 100 percent rated input.

2. Motors: Three-phase (with magnetic starter), 208V.

3. Damper:

a. Low leak damper shall be of the opposed blade type, construction of galvanized steel with neoprene nylon bushings and vinyl blade edge seals, blades to be mechanically interlocked.

b. Outside air/two position motor: outside air damper shall be provided with two-position spring return damper motor and controls.

2.24 EXHAUST FANS

A. Exhaust fans shall be Cook Ventilator ACW-D series, model 90W10DH, direct drive. Fans shall be furnished with a safety switch or other suitable disconnect switch. The fan drive shall have a 1.5 service factor for the maximum rated horsepower. Fan shall incorporate a backdraft damper and fan speed control.

B. Bearings shall be precision, flange-mounted self-aligning ball bearings at inlet and discharge. Minimum average design life shall be 200,000 hours at maximum catalogued operating conditions. Grease lines shall extend to the exterior of the fan housing.

C. Fan speed control shall employ solid-state circuitry.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

A. Inspection:

1. Prior to work of this Section, carefully inspect the installed work of other trades and verify that such work is complete to the point where this installation may properly commence.

2. Verify that the heating system may be installed in accordance with pertinent codes and regulations and the reviewed Submittals.

3.02 CLOSING IN WORK

A. Cover up or enclose work after it has been properly and completely tested and reviewed.

B. No additional cost to the Owner will be allowed for uncovering or recovering any work that is covered or enclosed prior to required test and review.

3.03 TEST AND ADJUST

A. After the installation is complete and ready for operation, test the system under normal operating conditions in the presence of the Architect and demonstrate that the system functions as designed.

B. Correct defects which develop in operational testing, conduct additional testing until defect free operation is achieved.

3.04 CLEANUP AND CORROSION PREVENTION

A. Equipment shall be thoroughly cleaned. Dirt, dust, and debris shall be removed and the premises left in a clean and neat condition.

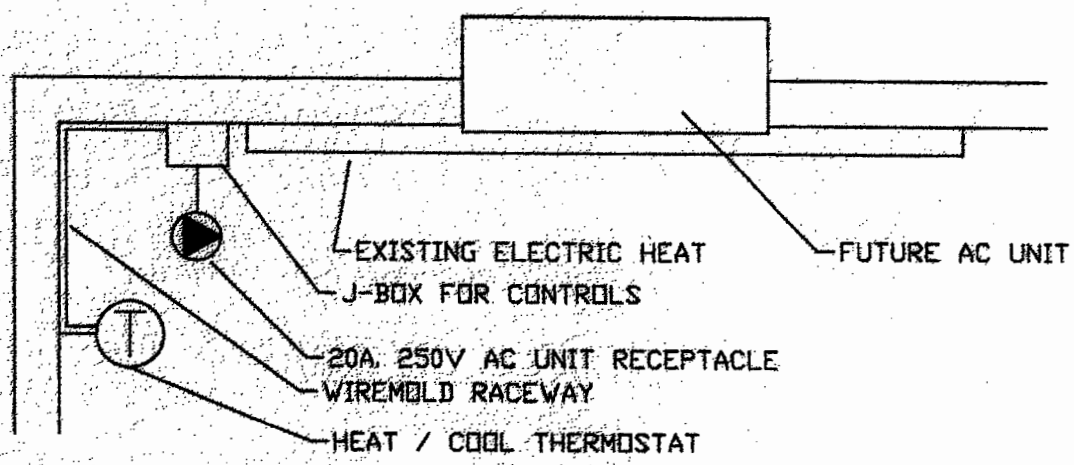
3.05 INSTRUCTIONS

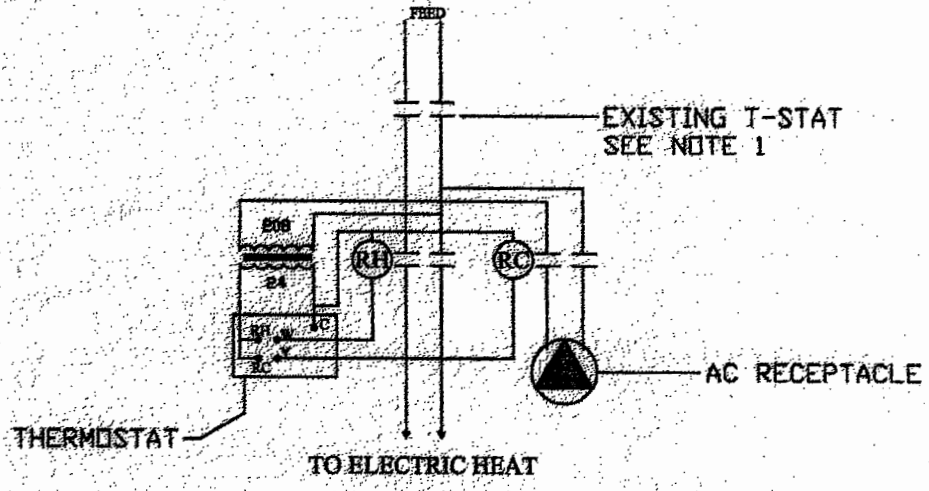
A. On completion of the project, instruct the Owner's representative in the care and operation of the system. The total period of instruction shall not exceed four (4) hours per building. The time of instruction shall be arranged with the Owner. In addition to the prime Mechanical Contractor, the control system Contractor, Balancing Contractor, and Owner's representative shall be present and participate in the Owner's instruction.

END OF SECTION

Division 16

Electrical





NOTE:

1) DISCONNECT AND WIRE THRU EXISTING THERMOSTAT. BLANK OFF BOX.

BENNETT ENGINEERING
CONSULTING ENGINEERS
BENNETT ROAD P.O. BOX 297
FREEPORT, MAINE 04032
(207) 865-9475

JOB: --
DESIGNED BY: XXX DATE: 18 MAR 2005
CHECKED BY: XXX DATE: 18 MAR 2005
SCALE: NONE PAGE: --