SPECIFICATIONS

FOR:

FILER SCHOOL DISTRICT

DISTRICT OFFICE

IMPROVEMENTS

FILER, IDAHO

Laughlin Ricks Architecture

architecture/planning

134 3rd Avenue East * Twin Falls, Idaho 83301

(208) 736-8050

TABLE OF CONTENTS

END OF TABLE OF CONTENTS

SECTION 010010 - BASIC REQUIREMENTS

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 CASH ALLOWANCES

A. None

1.3 SCHEDULE OF VALUES

A. Submit schedule on AIA Form G703, or as approved by Architect.

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

1.4 APPLICATIONS FOR PAYMENT

A. Submit three copies of each application on AIA Form G702 and G703 or as approved by Architect.

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

C. Payment Period: Monthly. Pay request to be submitted by the 25th day of the month and payment to be made within 30 days of approval of the pay request.

1.5 CHANGE PROCEDURES

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

B. Change Order Forms: AIA G701, or as approved by Architect.

1.6 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.

1.7 FIELD ENGINEERING

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

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

1.8 CUTTING AND PATCHING

A. Employ a 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. 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. Fit Work tight to adjacent elements. Maintain integrity of wall, ceiling, or floor construction; completely seal voids. Provide all required protection including, but not necessarily limited to shoring, bracing, and support to maintain structural integrity of the Work. Provide proper dust abatement materials and/or procedures to protect persons and property.

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

G. Refinish surfaces to match adjacent finishes.

H. Remove and properly replace defective or damaged Work in place.

I. Restoration of existing and/or newly installed surfaces, assemblies, systems, etc.

J. Thoroughly clean and restore areas, finishes and spaces where work is performed or used to access the Work.

1.9 SUBMITTAL PROCEDURES

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

B. The General Contractor shall review all submittals prior to submitting to Owner. The responsibility to properly review and coordinate the submittals is solely the Contractor's and is the means by which the Contractor can confirm that the products, materials, systems, etc., by his Subcontractors will be constructed in accordance with the Contract Documents. Review of each submittal by the Architect and the Engineer shall not be construed as a complete or comprehensive check. The Architect/Engineer review shall not relieve the Contractor from responsibility for errors which may exist in the submittal.

C. 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.

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

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

F. No extension of time will be authorized because of the Contractor’s failure to transmit submittals which have not been adequately checked or properly coordinated by the Contractor.

1.10 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial progress schedule in duplicate within fifteen (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, or section of Work, identifying first work day of each week.

1.11 PROPOSED PRODUCTS LIST

A. Within fifteen (15) 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.

1.12 PRODUCT DATA

A. Product Data for Review:

1. Submitted to Owner 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.

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.

1.13 SHOP DRAWINGS

A. Shop Drawings for Review:

1. Submitted to Owner 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.

B. Shop Drawings for Information:

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

C. Submit the number of opaque reproductions which Contractor requires, plus two copies which will be retained by Owner.

1.14 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.

B. Samples for Selection:

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

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

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

1.15 MANUFACTURER INSTALLATION INSTRUCTIONS

A. When specified in individual specification sections, submit manufacturer printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.

1.16 MANUFACTURER CERTIFICATES

A. When specified in individual specification sections, submit certifications by manufacturer to Architect, 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.

1.17 QUALITY ASSURANCE - CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.

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. Defective work deemed to be unsatisfactory due to quality workmanship or installation shall be removed from project at the contractor’s expense.

1.18 EXAMINATION

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

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

1.19 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.

1.20 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.

1.21 REFERENCES

A. Conform to reference standards by date of issue current as of date of Contract Documents or date for receiving bids.

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

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

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

D. Contractor shall employ and pay for services of an independent testing agency to perform other specified testing and inspection.

1.23 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.

1.24 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Provide and maintain temporary lighting for construction operations. Contractor may use owner’s lighting as available.

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

1.25 TEMPORARY HEAT

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

1. Do not use heating equipment that will introduce moisture within enclosed or finished spaces.

B. The Contractor shall pay for temporary heating equipment and fuel, necessary accessories and to protect the operating equipment of the building.

C. The Contractor shall be responsible for utility expenses of heating and/or air conditioning, including operating of heating system. Contractor shall be responsible for expenses related to maintenance and operation during construction.

1.26 TEMPORARY VENTILATION

A. Contractor shall provide ventilation of enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases for the health and safety of the facility residents.

1.27 TELEPHONE SERVICE

A. Contractor shall provide, maintain and pay for telephone and telephone facsimile service to field office at time of project mobilization.

1.28 TEMPORARY WATER SERVICE

A. Contractor shall provide, maintain and pay for suitable quality water service required.

B. At the telephone, post a list of important telephone numbers, including the following:

1. Local police and fire department
2. Doctor/emergency room.
3. Ambulance service.
4. Contractor’s office.
5. Architects office.
6. Engineers’ offices.
7. Owner’s office.
8. Principal sub-contractor’s offices.

1.29 TEMPORARY SANITARY FACILITIES

A. Contractor shall provide and maintain restroom facilities for contractor use.

B. Contractor shall maintain in clean and sanitary condition.

1.30 WATER CONTROL

A. Contractor shall provide water to control dust.

1.31 INTERIOR ENCLOSURES

A. Provide temporary closures or barriers as required to limit debris, dust and noise control for acceptable conditions and protection of the areas of work.

B. Temporary Enclosures: At the earliest practical time provide temporary enclosure of materials, equipment, work in progress and completed parts of the work for compliance with OSHA safety regulations. Provide for safe access, exiting and circulation for occupants to, from, and between the various occupied areas of the facility as required for safety and as approved by authorities. Construction aids and miscellaneous general services and facilities include, but are not limited to the following:

1. Guardrails, barriers, fencing, etc.
2. Scaffolding.
3. Temporary access and exit and enclosures.

1.32 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.

1.33 SECURITY

A. Contractor shall coordinate to maintain building from unauthorized entry due to contractors accessing work areas.

B. Contractor shall establish work schedules and work hours that comply with local jurisdiction.

C. Contractor shall provide an emergency contact number, with a local contact available 24 hours a day, 7 days a weed, for Police/Fire/Owner contact. An answering service must have access to the Contractor at ALL times.

D. General: Provide a reasonably neat and uniform appearance in security and protection facilities acceptable to the Owner.

E. Fire Protection: Provide fire protection equipment. Comply with the applicable recommendations of NFPA Standard 10 “Standard for Portable Fire Extinguishers”. Locate fire extinguishers where they are most convenient and effective for their intended purpose. Store combustible materials in containers in recognized fire-safe locations.

1. Develop and supervise an overall fire prevention and first-aid fire protection program for personnel at the project site. Review needs with the local fire department officials and establish procedures to be followed. Instruct personnel in methods and procedures to be followed. Post warnings and information and enforce strict

discipline. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, and access routes for fighting fires. Prohibit smoking. Provide supervision of welding operations, combustible type temporary heating units, and similar sources of ignition for possible fires.

1.34 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. All waste material shall be disposed of in strict accordance with all current federal, state, and local requirements and regulations.

1.35 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

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

B. Remove underground installations to a minimum depth of 2 feet.

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.

1.36 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.

B. Owner or Tenant Supplied Products. – referred to as Owner hereafter

1. Owner shall arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.

2. Arrange and pay for product delivery to site.

3. Submit claims for transportation damage and replace damaged, defective, or deficient items.

4. Arrange for manufacturers' warranties, inspections, and service.

C. Contractor's Responsibilities.

1. Review Owner reviewed shop drawings, product data, and samples.

2. Receive and unload products at site; inspect for completeness or damage and report damaged, defective, or deficient items to Owner.

3. Handle and store finished products. Install finished products as indicated in Contract Documents.

4. Repair or replace items damaged after receipt.

1.37 TRANSPORTATION, HANDLING, STORAGE AND PROTECTION

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

1.38 PRODUCT OPTIONS

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

1.39 SUBSTITUTIONS

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

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

C. In making request for Substitution, the Bidder/Contractor represents:

1. They have personally investigated proposed product and determined that it is equal or superior in all respects to that specified.

2. They will provide the same guarantee for the substitute as for the product specified.

3. They will coordinate installation of the accepted substitution into work, making such changes as may be required for work to be complete in all respect.

4. They waive all claims for additional costs related to substitution(s) which consequently becomes apparent.

5. Cost data is complete and includes all related costs under this Contract.

6. Project Schedule will not be altered.

1.40 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.

1.41 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks 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.

1.42 TESTING, ADJUSTING, AND BALANCING

A. General Contractor shall employ and pay for services of an independent engineering firm to perform testing, adjusting, and balancing and certification of such for the building HVAC to the owner and the mechanical inspector.

1.43 OPPERATIONS, TERMINATION AND REMOVAL:

A. Supervision: Do not allow hazardous, dangerous or unsanitary conditions to develop or persist on the project site.

B. Maintenance: Operate and maintain temporary services and facilities in good operating condition throughout the time of use and until removal. Protect from damage by freezing temperatures and similar elements.

C. Termination and Removal: Remove each temporary service and facility promptly when the need for it has ended. Complete and restore permanent and existing work which may have been damaged because of the temporary service or facility.

1. Materials and facilities that constitute temporary services and facilities are and remain the property of the Contractor.

2. Prior to Substantial Completion, Clean and renovate or restore permanent services, facilities and assemblies that have been used to provide temporary services and facilities during the construction period to original condition. Replace “construction” filters in the mechanical system.

1.44 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. In ordered to achieve Substantial Completion:

1. Contractor shall prepare a comprehensive list of items to be completed or corrected. Proceed with the completion and correction of the listed items.

2. Provide approvals from the Building and the Fire Authority allowing for occupancy of the building.

3. Provide the following:

a. Operation and maintenance manuals for the Owner's use.
b. Complete startup testing procedures and provide documentation.

c. Complete instruction for proper use, maintenance, and operation of all systems in the building for the Owner's designated personnel.

d. Submit brief written documentation for type of training undertaken and sign-in sheet showing personnel in attendance for instruction.

1) Complete final cleanup requirements including finishing of flooring.

C. Architect's Review Procedures

1. Following completion of the provisions listed above, Contractor shall submit a written request for the Architect's inspection. Further, Contractor shall include documentation with the written request for inspection that each of the provisions listed above have been complied with and have been completed. After the above information is received, the Architect will proceed with the requested inspection within a reasonable time or will advise Contractor in writing of unfulfilled requirements.

2. If the Work or designated portion of the Work is Substantially Complete in the opinion of the Architect, the Architect will prepare the Certificate of Substantial Completion which shall establish the date of Substantial Completion and other information. If the Work or designated portion of the Work is not complete in the opinion of the Architect, the Architect shall notify Contractor in writing. Contractor shall then complete the work and shall again request, in writing, a second inspection by the Architect.

a. The number of inspections the Architect will make to determine Substantial Completion before costs will be incurred by Contractor is specified.

3. The Architect shall attach any listing of punch list items to be corrected by the Contractor to the Certificate of Substantial Completion, which shall indicate the time period in which Final Completion shall be achieved. The punch list shall be completed, with documentation by Contractor showing the date of correction, the party making the correction, and certification by Contractor that all items on the punch list have been completed prior to the request for final inspection.

4. Following the completion of the punch list and on receipt of the above information and Contractor's certification that the punch list items have been completed, Contractor shall request, in writing, the Architect's final inspection.

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

1.45 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

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

F. Glass: Clean all glass inside and outside.

G. For all resilient flooring finishes, just prior to Architect's inspection for Substantial Completion, Contractor shall thoroughly clean all flooring materials and apply commercial floor polish, per the manufacturer's directions and will apply proper type of materials and buffing procedures in strict compliance with the manufacture's instructions for each type of flooring. Coordinate with Owner for product used and include instructions for flooring maintenance in Operations and Maintenance Manual.

1.46 ADJUSTING

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

1.47 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of Contract Documents to be utilized for record documents. Indicate all utility location and/or changes to original construction documents.

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

C. Making Entries of Record Documents: Using and erasable colored pencil (not ink or indelible pencil), clearly describe the change by note and by graphic line, as required. Date all entries. Call attention to the entry by a “cloud” around the area or areas affected. In the event of overlapping changes, different colors may be used for each of the changes. Make entries in the pertinent Documents as approved by the Architect.

1. Documents with unclear or unintelligible markings will be rejected and will be required to be resubmitted.

D. Tape addenda, revisions, and changes on drawings and/or in specifications and schedules.

1.48 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 or capacity expansion binders with durable plastic or cloth 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.

D. Contents: Include at least the following:

1. Neatly typewritten index near the front of the Manual, giving immediate information as to location within the Manual of all emergency data regarding the installation.

2. Copy of all guarantees and warranties issued.

3. Complete instructions regarding operation and maintenance of all equipment involved, including lubrication, disassembly, and reassembly.

a. For each product, provide the following in list or “spread sheet: format (organized in order by Division and Section):

1) Division and Section name/number.
2) Subcontractor name; address, telephone number; fax number; contact person.
3) Name of product(s); model number(s); part number(s); etc.
4) Name of manufacturer(s); address; telephone number; fax number.
5) Supplier name; address; telephone number; fax number; contact person.

6)

4. Complete nomenclature of all parts of all equipment.
5. Manufacturers' bulletins, cuts, and descriptive data, where pertinent, clearly indicating the precise items included in this installation and deleting, or otherwise clearly indicating, all manufacturers' data with which this installation is not concerned.

1.49 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.

D. The starting date of each and every warranty begins at the date of Substantial Completion, Whether or not the warranty is dated otherwise.

E. Provide certification that all materials and products used in the construction are asbestos (ACM) free.

1.50 NOISE, LANGUAGE, TOBACCO AND FIREARMS

A. Proper conduct on project shall be maintained at all times. No loud sound systems, no loud music, no loud shouting, no loud language, no smoking or other disruptive noise shall be allowed or generated at any place on the project site. Contractor shall be responsible to maintain a quality work environment that is not disruptive to workers, employees, and others associated with the Work.

B. Loud or abusive language will not be tolerated by any person on the project site. In the event that any person generates such language and fails to conduct themselves in a proper manner or practices loud and/or abusive language, they shall be informed by the Contractor of these provisions and if repeated, shall be dismissed from the site by the Contractor. Contractor shall have the responsibility to see that such behavior is not tolerated or allowed on site and be responsible for removal of those not in compliance with the above requirements.

C. Uphold Owner's Policy of no firearms allowed, in any form, on the property.

2 PART 2 - PRODUCTS
Not Used.

3 PART 3 - EXECUTION
Not Used.

END OF SECTION

Section 013500 – PROJECT ALTERATION PROCEDURES

PART 1 - GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. General: Procedural requirements and established standards for coordination and provision of interfaces between existing construction to remain and new Work, include, but are not limited to:

1. Restoration of existing Work, areas, surfaces, conditions, systems, etc., as applicable.

2. Restoration and/or correction of existing Work removed or damaged as a result of Work on this Contract or Work that has been rejected, as applicable.

B. Requirements for demolition of existing Work in preparation of new Work are specified in other Divisions of this specification.

C. Refer to Technical Specification sections and drawings and schedules for other requirements.

1.2 QUALITY ASSURANCE

A. Comply with applicable referenced codes, rules, regulations and required approvals by local authorities for each occurrence and condition of Work described in this section.

1.3 SUBMITTALS

A. Submit notifications of unusual conditions, requests for interpretations, proposals for alternate methods and other communications and requests regarding alteration procedures in writing to the Architect.

PART 2 - PRODUCTS

2.1 GENERAL

A. Compatibility: Provide new materials which are compatible with existing materials and/or substrates to which they are to be applied or attached.

1. Full restoration of site and site Work and full replacement and restoration of rejected Work is the obligation and responsibility of the Contractor.

2.2 PRODUCTS FOR PATCHING WORK

A. Match existing products and Work for patching where indicated.

1. Match existing products for areas of non-conforming Work that will be removed and replaced that have been rejected or as a result of a correction notice issued by the Owner or Architect.

PART 3 - EXECUTIONS

3.1 PREPARATION

A. Cut, move or remove all items and existing Work for restoration Work; replace and fully restore all aspects of area(s) to prime condition at completion.

B. Remove and properly dispose of all debris and abandoned items from area and from concealed spaces.

C. Prepare surfaces and remove surface finishes to provide for proper installation of new Work and new finishes.

3.2 INSTALLATION

A. Coordinate Work to expedite completion sequentially and to accommodate Owner occupancy. Sequence and schedule Work to minimize construction traffic in Owner occupied spaces.

B. Remove, cut, and patch Work in a manner to minimize damage and to provide means of restoring products, finishes, surfaces, systems, etc. to match original conditions as acceptable to Owner and Architect.

1. Do not overload or apply excessive forces to existing structures and assemblies.

2. Restore all systems to working condition acceptable to Owner.

C. Provide products and materials as indicated to result in finished appearance and function acceptable to Owner and Architect.

1. Verify and coordinate exact existing conditions and with details if drawn.

2. If no detail is drawn for a specific condition, verify a similar detail with Architect. Adjust to fit the condition at no extra cost to the contract.

3.3 REPAIR OF DAMAGED SURFACES

A. Patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections which are the result of work of the contract.

1. Patching procedure must result in a surface or finish that exactly matches existing work. Non-matching work will be the basis for rejection.

3.4 FINISHES

A. Finish patchings to produce uniform finish and texture over entire area. When textures or colors cannot be matched, retexture or repaint entire surface to nearest intersection(s).

3.5 CLEANING

A. In addition to cleaning specified in other Division 1 sections and for specific Work specified in Divisions 2 through 33, expertly clean Owner-occupied areas of construction debris daily.

END OF SECTION

SECTION 017000 - SELECTIVE DEMOLITION

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. This Section includes but is not limited to:

1. Demolition and removal of all portions of the building in preparation for the provision of new work; Typical above and below grade elements.
2. Patching and repairs

1.2 DEFINITIONS

A. Remove: Remove and legally dispose of items except those to be reinstalled, salvaged, or to remain the Owner's property. Removal of existing work shall be in preparation for the provision of new work. The Owner will turn the buildings over to the Contractor and anything left behind is Contractor's option to salvage, save or dispose.

B. Remove and Salvage: Items to be removed and salvaged remain the Owner's property prior to turning building over to Contractor. Remove, clean, and pack or crate items to protect against damage that are indicated. Otherwise, it is the responsibility of the Owner. Identify contents of containers and deliver to Owner's designated storage area.

C. Remove and Reinstall: Remove and reinstall items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage/ Reinstall items in the same locations or in locations indicated.

D. Existing to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Architect, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.

1.3 MATERIALS OWNERSHIP

A. All items remain the ownership of the Owner until building is turned over to the Contractor. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the Owner's property and shall be removed from the site with further disposition at the Contractor's option.

END OF SECTION

SECTION 024113 - SELECTIVE SITE DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Demolish and remove portions of existing site facilities as described in Contract Documents.

B. Related Requirements:
   1. New and replacement work specified in appropriate specification Sections.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Scheduling: Include on Construction Schedule detailed sequence of individual site demolition operations.

1.3 SUBMITTALS

A. Closeout Submittals:
   1. Record Documentation: Identify abandoned utility and service lines and capping locations on record drawings.

PART 2 PRODUCTS: Not Used

PART 3 EXECUTION

3.1 PREPARATION

A. Notify corporations, companies, individuals, and local authorities owning conduits running to property.

   1. Protect and maintain conduits, drains, sewers, pipes, and wires that are to remain on the property.

   2. Arrange for removal of wires running to and on property. Remove pipes and sewers in accordance with instructions of above owners.

3.2 PERFORMANCE

A. Execute work in an orderly and careful manner, with due consideration for neighbors and the public.

B. Carefully remove, disassemble, or dismantle as required, and store in approved location on site, existing items to be reused in completed work. Coordinate with Owner for equipment and materials to be removed by Owner.

C. Concrete And Paving Removal:

1. Saw cut joints between material to be removed and material to remain to full depth.

2. Hand-excavate trench 12 inches wide and 16 inches deep along concrete or paving to be removed. Cut roots encountered with saw, axe, or pruner. Do not cut roots with excavating equipment. Remove roots under concrete and paving to be replaced down to 12 inches below finish grade.

3.3 CLEANING

A. Keep streets and roads reasonably clean, and sweep daily.

B. Sprinkle demolition rubbish and debris as necessary to lay dust.

C. Promptly remove demolition materials, rubbish, and debris from property.

END OF SECTION

SECTION 033000 - CONCRETE

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes but is not limited to the following:

1. Cast-in place concrete, including formwork, reinforcing, mix design, placement procedures, curing, and finishes

1.2 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. w/cm: The ratio by mass of water to cementitious materials.

1.3 SUBMITTALS

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

B. Submit shop drawings for reinforcement steel: Indicate reinforcement sizes, spacing, diagrams of bent bars, wire fabric, bending and cutting schedules, splicing, supporting and spacing devices and arrangement of concrete reinforcement. Include special reinforcement required for openings.

C. Material suppliers test reports for concrete materials and mix design.

1.4 PREINSTALLATION MEETING

Preinstallation Conference: Conduct conference at Project site

1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
   a. Contractor's superintendent.
   b. Independent testing agency responsible for concrete design mixtures.
   c. Ready-mixed concrete manufacturer.
   d. Concrete Subcontractor.
   e. Special Concrete finish Subcontractor
2. Review the following:
   a. Special inspection and testing and inspecting agency procedures for field quality control.

b. Construction joints, control joints, isolation joints, and joint-filler strips.
c. Semirigid joint fillers.
d. Vapor-retarder installation.
e. Anchor rod and anchorage device installation tolerances.
f. Cold and hot weather concreting procedures.
g. Concrete finishes and finishing.
h. Curing procedures.
i. Forms and form-removal limitations.
j. Shoring and reshoring procedures.
k. Methods for achieving specified floor and slab flatness and levelness.
l. Floor and slab flatness and levelness measurements.
m. Concrete repair procedures.
n. Concrete protection.
o. Initial curing and field curing of field test cylinders (ASTM C31/C31M.)
p. Protection of field cured field test cylinders.

1.3 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of following codes, specifications, and standards, except where more stringent requirements are shown or specified:

1. ACI 301, “Specification of Structural Concrete for Buildings” and ACI 302.1R “Guide for Concrete Floor and Slab Construction,” Current Edition.

2. ACI 305R, “Hot Weather Concreting,” Current Edition.

3. ACI 306R, “Cold Weather Concreting,” Current Edition

4. ACI 308, “Standard Practice for Curing Concrete,” Current Edition.

5. ACI 309, “Standard Practice for Consolidation of Concrete,” Current Edition.

6. ACI 318, “Building Code Requirements for Reinforced Concrete,” Current Edition.

7. ACI 347, “Recommended Practice for Concrete Formwork,” Current Edition.

8. ACI 360R, “Design of Slabs on Grade,” Current Edition.

9. Concrete Reinforcing Steel Institute (CRSI), “Manual of Standard Practice,” Current Edition.

B. TESTING

1. Tests: Testing for moisture control and the results of the tests will be required prior to installation of finish floor surfaces. The tests include the following:

2. ASTM F 710: “Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.” Schedule the referenced tests to be taken after the space to receive flooring is brought to “in-use” conditions through the use and operation of the permanent HVAC system.

3. ASTM F 1869 “Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydros Calcium Chloride.”

4. Alkalinity Tests: Alkalinity of the concrete surface shall not be less than pH 7.5, minimum, and shall not exceed pH 8.5, maximum. The test for alkalinity shall be taken at the floor surface only following completion of all abrasive removal operations (shot blasting, sanding, or grinding).

PART 2 PRODUCTS

2.1 FORM MATERIALS

A. Forms for Exposed Finish Concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings.

1. Use overlaid plywood complying with U.S. Product Standard PS-1 “A-C or B-B High Density Overlaid Concrete Form,” Class I.

B. Form Ties: Factory-fabricated snap-off metal form ties.

2.2 REINFORCING MATERIALS

A. Reinforcing Bars: ASTM A 615, Grade 60, deformed, unless otherwise indicated.

2.3 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, for cast-in-place and pre-cast concrete.

B. Fly Ash: Fly ash is not allowed in any concrete mixes used for slabs-on-grade or slabs on metal deck.

C. Welded Steel Wire Fabric: ASTM A185 Plain type, fabricated into flat sheets, coiled rolls prohibited.

D. Chairs, Bolters, Bar Supports, and Spacer: Sized and shaped for support of reinforcing, conforming to CRSI.

E. Fabricate concrete reinforcing in accordance with ACI 315.

1. Use one brand of cement throughout project unless otherwise acceptable to Architect.

    a. Portland Cement ASTM C 150, Type II Preferred

    b. Use cement that exhibits low shrinkage characteristics.

    c. Type of cement (Type I, Type I/II, Type II, etc.) used will be at discretion of the batching plant in order to meet the specified criteria for low shrinkage, low alkalinity, low permeability, etc.

F. Aggregates: ASTM C 33 and as herein specified.

1. Local aggregates not complying with ASTM C 33 but that special tests or actual service have shown to produce concrete of adequate strength and durability may be used when acceptable to Architect.

2. Provide aggregates that test low in alkalinity.

3. Aggregate size shall be as indicated in ACI 301 for structural concrete and as indicated in ACI 302.1R and ACI 360R.

    a. For structural concrete, maximum aggregate size shall not exceed 2/3 the spacing distance of the reinforcement, but not to exceed 1 1/2".

    b. For slab-on-grade construction and for concrete pavements, maximum aggregate sizing shall equal approximately 1/3 of the slab section but shall not exceed 1 1/2". (Example: For 4" slabs, maximum aggregate size equals $\pm$ 1 1/2"; for 2" topping, maximum aggregate size equals $\pm$ 5/8".)

G. Water: Drinkable with low alkaline characteristics.

H. Admixtures, General: Provide admixtures for concrete that contain not more than 0.1 percent chloride ions.

I. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include:

    a. "Air-Tite," Cormix.

    b. "Air-Mix" or "Perma-Air," Euclid Chemical Co.

    c. "Darex AEA" or "Daravair," W.R. Grace & Co.

d. “MB-VR” or “Micro-Air,” Master Builders, Inc.

e. “Sealtight AEA,” W.R. Meadows, Inc.
f. “Sika AER,” Sika Corp.

g. or Approved.

2.4 RELATED MATERIALS

A. Moisture-Retaining Cover for Interior Slabs-On-Grade: The following complies with ASTM C 171.

1. Polyethylene film per ACI 302.1R.

B. Vapor Retarder: Provide vapor retarder cover over prepared base material directly below all slabs on grade.

C. Underlayment Compound: Free-flowing, self-leveling, pumpable, cement-based compound for applications from feathered edge to 1/2-inch or from feathered edge to 4-inch thick with sand extension.

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

a. “LevelLayer II,” Dayton Superior Corp. (Design Standard).

b. “Flo-Top,” Euclid Chemical Co.

c. “Pourcrete,” Master Builders, Inc.

d. “Thoro Underlayment Self-Leveling,” Thoro System Products.

e. “Raeco Self-Leveling Underlayment (SLU),” Raeco, Seattle, WA.
f. or Approved.

D. Bonding Compound: Polyvinyl acetate or acrylic base.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include:

a. Acrylic or Styrene Butadiene:

1) “Day-Chem Ad Bond,” Dayton Superior Corp. (Design Standard)

2) “SBR Latex,” Euclid Chemical Co.

3) "Daraweld C," W.R. Grace & Co.

4) "Hornweld," A.C. Horn, Inc.

5) "Acryl-Set," Master Builders Inc.

6) "Intralok," W.R. Meadows, Inc.

7) or Approved.

2. Use recommended bonding compound for bonding new to new or new to old concrete.

E. Non-Shrink Grout: Premixed compound with non-metallic aggregate cement, water reducing and plasticizing agents; capable of minimum compressive strength of 6,000 psi. Master Builders "Embeco" or approved.

2.5 PROPORTIONING AND DESIGNING CONCRETE MIXES

A. Prepare design mixes for each type and strength of concrete by using methods as specified in ACI 301. Proportions shall be as necessary to obtain indicated strengths.

1. Note requirements for low alkaline component materials for concrete slabs-on-grade.

2. No fly-ash will be allowed in the mix design.

B. Submit written reports to Architect of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until proposed mix designs have been reviewed and approved.

C. Design mixes to provide normal weight concrete with the properties as indicated on drawings and schedules. Light weight concrete is required at slab on metal deck as indicated on the drawings and schedules.

D. Water-Cement Ratio for Low Shrink Concrete: Provide concrete for following conditions with maximum water-cement (W/C) ratios as follows:

1. Interior Slabs: W/C: 0.48 or higher [air entrainment: not allowed].

a. Advise, confer with and coordinate these W/C ratios with the entity contracted to perform the concrete work.

2. Exterior Slabs subject to de-icers: W/C 0.45- [259 lbs. water/564 lbs. cement; air-entrainment: 6% (+/- 1%)].

E. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:

1. Interior Slabs: 4 inches maximum. (Slump limit prior to introduction of water-reducing admixture).
   a. Advise, confer with and coordinate these slump limits with the entity contracted to perform the concrete polishing work.

2. Reinforced foundation systems: 4 inches maximum.

3. Other concrete and exterior flat work: Not more than 4 inches maximum.

2.6 ADMIXTURES

A. Provide high-range or medium range water-reducing admixture in interior slab-on-grade concrete for workability. Submit mix design with manufacturer's product information and specifications for review and approval.

B. Provide accelerating admixture in concrete slabs placed at ambient temperatures below 50° F (10° C).

C. Where used, admixtures for water reduction and set control shall be provided in strict compliance with manufacturer's directions.

2.7 CONCRETE MIXING

A. Ready-Mix Concrete: Comply with requirements of ASTM C 94, and as specified.

1. When air temperature is between 85° F (30° C) and 90° F (32°C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 ° F (32° C), reduce mixing and delivery time to 60 minutes.

2. Verify with Architect the procedures to be taken to comply with referenced standards regarding hot or cold weather delivery and placement of concrete.

PART 3 EXECUTION

3.1 GENERAL

A. Coordinate the installation of joint materials insulation and vapor retarders with placement of forms and reinforcing steel.

B. Comply with requirements of ACI 301, "Standard Specification for Structural Concrete."

3.2 FORMS

A. General: Design, erect, support, brace, and maintain formwork to support vertical and lateral, static and dynamic loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances complying with ACI 347.

B. Construct forms to sizes, shapes, lines, and dimensions shown and to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, etc., required in work. Solidly butt joints and provide backup at joints to prevent leakage of cement paste.

C. Fabricate forms for easy removal without hammering or prying against concrete surfaces.

D. Chamfer exposed corners and edges using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

E. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and coordinate location of openings, recesses, locker bases and chases from trades providing such items. Accurately place and securely support items built into forms.

F. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before concrete is placed. Retighten forms and bracing before concrete placement as required to prevent mortar leaks and maintain proper alignment.

3.3 PLACING REINFORCEMENT

A. General: Comply with Concrete Reinforcing Steel Institute’s recommended practice for “Placing Reinforcing Bars,” for details and methods of reinforcement placement and supports and as herein specified.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials that could reduce or destroy bond with concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as approved.

D. Place reinforcement to obtain at least minimum coverage for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

3.4 JOINTS

A. Construction Joints: Locate and install construction joints as acceptable to Architect, unless indicated on drawings.

B. Isolation Joints in Slabs-on-Ground: Construct isolation joints in slabs-on-ground at points of contact between slabs-on-ground and vertical surfaces, such as column pedestals, foundation walls, grade beams, and elsewhere as indicated.

C. Contraction (Control) Joints in Slabs-on-Grade: Construct contraction joints in slabs-on-grade to form panels of patterns as shown. Use saw cuts 1/8-inch-wide on interior slabs as shown on drawings.

1. Contraction joints in exposed floor slabs should be formed as soon as possible after slab finishing as may be safely done without dislodging aggregate to minimize shrinkage cracking.

2. For joint patterns not shown, provide joints not exceeding 12 feet in either direction and located to conform to bay spacing wherever possible (at wall lines or column centerlines, half bays, third bays, etc.). Verify joint layout with Architect.

3. Joint sealant material is specified in Division 7 Sections of these specifications.

3.5 INSTALLATION OF EMBEDDED ITEMS

A. General: Set and build into work anchorage devices and other embedded items required for other work that is attached to or supported by cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached thereto.

B. Forms for Slabs: Set edge forms, bulkheads, and intermediate screed strips for slabs to obtain required elevations and contours in finished surfaces. Provide and secure units to support screed strips using strike-off templates or compacting-type screeds.

3.6 PREPARATION OF FORM SURFACES

A. General: Coat contact surfaces of forms with an approved, non-residual, low-VOC, form-coating compound before reinforcement is placed.

B. Do not allow excess form-coating material to accumulate in forms or to come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer’s instructions.

C. Coat steel forms with a non-staining, rust-preventative material. Rust-stained steel formwork is not acceptable.

D. Install expansion joint material when abutting to other construction.

3.7 CONCRETE PLACEMENT

A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other crafts to permit installation of their work; cooperate with other trades in setting such work. Notify Building Official and Architect prior to placement of concrete.

B. General: Comply with ACI 304, "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete," and as herein specified.

C. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete that has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints. Deposit concrete to avoid segregation at its final location.

D. Placing Concrete in Forms: Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI 309.

1. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine.

E. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.

1. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.

2. Bring slab surfaces to correct level with straightedge and strike off. Use appropriate equipment to smooth surface, free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.

3. Maintain reinforcing in proper position during concrete placement.

4. Place expansion joint material.

5. Apply water and moisture retaining cover. Keep continuously wet for 7 to 10 days, depending on conditions.

F. Cold-Weather Placing: Comply with provisions of ACI 306 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

G. When air temperature has fallen to or is expected to fall below 40° F (4° C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50° F (10° C) and not more than 80° F (27° C) at point of placement.

1. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

H. Hot-Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.

1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90° F (32° C).
2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embodiment in concrete.

3. Fog spray forms, reinforcing steel, and subgrade just before concrete is placed.

I. Slab Tolerances:

1. Interior flat slabs shall be plus or minus a maximum of 3/16” in 10’-0”, without excessive changes in slope.

2. Interior slabs that slope to drain shall be formed and the concrete shall be placed to conform to the indicated elevations for top of slope and at the drain. Finish the sloping planes to tolerances for flat slabs by minimizing surface variations.

3.8 FINISH OF FORMED SURFACES

A. Rough Form Finish: For formed concrete surfaces not exposed to view in the finish work or concealed by other construction. This is the concrete surface having texture imparted by form-facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4 inch in height rubbed down or chipped off.

B. Smooth Form Finish: For formed concrete surfaces exposed to view or to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, damp proofing, veneer plaster, painting, or other similar system. This is an as-cast concrete surface obtained with selected form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch defective areas with fins and other projections completely removed and smoothed.

1. Perform “smooth rubbed finish” or “grout cleaned finish” (sack finish) per ACI 301 depending on timing when rubbed finish is applied.

C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.9 MONOLITHIC SLAB FINISHES

A. Scratch Finish: Apply scratch finish to monolithic slab surfaces that are to receive concrete floor topping or mortar setting beds for tile, Portland cement terrazzo, and other bonded applied cementitious finish flooring material, and as otherwise indicated.

1. After placing slabs, plane surface so that depressions between high spots do not exceed 1/2" under a 10' straightedge. Slope surfaces uniformly to drains where required. After leveling, roughen surface before final set, with stiff brushes, brooms or rakes.

B. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as hereinafter specified, and to slab surfaces which are to be covered with membrane or elastic waterproofing, such as sub-slabs for wood gymnasium floors, and as otherwise indicated.

1. After screening and consolidating concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of hand floats or power- driven floats, or both. Consolidate surface with power- driven floats or by hand-floating if area is small or inaccessible to power units. Check and level surface tolerances. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.

C. Hard Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed-to-view, and slab surfaces to be covered with resilient flooring, carpet, thinset ceramic tile, paint or other thin film finish coating system and to slabs used as substrates for wood flooring systems.

1. After floating, begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance. Grind smooth surface defects which would telegraph through applied floor covering system.

a. Texture of concrete slabs-on-grade to receive adhesive applied finish. Finish of concrete shall be similar to 60 grit sandpaper.

b. Provide slab "soft-cuts" not to exceed 12'-0" in each direction or as indicated.

D. Finish: Apply nonslip broom finish to exterior concrete platforms, steps and ramps, and elsewhere as indicated. Refer to Division 32 section "Concrete Walks" for finishing requirements for exterior concrete flatwork.

1. Immediately after trowel finishing, slightly roughen concrete surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.10 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures for passage of work by other trades after work of other trades is in place. Provide other miscellaneous concrete filling required to complete work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

3.11 CONCRETE CURING AND PROTECTION

A. General: Concrete Cure Finishing System

1. Product System: Green Umbrella, "GreenIce Cure System":

a. Curative / FinishAid / Fixative / Densifier System: Clear, penetrating, reactive VOC compliant compound designed to promote proper cure as well as mechanically, and chemically densified power troweled concrete surfaces.

a) Product: Green Umbrella, IceStart & IceStop.
b) Cure.
c) Fixative.
d) pH neutral.

2) Mechanical:

a) Integral Mechanical Densification Finishing Trowel.
b) Black Pad High-Speed Propane Burnished.

1. Concrete with shrinkage cracks will be assumed to have been improperly cured and will not be accepted. Before forming, advise Architect of detailing or restraints that Contractor believes may cause shrinkage cracking.

B. Provide curing and sealing compound to exposed exterior slabs, walks, parking lot light standard bases, and curbs as follows:

1. Apply specified curing and sealing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours and after surface water sheen has disappeared). Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer’s directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.

2. Do not use membrane curing compounds that will affect surfaces to be covered with Division 9 specified finish materials applied directly to concrete. Curing compounds are not acceptable for use on interior slabs-on-grade.

C. Provide moisture-retaining cover curing for interior slabs as follows:

1. Follow GreenIce Manufacturer installation procedure.

E. Curing Formed Surfaces: Cure formed concrete surfaces by moist curing with forms in place for the full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.

3.12 SHORES AND SUPPORTS

A. General: Comply with ACI 347 for shoring concrete construction.

B. Remove shores and reshore in a planned sequence to avoid damage to partially cured concrete. Locate and provide adequate reshoring to support work without excessive stress or deflection.

3.13 REMOVAL OF FORMS

A. General: Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50° F (10° C) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form-removal operations, and provided curing and protection operations are maintained.

B. Formwork supporting weight of concrete and other structural elements, may not be removed in less than 14 days and until concrete has attained at least 75 percent of design minimum compressive strength at 28 days.

3.14 REUSE OF FORMS

A. Clean and repair surfaces of forms to be reused in work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form- coating compound as specified for new formwork.

3.15 CONCRETE SURFACE REPAIRS

A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms as acceptable to Architect.

B. Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish.

Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope and smoothness.

1. Repair finished unformed surfaces that contain defects that affect durability of concrete. Surface defects, as such, include crazing and cracks, spalling, pop-outs, honeycomb, rock pockets, and other objectionable conditions.

2. Correct high areas in unformed surfaces by grinding after concrete has cured at least 14 days.

3. Correct low areas in unformed surfaces during or immediately after completion of surface finishing operations by cutting out low areas and replacing with patching compound. Finish repaired areas to blend into adjacent concrete. Proprietary underlayment compounds may be used when acceptable to Architect.

C. Perform structural repairs with prior approval of Architect for method and procedure, using specified epoxy adhesive and mortar.

D. Repair methods not specified above may be used, subject to acceptance of Architect.

3.16 QUALITY CONTROL TESTING DURING CONSTRUCTION

A. General: The Owner may employ a testing laboratory to perform tests and to submit test reports.

B. Sampling and testing for quality control will occur during placement of concrete. Cooperate with the testing laboratory to provide cylinders for compressive tests, samples of the materials for slump tests, air content and temperature, and access to the work. Test results will be reported in writing to the Architect and the Contract Officer for distribution.

C. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Architect. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed. Contractor shall pay for such tests when unacceptable concrete is verified.

3.17 STANDARD FF/FL SPECIFICATION

A. Designation: The floor area bounded by the exterior foundation is designated the Random Traffic Floor. Any floor slab which comprises a portion of the Random Traffic Floor is designated a Random Traffic Slab.

B. Local Flatness/Levelness: Except as set forth in Paragraph D below, the Random Traffic Floor shall conform to the following minimum F-number requirements:

1. Specified Overall Values (resilient flooring areas): OAFF:35/OAFL25

2. Specified Overall Values (carpeted areas): OAFF:21/OAFL15

C. General Conformity to Design Grade: Except as set forth in Paragraph D below, the entire Random Traffic Floor shall fall within plus or minus 1/4” of its specified (matching existing floor) elevation.

1. Floor level tolerance at base cabinets shall not exceed 1/4” along entire length of cabinet with no exception for elevation slab construction.

D. Exception: Both the overall and minimum local FL levelness tolerances set forth in Paragraph B above shall not apply to any Random Traffic Slab that is to be inclined or cambered.

E. Testing: All floor flatness, levelness, and grade conformity tests shall be made at the Owner’s expense on each newly installed Random Traffic Slab within 72 hours after completion of the final troweling operation. FF and FL tests shall be conducted in accordance with ASTM E1155. Grade conformity tests shall be made using either an optical or laser level. Results of all floor tolerance tests (including a formal notice of acceptance or rejection of the work) shall be provided to the Contractor within 24 hours after data collection. Failure to adhere to the testing and reporting requirements set forth in this paragraph shall constitute *de facto* acceptance of the work. (Note: Weekends and holidays shall be ignored when computing specified testing and reporting deadlines.)

F. Remedy for Out-of-Tolerance Work: The entire Random Traffic Floor shall be subdivided into Minimum Local Floor Sections bounded either by the column and half-column lines, or the construction and control joints, whichever subdivision yields the smaller areas.

1. All Minimum Local Floor Sections measuring at or above both the specified MLFF and MLFL numbers shall be accepted for F-number compliance as constructed. All Minimum Local Floor Section slabs-on-grade which fail to meet or exceed both specified minimum local F-numbers shall be ground and/or retopped, or in extreme cases, removed and replaced.

3.18 REMEDY FOR OUT-OF-TOLERANCE WORK FOR SLAB-ON-GRADE CONDITIONS

A. Grind areas of slab-on-grade construction that have curled to out-of-tolerance condition. Bring the work into tolerance (or replace as indicated) at no cost to the Owner.

1. Grind high points at construction joints to meet specified tolerance.

2. Areas of slab-on-grade construction that have curled to being out-of-tolerance shall be ground to bring the work into tolerance.

B. Fill low points in slabs that have finished flooring to a level that will properly meet the specified tolerance at no cost to the Owner.

1. Slab areas that are excessively low that do not have finished flooring shall be removed and replaced.

C. Repair shrinkage cracks by grinding cracks in a “vee groove” and fill with epoxy-based repair materials and grind the filled areas smooth at no cost to the Owner.

END OF SECTION

SECTION 06100 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Structural floor, wall, and roof framing; built-up structural members; shop fabricated trusses; wall and roof sheathing; subfloor sheathing; sill gaskets.

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

C. Moisture Barrier.

1.2 QUALITY ASSURANCE

A. Perform Work in accordance with the following agencies:

1. Lumber Grading Agency: Certified by ALSC.
2. Plywood Grading Agency: Certified by APA.

PART 2 - PRODUCTS

2.1 LUMBER MATERIALS

A. Lumber Grading Rules: WCLIB and WWPA.

B. Joist Framing: Douglas Fir species, dense No. 2 or better grade, 2 x 10 size classification, 19 percent maximum moisture content.

C. Rafter Framing: Douglas Fir species, dense No. 2 or better grade, 2 x 4 size classification, 19 percent maximum moisture content.

D. Studding: Douglas Fir species, dense No. 2 or better grade, 2 x 4 and 2 x 6 size classification, 19 percent maximum moisture content.

E. Sill Plate: Pressure treated.

2.2 SHEATHING MATERIALS

A. Particleboard Roof Sheathing: Oriented Strand Board

B. Particleboard Wall Sheathing: Oriented Strand Board

C. Particleboard Floor Sheathing: ANSI A208.1, Oriented Strand Board

D. Plywood Floor Sheathing: ASTM D 6305

E. Telephone and Electrical Panel Boards: Plywood.

2.3 SHEATHING AND UNDERLAYMENT LOCATIONS

A. Sloped Roof Sheathing: 5/8 inch thick, 48 x 96 inch sized sheets, square edges, preservative treated.

B. Floor Sheathing: ¾ inch thick, 48 x 96 inch sized sheets, square, tongue and groove edges, preservative treated.

C. Exterior Wall Sheathing: 7/16 ’’, 48 x 96 inch sized sheets.

2.4 SHOP FABRICATED TRUSSES (NOT USED)

A. Design Roof Live and Dead Load: In accordance with current International Building Code.

B. Truss Type: Wood chord. Plate connected.

2.5 ACCESSORIES

A. Fasteners: Galvanized steel for exterior, high humidity, and treated wood locations, plain finish elsewhere.

B. Structural Framing Connectors: Joist Hangers: Galvanized steel, sized to suit framing conditions.

C. Sill Flashing (Under Sill Gasket): Galvanized steel.

D. Subfloor Glue: APA AFG-01, water base, waterproof.

E. Building Paper: (2) Two layers Grade D paper.

F. Roof Felt: #30 roof felt.

3 PART 3 - EXECUTION

3.1 FRAMING

A. Erect wood framing members in accordance with applicable code. Place members level and plumb. Place horizontal members crown side up.

B. Place sill gasket directly on foundation.

C. Frame double joist headers at floor and ceiling openings. Frame rigidly into joists. Frame double joists under wall studding.

D. Bridge joists and framing in excess of 8 feet span at mid-span members. Fit solid blocking and bridging at ends of members.

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

3.2 SHEATHING

A. Install subfloor sheathing with longer edge perpendicular to floor framing with end joints staggered. Secure sheet edges over firm bearing. Attach sheathing with subfloor glue and gypsum board screws.

B. Install sheathing to two span continuous.

C. Secure wall sheathing with ends staggered from bottom sill plate to top wall plate over firm bearing. (piece- meal sheathing shall not be allowed).

D. Place building paper over wall sheathing, weather lap joints and end laps, staple in place.

E. Provide solid edge blocking between sheets as directed by Roof Framing Plan or as indicated on plans.

F. Install telephone and electrical panel back boards with plywood sheathing material where required. Size the back board by 12 inches beyond size of electrical panel.

3.3 Moisture Barrier

A. Moisture Barrier shall be applied in one operation.

B. No doors, windows or other openings shall be installed until all openings are properly wrapped with moisture barrier and flashing as per manufacturer's details and recommendations and construction standards.

C. All openings and surfaces shall be made weather tight.

END OF SECTION

SECTION 062000 - FINISH CARPENTRY

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Finish carpentry items.

B. Wood standing and running trim.

C. Plastic laminate panels.

1.2 SUBMITTALS

A. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories. Provide the information required by AWI/AWMAC/WI Architectural Woodwork Standards.

B. Samples: Submit two samples of wood trim 6-inch long.

1.3 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years experience.

PART 2 - PRODUCTS

2.1 FINISH CARPENTRY ITEMS

A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI/AWMAC/WI Architectural Woodwork Standards for Custom Grade.

B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.

2.2 SHEET MATERIALS

A. Particleboard: ANSI A208.1; composed of wood chips, sawdust, or flakes of medium density, made with waterproof resin binders; of grade to suit application; sanded faces.

B. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130.

2.4 FASTENINGS

A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.

B. Fasteners: Of size and type to suit application; use corrosion resistant fasteners for exterior locations.

2.5 ACCESSORIES

A. Lumber for Shimming and Blocking: Softwood lumber of any appropriate species.

B. Primer: Alkyd primer sealer.

C. Wood Filler: Solvent base, tinted to match surface finish color.

2.6 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. Cap exposed plastic laminate finish edges with material of same finish and pattern.

C. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

D. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.

2.7 SHOP FINISHING

A. Sand work smooth and set exposed nails and screws.

B. Apply wood filler in exposed nail and screw indentations.

C. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.

D. Finish work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 5 – Finishing for Grade specified and as follows:

1. Transparent:

a. System – 12, Polyurethane, Water-based.

b. Stain: As selected.

c. Sheen: As selected.

2. Opaque:

a. System – 4, Latex Acrylic, Water-based.

b. Color: As selected.

c. Sheen: As selected.

E. Back prime woodwork items to be field finished, prior to installation.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.2 INSTALLATION

A. Install work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards requirements for grade indicated.

B. Set and secure materials and components in place, plumb and level.

C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

D. Install trim with appropriate mechanical fasteners.

E. Install panels with concealed fasteners.

3.3 PREPARATION FOR SITE FINISHING

A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

B. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.4 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

C. TCNA W202E.

D. Framed Walls: Wall sheathing, weather barrier, cementitious backer board, and direct application; TCNA W244E.

END OF SECTION

SECTION 064100 - CASEWORK

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Specially fabricated cabinet units.

B. Countertops.

C. Cabinet hardware.

D. Preparation for installing utilities.

1.2 SUBMITTALS

A. Shop Drawings: Indicate materials, component profiles, fastening methods, joining details, and accessories. Provide the information required by AWI/AWMAC/WI Architectural Woodwork Standards.

B. Product Data: Provide data for hardware accessories.

1.3 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of experience.

PART 2 PRODUCTS

2.1 CABINETS

A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI/AWMAC/WI Architectural Woodwork Standards for Custom Grade.

B. Plastic Laminate Faced Cabinets: Premium grade.

C. Cabinets:

1. Finish – Exposed Exterior Surfaces: Decorative laminate.

2. Door and Drawer Front Edge Profiles: Self-Edge banding with material of same finish and pattern.

3. Casework Construction Type: Type A – Frameless.

4. Interface Style for Cabinet and Door: Style 1 – Overlay; Flush overlay.

5. Adjustable Shelf Loading: 50 lbs. per sq. ft.

2.2 LAMINATE MATERIALS

A. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.

B. Provide specific types as indicated.

1. Horizontal Surfaces: HGL, 0.050-inch nominal thickness, colors as scheduled, finish as scheduled.

2. Vertical Surfaces: VGS, 0.028-inch nominal thickness, colors as scheduled, finish as scheduled.

3. Cabinet Liner: CLS 0.020-inch nominal thickness, colors as scheduled, finish as scheduled.

4. Laminate Backer: BKL, 0.020-inch nominal thickness, undecorated; for application to concealed backside of panels faced with high pressure decorative laminate.

5. Chemical Resistant Grade: 0.036"

C. Low Pressure Thermofused Polyester and Melamine Laminates: ALA (American Laminators Association).

D. PVC edge banding (polyvinyl chloride) on seamless rolls to be applied with automatic edge banding machines using hot-melt adhesives. Product to be chip proof, flame and moisture resistant.

E. Colors of laminates shall be as selected from the following manufacturers: "Nevamar," "Pionite", "Wilsonart", “Formica” and "Advanced Technology, Inc". Color as selected by Architect.

F. Colors of semi-exposed and concealed melamine shall be as selected from Almond, Folkstone Grey, Black and White. Color as selected by Architect.

G. Brands, colors, textures and patterns shall be as selected by the Architect from the full range of laminate choices, from any or all of the manufacturers specified above.

2.3 COUNTERTOPS

A. Plastic Laminate Countertops; Medium density fiberboard substrate covered with HPDL, 3-mm PVC edge banding and other specified requirements.

B. Wall-Mounted Counters: Provide skirts, aprons, brackets, and braces as indicated on drawings, finished to match.

C. Solid Surface Shelves: Provide solid surface shelves as manufactured by the following:
1. Corian by DuPont;
2. Samsung Chemical USA;
3. Wilsonart Contract.
4. Solid Surface Material:

a. Non-porous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment; not coated, laminated or of composite construction; meeting following criteria:

b. Flammability: Class 1 and A when tested to UL 723.

c. Finish: Matte, with a 60° gloss rating of 5 - 20.

d. Shelves shall be ¾" thick.

2.4 ACCESSORIES

A. Adhesive: Type recommended by AWI/AWMAC to suit application to meet requirements of ASTM-D3110.

B. Solvent Based Contact Cement: MMM-A-J130B.

C. Fasteners: Size and type to suit application.

D. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless-steel chrome-plated finish in exposed locations.

E. Concealed Joint Fasteners: Threaded steel.

F. Grommets: Standard plastic, painted metal, or rubber grommets for cut-outs, in color to match adjacent surface. Provide a wiring grommet at each electrical or data outlet and additional grommets as indicated in the contract documents.

G. Provide National Lock No. C8173-26D for cabinets as indicated in the contract documents.

H. Workmanship Complies with Industry Standards: AWI (Architectural Woodwork Institute).

2.5 HARDWARE

A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.

B. Drawer and Door Pulls: If not specified in drawings then provide 5/16" "U" shaped wire pull, aluminum with satin finish, 4-inch centers.

C. Drawer Slides:

1. Box Drawer: Single extension, almond epoxy finish with 75 lb. load rating and positive in and out stops, stay close detent, one side captive and four nylon rollers. Hettich #FR602L, Accuride No. 3832, or Blum No. 230M.

2. File Drawers: Full extension, zinc finish with 150 lb. load rating and positive in and out stops, stay close detent and steel ball bearing. Accuride #4034.

D. Adjustable Shelf Support System:

1. Standard adjustable shelf support system shall be provided by inserting nickel plated steel "L" shaped clips into predrilled 5-mm diameter holes 32-mm (1-1/4") on centers. Liberty #A1131 HNP. Shelves shall be fixed using a retaining screw.

E. Wall Standards and Brackets:

1. All adjustable shelves indicated on the Interior Elevations to have heavy duty metal standards and brackets, to be provided with zinc plated steel, adjustable 2” center. Knape & Vogt No. 85 and 185 double-slot standards and brackets.

F. Countertop Support Brackets:

1. Countertop support brackets shall be constructed of 16 gauge 1-1/2" tube steel, with welded construction, designed to support countertops off finished wall at desired heights. Brackets are powered coated. Color as selected by Architect.

2. 18" x 21" legs for up to 26" deep countertop.

3. 21" x 27" legs for up to 32" deep countertop.

G. Hinges: European style concealed self-closing type, steel with satin finish. Maximum door size of 24" x 36" and 24" x 48" shall be provided with 2 knuckles. Maximum door size of 24" x 84" shall be provided with 3 knuckles. Maximum door size of 24" x 90" shall be provided with 4 knuckles.

2.6 FABRICATION

A. Assembly: Shop assemble cabinets for delivery to sit in units easily handled and to permit passage through building openings.

B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.

C. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.

D. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.

1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.

E. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Seal cut edges.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with work of this section.

3.2 INSTALLATION

A. Set and secure custom cabinets I place, assuring that they are rigid, plumb, and level.

B. Use fixture attachments in concealed locations for wall mounted components.

C. Use concealed joint fasteners to align and secure adjoining cabinet units.

D. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.

E. Secure cabinets to floor using appropriate angles and anchorages.

F. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

G. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.

H. Attach plastic laminate countertops using screws with minimum penetration into substrate board of 5/8 inch.

I. Seal joint between back/end splashes and vertical surfaces. Back and end splashes with plastic laminate self edge at tops and exposed ends; construction similar to counter tops.

J. Framed Walls: Wall sheathing, weather barrier, cementitious backer board, and direct application; TCNA W244E.

END OF SECTION 064100

SECTION 072000 - INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Thermal batt-type building insulation, Sound attenuation batt insulation, Film vapor retarder (VR), Flame resistant vapor retarder (FRVR), & Board type rigid insulation.

1.2 SUBMITTALS

A. Product Data for each type of insulation and vapor retarder material required.

1. After review and approval, submit to Architect.

B. Certified Test Reports: With product data, submit copies of certified test reports showing compliance with specified performance values, including r-values (aged values for plastic insulation), densities, compression strengths, fire performance characteristics, perm ratings, water absorption ratings and similar properties.

1. Submit with Operation and Maintenance manuals.

1.3 QUALITY ASSURANCE

A. Thermal Resistivity: Where thermal resistivity properties of insulation materials are designated by r-values they represent the rate of heat flow through a homogeneous material exactly 1” thick, measured by test method included in referenced material standard or otherwise indicated. They are expressed by the temperature difference in degrees F between the two exposed faces required to cause one BTU to flow through one square foot per hour at mean temperatures indicated.

B. Fire Performance Characteristics: Provide insulation materials which are identical to those whose fire performance characteristics, as listed for each material or assembly of which insulation is a part, have been determined by testing, per methods indicated below, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.

1. Surface Burning Characteristics: ASTM E 84.

2. Fire Resistance Ratings: ASTM E 119.

3. Combustion Characteristics: ASTM E 136.

1.4 DELIVERY, STORAGE, AND HANDLING

A. General Protection: Protect insulation from physical damage and from becoming wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.

B. Protection for Plastic Insulation:

1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.

2. Protect against ignition at all times. Do not deliver plastic insulating materials to project site ahead of installation time.

3. Complete installation and concealment of plastic materials as rapidly as possible in each area of work.

C. Project construction will be conducted in phases. Coordinate all work of this section within each phase as scheduled and approved.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

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

1. Glass Fiber Batt Insulation:

a. CertainTeed Corp.

b. Owens-Corning Fiberglas Corp. (Design Standard).

c. Schuller International, Inc.

2. Sound Attenuation Blanket/Batt Type Insulation:

a. United States Gypsum Co. (Design Standard).

b. Manville.

c. or Approved.

3. Board Type foundation and Building Extruded Polystyrene Insulation:

a. Dow Chemical U.S.A. (complying example).
b. Insulae.

2.2 INSULATING MATERIALS

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

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

B. Thermal Batt Insulation: Lightweight unfaced resilient fiberglass insulation complying with ASTM C 665, Type 1 and ASTM E 136. Size width for installation between studs in wall assembly. Maximum flame spread and smoke developed values of 25 and 50, respectively.

1. Exterior Walls: R-value as indicated.

2. Ceiling Attic Space: R-value as indicated.

C. Sound Attenuation Batt Insulation: Unfaced Mineral Fiber Blanket/Batt Insulation: Acoustical insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 for Type I, fibers manufactured from glass, passes ASTM E 136 test, maximum flame spread and smoke developed values of 25 and 50, respectively.

1. Thickness: Full depth of cavity, unless otherwise indicated.

2. Provide in all interior frame partitions.

D. Extruded Polystyrene Board Type Insulation: Rigid, cellular polystyrene thermal insulation formed from polystyrene base resin by an extrusion process using hydrcholoroflurocarbons as blowing agent to comply with ASTM C 578 for type and with other requirements indicated below.

1. Type IV, 1.60-lb/cu. Ft. (26-kg/cu. m) minimum density, unless otherwise indicated.

2. Surface-Burning Characteristics: Maximum flame-spread and smoke-developed indices of 75 and 450, respectively.

3. Perimeter Foundation Insulation: R-value or thickness as indicated.

2.3 AUXILIARY INSULATING MATERIALS

A. Film Vapor Retarder: ASTM D 4397, 6-mil polyethylene film, with laboratory-tested vapor transmission rating of 0.2 perms, natural color.

B. Flame Resistant Vapor Retarder: Flame resistant foil scrim kraft (FSK) barrier, flame spread rating of 25 or less, Compac Corp. - FB-1535, Lamtec Corp. - RC-3035, or approved.

1. Provide over all batt insulation not covered by gypsum wall board.

C. Adhesive for Bonding Insulation: Type recommended by insulation manufacturer and complying with requirements for fire performance characteristics.

D. Mechanical Anchors: Type and size indicated or, if not indicated as recommended by insulation manufacturer for type of application and condition of substrate.

E. Foam-In Insulation: Type required to insulate voids at hollow metal door and window frames, vents, louvers, etc.

1. Complying Example: DAP, Inc., “DAP-TEX” Latex Insulating Foam Sealant.

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Examine substrates and conditions with Installer present, under which insulation work is to be performed. A satisfactory substrate is one that complies with requirements of the section in which substrate and related work is specified. Obtain Installer's written report listing conditions detrimental to performance of work in this section. Do not proceed with installation of insulation until unsatisfactory conditions have been corrected.

B. Clean substrates of substances harmful to insulation or vapor retarders, including removal of projections which might puncture vapor retarders.

3.2 INSTALLATION, GENERAL

A. Comply with manufacturer's instructions applicable to products and application indicated. If printed instructions are not available or do not apply to project conditions, consult manufacturer's technical representative for specific recommendations before proceeding with work.

B. Extend insulation in thickness over entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation. Remove projections which interfere with placement.

1. Provide materials to fully insulate the entire building envelope.

2. Fill cavities of metal studs and wood framing with insulation as they are installed.

C. Apply a single layer of insulation of required thickness, unless otherwise shown or required to make up total thickness.

D. Coordinate the installation of acoustical insulation materials and sequencing, needed to properly construct the acoustical walls, in strict compliance with the requirements of Division 9 Section “Acoustical Wall Construction”.

1. Schedule and conduct a pre-installation meeting to discuss the requirements, coordination and the Contractor's planned construction means and methods for acoustical walls.

3.3 INSTALLATION OF GENERAL BUILDING INSULATION

A. Apply insulation units to substrate by method indicated, complying with manufacturer's recommendations. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units as approved by manufacturer.

1. Support insulation as required to prevent sagging of material over time, which will affect other construction and/or result in gaps in insulation.

2. Do not cover insulation until inspection/approval of local jurisdiction.

3. Support board type insulation against foundation walls and protect during back-fill operations.

B. Unfaced Thermal Batt Insulation: Install by friction-fit method except as otherwise required for support of units. Cut, cope and shape units as required at obstructions to provide most effective wall insulation envelope reasonably achievable. Install in all exterior wood and metal stud frame walls from foundation plate and up as required to form full closure with "ceiling" insulation. Place insulation into concealed corners and similar areas while areas are still accessible, whether or not such placement requires special sequencing of the work.

1. Use blanket widths and lengths that fill cavities formed by framing members. Where more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.

2. Place blankets in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.

C. Sound Attenuation Batt Insulation: Install in ceilings where indicated and in all interior frame partitions and walls from sill plate up to the top of the wall or partition, unless otherwise indicated. Fill all voids, full depth of cavity unless otherwise indicated, for complete insulation system.

D. Fill voids surrounding door and window frames, vents, louvers, etc. with foam-in type insulation. Install per manufacturer's directions. Clean excess.

3.4 INSTALLATION OF VAPOR BARRIERS

A. General: Extend vapor barrier to extremities of areas to be protected from vapor transmission. Secure in place with adhesives or other anchorage system as indicated.

Extend vapor barrier to cover miscellaneous voids in insulated substrates, including those which have been stuffed with loose fiber-type insulation.

B. All vapor barriers not covered with gypsum board shall be the flame-resistant type vapor barrier (FRVR).

C. Seal vertical joints in vapor barriers over framing by lapping not less than 2 wall studs. Fasten vapor barriers to framing at top, end, and bottom edges, at perimeter of wall openings and at lap joints; space fasteners 16” o.c.

D. Seal overlapping joints in vapor barriers with adhesives per vapor retarder manufacturer's printed directions. Seal butt joints and fastener penetrations with tape of type recommended by vapor retarder manufacturer. Locate all joints over framing members or substrates with mechanical fasteners or adhesives as recommended by vapor retarder manufacturer.

E. Seal joints caused by pipes, conduits, electrical boxes and similar items penetrating vapor retarders with cloth or aluminized tape of type recommended by vapor retarder manufacturer to create an air-tight seal between penetrating objects and vapor retarder.

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

3.5 PROTECTION

A. General: Protect installed insulation and vapor retarders from harmful weather exposures and from possible physical abuses, where possible by non-delayed installation of concealing work or, where that is not possible, by temporary covering or enclosure.

END OF SECTION 072000

SECTION 076000 - FLASHING AND SHEET METAL

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes the following:

Metal flashing, Copings, Roof drainage systems (scuppers, gutters, downspouts and accessories), and Exposed trim.

1.2 SUBMITTALS

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

1. After review and approval, submit to Architect.

B. Product data, Flashing, Sheet Metal, and Accessories: Manufacturer's technical product data, installation instructions and general recommendations for each specified sheet material and fabricated product.

C. Samples of the following sheet metal and accessory items:

1. 8-inch-square samples of specified sheet materials to be exposed as finished surfaces, or:

2. 12-inch-long samples of factory-fabricated products exposed as finished work. Provide complete with specified factory finish.

D. Shop drawings showing profiles, anchorage, and expansion details for gutters and down spouts.

1.3 PROJECT CONDITIONS

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

1. Provide flashing design and fabrications that are weather and water tight.

1.4 WARRANTY

A. Special Project Warranty: Provide 2-year “Roofing Warranty” signed by Installer (roofing, flashing and sheet metal).

PART 2 - PRODUCTS

2.1 METALS

A. Zinc-Coated Steel: Commercial quality with 0.20 percent copper, ASTM A 526 except ASTM A 527 for lock-forming, G90 hot-dip galvanized, mill phosphatized where indicated for painting; 0.0239-inch thick unless otherwise indicated.

1. Shop Painting:

a. After fabrication, but before installation, clean surfaces of galvanized steel with gasoline; coat with 12% copper sulfate solution.

b. Allow coating to remain for 12 hours, then dust off with stiff brush.

c. Paint surfaces one full coat zinc chromate primer.

2. Fluoropolymer Coating (Pre-Finished): For flashing indicated to be pre-finished, provide manufacturer's custom, low-gloss "Dura Tech 5000" finish (to match roofing system finish) coating consisting of a primer and a minimum 0.8-mil dry film thickness finish coat in accordance with ASTM D 523.

a. Colors as selected by Architect.

2.2 FABRICATION, GENERAL

A. General Metal Fabrication: Shop-fabricate work to greatest extent possible. Comply with details shown and with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Fabricate for waterproof and weather-resistant performance, with expansion provisions for running work, sufficient to permanently prevent leakage, damage, or deterioration of the work. Form work to fit substrates. Comply with material manufacturer instructions and recommendations for forming material. Form exposed sheet metal work without excessive oil-canning, buckling, and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.

B. Seams: Fabricate non-moving seams in sheet metal with flat-lock seams. For metal other than aluminum, tin edges to be seamed, form seams, and solder. Form aluminum seams with epoxy seam sealer; rivet joints for additional strength where required.

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

D. Sealant Joints: Where movable, non-expansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.

E. Separations: Provide for separation of metal from non-compatible metal or corrosive

substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.

F. Aluminum Extrusion Units: Fabricate extruded aluminum running units with formed or extruded aluminum joint covers for installation behind main members where possible. Fabricate mitered and welded corner units.

2.3 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. Fasteners: Same metal as flashing/sheet metal or other non-corrosive metal as recommended by sheet manufacturer. Match finish of exposed heads with material being fastened.

B. Bituminous Coating: SSPC - Paint 12, solvent-type bituminous mastic, nominally free of sulfur, compounded for 14-mil dry film thickness per coat.

C. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, non-drying, nonmigrating sealant.

D. Elastomeric Sealant: Generic type recommended by manufacturer of metal fabricator of components being sealed and complying with requirements for joint sealants as specified in Division 7 Section “Joint Sealers.”

E. Epoxy Seam Sealer: 2-part noncorrosive metal seam cementing compound, recommended by metal manufacturer for exterior/interior nonmoving joints including riveted joints.

F. Adhesives: Type recommended by flashing sheet manufacturer for waterproof/weather-resistant seaming and adhesive application of flashing sheet.

G. Paper Slip Sheet: 5-lb. rosin-sized building paper.

H. Polyethylene Underlayment: Minimum 6-mil carbonated polyethylene film resistant to decay when tested in accordance with ASTM E 154.

I. Reglets: Metal or plastic units of type and profile indicated, compatible with flashing indicated, noncorrosive.

J. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of work, matching or compatible with material being installed, noncorrosive, size and gage required for performance.

K. Cast-Iron Drainage Boots: Gray iron castings of size and pattern indicated, ASTM A 48, bituminous shop-coated.

L. Elastic Flashing Filler: Closed-cell polyethylene or other soft closed-cell material

recommended by elastic flashing manufacturer as filler under flashing loops to ensure movement with minimum stress on flashing sheet.

M. Roofing Cement: ASTM D 2822, asphaltic.

2.4 SHEET METAL FABRICATIONS

A. General: Fabricate sheet metal items in thickness or weight needed to comply with performance requirements but not less than that listed below for each application and metal.

1. Exposed Trim, Scuppers, Fascia and Gutters and Downspouts: Fabricate from the following material:

a. Galvanized Steel: 0.0239-inch-thick 24GA; pre-finished as selected by Architect.

b. Gutters: 0.0299-inch-thick (22 GA); Pre-finished as selected by Architect.

c. Downspouts: 0.0239-inch-thick (24 GA) 4” diameter;
Pre-finished as selected by Architect.

d. Color to match adjacent paint color.

2. Copings: Fabricate from the following material:

a. Galvanized Steel: 0.0239 inch thick (24GA); pre-finished.

b. Color as selected.

3. Base Flashing: Fabricate from the following material:

a. Galvanized Steel: 0.0239 inch thick (24GA).

4. Counterflashing: Fabricate from the following material:

a. Galvanized Steel: 0.0239 inch thick (24GA); pre-finished.

b. Color as selected.

5. Flashing Receivers: Fabricate from the following material:

a. Galvanized Steel: 0.0239 inch thick (24GA); pre-finished.

6. Equipment Support Flashing: Fabricate from the following material:

a. Galvanized Steel: 0.0299 inch thick (22GA).

7. Roof-Penetration Flashing: Fabricate from the following material:

a. Galvanized Steel: 0.0299 inch thick (22GA).

8. Miscellaneous Flashing and Trim:

a. As indicated.

b. Color as selected.

PART 3 - EXECUTION

3.1 INSTALLATION REQUIREMENTS

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

B. Underlayment: Where stainless steel or aluminum is to be installed directly on cementitious or wood substrates, install a slip sheet of red rosin paper and a course of polyethylene underlayment.

C. Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.

D. Install reglets to receive counterflashing in manner and by methods indicated. Where shown in concrete, furnish reglets to
trades of concrete work for installation as work of Division 3 sections. Where shown in masonry, furnish reglets to trades of masonry work, for installation as work of Division 4 sections.

E. Install counterflashing in reglets, either by snap-in seal arrangement or by welding in place for anchorage and filling reglet with mastic or elastomeric sealant, as indicated and depending on degree of sealant exposure.

F. Install elastic flashing in accordance with manufacturer's recommendations. Where required, provide for movement at joints by forming loops or bellows in width of flashing. Locate cover or filler strips at joints to facilitate complete drainage of water from flashing. Seam adjacent flashing sheets with adhesive, seal and anchor edges in accordance with manufacturer's recommendations.

G. Roof-Drainage System: Install drainage items fabricated from sheet metal, with straps, adhesives, and anchors recommended by SMACNA's Manual or the item manufacturer,

to drain roof in the most efficient manner. Coordinate roof-drain flashing installation with roof-drainage system installation. Coordinate flashing and sheet metal items for steep-sloped roofs with roofing installation.

H. Equipment Support Flashing: Coordinate equipment support flashing installation with roofing and equipment installation. Weld or seal flashing to equipment support member.

I. Roof-Penetration Flashing: Coordinate roof-penetration flashing installation with roofing and installation of items penetrating roof. Install flashing as follows:

1. Turn lead flashing down inside vent piping, being careful not to block vent piping with flashing.

2. Seal and clamp flashing to pipes penetrating roof, other than lead flashing on vent piping.

3.2 CLEANING AND PROTECTION

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

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

C. Use small (as possible) paint brush when touching up scratches with manufacturer's standard touch-up Paint. Minimize over-painting of scratched areas. Use of spray paint for touch-up will be rejected.

END OF SECTION

SECTION 079000 - JOINT SEALERS

1 PART 1 GENERAL

1.1 SECTION INCLUDES

A. Sealants and joint backing.

1.2 ENVIRONMENTAL REQUIREMENTS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

2 PART 2 PRODUCTS

2.1 SEALANTS

A. Exterior Window and Joint Sealant:

1. Vertical joints: Sonneborn NP-1 or Sashco “Big Stretch”.

2. Horizontal joints: Sonneborn SL-1 or Sashco “Big Stretch”.

3. Standard colors matching finished surfaces.

B. Interior Glazing Sealant: one-part mildew resistant silicone sealant; DOW

1. Standard colors matching finished surfaces.

C. interior Building Sealants (Painted surfaces)

1. One-part Acrylic Latex with Silicone (paintable) sealant:

a. Dap – 35-year warranty.

D. Approved Manufacturers:

1. Tremco, Cleveland, OH www.tremcosealants.com .

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 polyethylene or polyurethane; oversized 30 to 50 percent larger than joint width, no gassing.

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. Provide architect with manufacturer’s instructions for joint preparation and installation instructions.

3.2 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions. Provide a copy for the Architect before application.

B. Perform installation in accordance with ASTM C1193.

C. Clean off excess sealants or smears adjacent to joints without damaging adjacent surface or finishes.

D. Clean joint to eliminate all detrimental substances.

E. Install joint filler and backing without gaps between ends. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

F. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

G. Tool joints concave.

END OF SECTION

SECTION 081000 - METAL DOOR FRAMES

Part 1 - GENERAL

1.01 Section Includes

A. The work under this section shall include the furnishing of all items shown on the drawings and as specified, including but not limited to, the following:

1. Knocked down, site assembled prefinished steel door frames
2. Knocked down, site assembled sidelight, borrowed light, transom, and full bound access door frames
3. Pocket trim jambs and casings (Pocket frame and hardware not included)

1.02 References

A. ASTM A653 – Standard for hot dipped galvanized steel material

B. UBC 7-2-97, UBC 7-4-97 Positive Pressure Fire Test Certification

C. UL 10B Fire test of Door Assemblies and UL10C Standard for Positive Pressure Fire Tests of Door Assemblies

D. NFPA 80 - Fire Doors and Windows (Latest Edition)

E. NFPA-101 - Life Safety Codes (Latest Edition)

F. ASTM D2197 - Standard Test Method for Adhesion of Organic Coatings by Scrape Adhesion.

G. ASTM D2247 - Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.

H. ASTM D2794 - Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).

I. ASTM D3361 - Standard Practice for Unfiltered Open-Flame Carbon-Arc exposures of Paint and Related Coatings.

J. ASTM B117 – Standard test for salt spray testing

1.04 Submittals

A. Section 01 00 10: Submittal procedures.

B. Product Data: Indicate frame material, Gauge, configuration and finishes.

C. Shop Drawings: Provide details of door design. Indicate frame elevations, details of frame anchorage, reinforcements required, rough opening requirements, location of hardware embosses, and finishes. Detail each floor of the building separately.

D. Samples: Submit 1 standard frame samples, illustrating factory finished frame colors.

E. Manufacturer's Installation Instructions: Provide installation instructions for all products under this section.

F. Manufacturer's Certificate of Warranty: Provide manufacturer’s standard warranty certificate stating material is warranted for a period of one year from date of building substantial completion

1.05 Quality Assurance

A. Quality Standards

1. Material free from defects in material and according to project specifications for pre-engineered opening systems
2. Proven durability of factory finishes allowing for bending and shaping of material after finish is applied

B. Fire Rated Frame Construction

1. Conform to ASTM E152, NFPA 252, UL 10B and 10C.

C. Installed Frame Assembly: Conform to NFPA 80

1. Use only installers familiar with installation of prefinished opening systems and applied casing frame installation

1.06 Delivery, Storage and Handling

A. Transport, handle, store, and protect products in a dry area off the ground.

B. Accept frames on site in manufacturer's box packaging with identification labels intact. Inspect for damage.

C. Do not open individual boxes until installation is to begin.

Part 2 - PRODUCTS

2.01 Acceptable Manufacturers

A. Timely Industries, A Division of SDS Industries, Inc., 10241 Norris Avenue, Pacoima, CA, 91331-2292; Phone toll free: 800-247-6242; Fax: 818-492-3530. Web site: www.timelyframes.com.

B. Frames: Provide all interior frames for project from same manufacturer. Provide exterior frames as shown on plans

C. Approved Manufacturers:

a. Rediframe

2.02 Frames

A. Frame Material: Hot dipped galvanized steel, for interior frames in normal atmospheric exposures.

B. Frame Material: Hot dipped galvanized steel for all frames used in the following locations:

1. Interior offices

C. Frame Throat Opening: As shown on plan details to suit finished wall thickness.

D. Frame Profile - Unequal Rabbet profile, standard with manufacturer

1. “C” Series, 1.2 mm (18 Gauge)

E. Casings

1. Standard Steel - TA-8 with 6 mm (1/4 inch) reveal, on steel. Fit factory assembled units with MiterGard corner alignment clips.

2.03 Frame Reinforcement and Accessories

A. Provide reinforcements shipped loose to project site for hardware application

1. Provide hinge reinforcement (TA-11) of 14 Gauge steel pierced to create depth of thread for hinge screws equal to or exceeding 7 Gauge steel.

B. Silencers: TA-5 vinyl, 2 per frame, clear stick-on type. Silencers not required on Kerfed frames or frames scheduled to receive stop mounted gasket or weatherstrip

C. Prepare frames for ASA 4-7/8" strikes where required. Provide minimum ¼" depth of threads in factory tapped screw holes

D. Installation fasteners

1. Interior Frames: #6 Drywall type length sufficient to penetrate studs or structure at least ½".

2.04 Fabrication

A. Openings for single swing, pair, borrowed light and sidelight frames to be pre- cut, notched and fabricated at the manufacturer's facility.

B. Provide minimum 14 Gauge hinge reinforcement plate tapped for machine screws supplied with hinges. Hinge plate to be mechanically attached to hinge emboss on frame

C. Casing Clips: Fabricate frames with factory applied, heat treated clips to ensure no deflection in the clip upon application or removal of casing. Attachment clips may not be of same material as frame

D. Provide notches, tabs and/or stops for positive alignment of frame parts at all corners

2.05 Finishing

A. Frame Units: Prefinished with factory applied impact resistant, polyurethane baked enamel finish.

B. Casing Finishes

1. Steel: Prefinished with factory applied impact resistant, polyurethane baked enamel finish.

D. Colors: (Select)

1. Standard Colors: Browntone (SC101).

Part 3 – EXECUTION

3.01 Examination

A. Verify acceptability of existing conditions before starting work.

B. Verify that opening sizes and wall thicknesses are within specified tolerances. Verify that all finished walls are in plane to ensure proper door alignment.

3.02 Installation

A. Install frames in accordance with manufacturer's requirements.

B. Anchor frames with screws located at every casing clip or every 11" as shown on manufacturer's instructions. Field verify quantity and location of fasteners prior to installing casing.

C. Install prefinished frames near end of the project after wall painting and wall coverings are applied.

D. Install frames using qualified installers familiar with installation of prefinished drywall frames.

E. Coordinate installation of glass and glazing in glazed units.

F. Touch-up blemishes on finished frames with factory prepared touch up paint.

END OF SECTION

SECTION 081429-FLUSH WOOD DOORS

PART 1 – GENERAL

1.1 SUMMARY

A. Products Furnished but Not Installed Under This Section:

1. Factory-finished flush wood doors.

B. Coordinate door manufacturing and installation with hollow metal frame submittals, fabrication and installation requirements.

1.2 REFERENCES

A. Reference Standards

1. Architectural Woodwork Institute:

a) AWI Standards, 'Architectural Woodwork Quality Standards, 7th Edition.'

2. Composite Panel Association / American National Standards Institute:

a) CPA / ANSI A208.1-1999, 'Particleboard, Mat-Formed Wood.'

3. Hardwood Plywood & Veneer Association / American National Standards Institute:

a) HPVA / ANSI HP-1-2004, 'Hardwood and Decorative Plywood.'

4. National Fire Protection Association / American National Standards Institute:

a) NFPA / ANSI 80-1998, 'Fire Doors and Fire Windows.'

1.3 SUBMITTALS

A. Action Submittals:

1. Shop Drawings:

a) Schedule showing type of door at each location. Included shall be size, veneer, core type, fire rating, hardware prep, openings, blocking, etc.

b) Indicate factory finish color and type.

B. Closeout Submittals:

1. Operations and Maintenance Data: Include following in Operations and Maintenance Manuals.

    a) Manufacturer's product literature on doors and factory finish.

    b) Maintenance and repair instructions.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Acceptance Requirements:

1. Deliver in clean truck and, in wet weather, under cover.

2. Deliver to building site only after plaster, cement, and taping compound are completed and dry and after interior painting operations have been completed.

3. Individually wrap in polyethylene bags for shipment and storage. Leave shipping bag on door after installation until immediately before substantial completion inspection.

B. Storage and Handling Requirements:

1. Store doors in a space having controlled temperature and humidity range between 25 and 55 percent. Store flat on level surface in dry, well ventilated space. Cover to keep clean but allow air circulation. Do not subject doors to direct sunlight, abnormal heat, dryness, or humidity.

2. Handle with clean gloves and do not drag doors across one another or across other surfaces.

1.5 WARRANTY

A. Manufacturer's standard full door warranty for lifetime of original installation.

1. Warranty shall include finishing, hanging, and installing hardware if manufacturing defect was discovered after door was finished and installed.

2. Warranty to include defects in materials including following:

    a) Delaminating in any degree.

    b) Warp or twist of 1/4 inch or more in door panel at time of one-year warranty inspection.

    c) Telegraphing of core assembly: Variation of 1/100 inch or more in 3-inch span.

PART 2 – PRODUCTS

2.1 MANUFACTURED UNITS

A. Manufacturers:

1. Approved Manufacturers.

a) Design Standard: Masonite Architectural

b) VT Industries, Holstein, IA.

c) Marshfield Door Systems Inc, Marshfield, WI.

d) Algoma Hardwoods

e) Eggers Ind.

f) Equal as approved by Architect prior to bidding.

B. Wood Doors:

1. Type: AWI Quality Standards: Section 1300 “Architectural Flush Doors” of “Architectural Woodwork Quality Standards” designation for grade and door construction under types of doors refers to this standard.

2.2 INTERIOR FLUSH WOOD DOORS

A. Face Veneers (Design Standard)

1. Doors to receive a pre-finished transparent finish: Faces shall conform to NWWDA I.S.I-A series, as follows: Refer to door schedule and drawings for size, thickness and type:

a. Manufacturer: Masonite Architectural (Design Standard)

b. Grade: Grade A – Select

c. Cut: Plain Sliced

d. Veneer Species: White Maple No. 1 – selected for minimal color variations.

e. Type of surface match: Book matched

f. Color/Finish: “Stout.”

g. Crossbands: Shall be a minimum of 1/16’ thick thoroughly kiln-dried hardwood extending the full width and height of the door.

h. Pairs of doors shall have matching faces on transparent finished doors.

B. Fire-Rated Solid Core Doors: Comply with the following requirements:

1. Faces and AWI Grade: Provide faces and grade to match non-rated doors.

2. Construction: Manufacturer’s standard core construction as required to provide fire-resistance rating indicated.

3. Edge Construction: Provide manufacturer’s standard laminated edge construction for improved screw-holding capability and split resistance as compared to edges composed of a single layer of treated lumber.

4. Pairs: Furnish formed-steel edges and astragals for pairs of fire-rated doors, unless otherwise indicated.

C. Factory Finishing: Finish edges to match manufacturers standard colors as selected by the Architect. Top and bottom rails shall be sealed.

2.3 GLAZING FRAMES

A. Frames for Glazing Openings in Doors: Manufacturer’s standard frame formed of 18-gage cold-rolled steel, powder coated finish of color configuration and profile acceptable to Architect.

1. Provide UL listed frames at fire-rated doors. Listed frames shall be identical in appearance to other glazing frames used on the project.

2. Frame color as selected by Architect. Fasteners to match color.

2.4 SOURCE QUALITY CONTROL

A. Verification of Performance:

1. Doors shall have following information permanently affixed on top of door:

a) Manufacturer:

b) Door designation or model.

c) Veneer species.

d) Factory finish.

PART 3 – EXECUTION

A. Condition doors to average prevailing humidity in installation area prior to hanging.

B. Hardware: Refer to Division – 8 “Finish Hardware” section of these specifications.

C. Manufacturer’s Instructions: Install wood doors to comply with manufacturer’s instructions and of referenced AWI standard and as indicated.

1. Install fire-rated doors in corresponding fire-rated frames in accordance with requirements of NFPA No. 80.

END OF SECTION

SECTION 083613 - SECTIONAL OVERHEAD DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Insulated Sectional Overhead Doors.

B. Electric Operators and Controls.

C. Operating Hardware, tracks, and support.

1.2 RELATED SECTIONS

A. Cast-In-Place Concrete: Prepared opening in concrete. Execution requirements for placement of anchors in concrete wall construction.

B. Unit Masonry Assemblies: Prepared opening in masonry. Execution requirements for placement of anchors in masonry wall construction.

C. Metal Fabrications: Steel frame and supports.

D. Joint Sealers: Perimeter sealant and backup materials.

E. Paints and Coatings: Field painting.

1.3 REFERENCES

A. ANSI/DASMA 102 - American National Standard Specifications for Sectional Overhead Type Doors.

B. ASTM A 123 – Zinc hot-dipped galvanized coatings on iron and steel products.

C. ASTM A 216 - Specifications for sectional overhead type doors.

D. ASTM A 229 - Steel wire, oil-tempered for mechanical springs.

E. ASTM A 653 - Steel sheet, zinc-coated galvanized by the hot-dipped process, commercial quality.

F. ASTM D 1929 - Ignition temperature test to determine flash and ignition temperature of foamed plastics.

G. ASTM E 84 - Tunnel test for flame spread and smoke developed index.

H. ASTM E 330 - Structural performance of exterior windows, curtain walls, and doors by uniform static air pressure difference.

I. ASTM E 413 - Classification for Rating Sound Insulation

J. ASTM E 1332 - Standard Classification for Rating Outdoor-Indoor Sound Attenuation.

K. ASTM E 283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen

1.4 DESIGN / PERFORMANCE REQUIREMENTS

A. Wind Loads: Design and size components to withstand loads caused by pressure and suction of wind acting normal to plane of wall as calculated in accordance with applicable code.

B. Wiring Connections: Requirements for electrical characteristics.
1. 115 volts, single phase, 60 Hz.

C. Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

1.5 SUBMITTALS

A. Submit under provisions of Section 010010.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Shop Drawings: Indicate plans and elevations including opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.

D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

E. Operation and Maintenance Data.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.

B. Installer Qualifications: Authorized representative of the manufacturer with minimum five years documented experience.

C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened labeled packaging until ready for installation.

B. Protect materials from exposure to moisture until ready for installation.

C. Store materials in a dry, ventilated weathertight location.

1.8 PROJECT CONDITIONS

A. Pre-Installation Conference: Convene a pre-installation conference just prior to commencement of field operations, to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1.9 WARRANTY

A. Warranty: Manufacturer’s limited door and operators System warranty for 10 years against cracking, splitting or deterioration of steel skin due to rust.

B. Warranty: Manufacturer’s limited door and operators System warranty for 8 years against cracking, splitting or deterioration due to rust-through.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Wayne Dalton; 2501 S. State Highway 121 Business, Suite 200, Lewisville, TX 75067. ASD. Phone: (800) 827-3667; Web Site: www.wayne-dalton.com. Email: info@wayne-dalton.com.

B. Substitutions: Overhead Door, Thermacore Model 592.

C. Requests for substitutions will be considered in accordance with provisions of Section 010010.

2.2 INSULATED SECTIONAL OVERHEAD DOORS

A. Insulated Steel Sectional Overhead Doors: Wayne Dalton ThermoMark 5150 insulated sectional overhead steel doors. Units shall have the following characteristics:
   1. Door Sections: Shall be of steel/polyurethane/steel sandwich type construction with thermal break.
      a. Panel Thickness: 1-3/8 inches (34.92 mm).
      b. Exterior Surface:
         1) Flush with non-repeating wood grain texture.

2) Raised panel with non-repeating wood grain texture.
c. Exterior Steel: .015 inch (0.38 mm), hot-dipped galvanized.
d. Thermal Values: R-value of 12.12; U-value of 0.0825.
e. Air Infiltration: 0.23 cfm at 15 mph.
f. Sound transmission class 20 when tested in accordance with ASTM E 413.
g. Outdoor-indoor transmission class 20 when tested in accordance with ASTM E 1332.
h. Insulation: CFC-free and HCFC-free polyurethane, fully encapsulated.
1) Insulated sections tested in accordance with ASTM E 84 and achieve a Flame spread Index of 10 or less, and a Smoke Developed Index of 210 or less.
2) Insulation material tested in accordance with ASTM D 1929 and achieve a minimum Flash Ignition temperature of 734 degrees F, and a minimum Self Ignition temperature of 950 degrees F.
3) Insulated sections shall meet all requirements of the UBC 17-5 corner burn.
i. Ends: Hot-dipped galvanized steel, full height with end caps.
1) 18 gauge.
2) 16 gauge.
j. Spring Counterbalance: Sized to weight of the door, with a helically wound, oil tempered torsion spring mounted on a steel shaft; cable drum of die cast aluminum with high strength galvanized aircraft cable. Sized with a minimum 5 to 1 safety factor.
1) High cycle spring: 100,000 cycles.

2. Finish and Color:
a. Two coat baked-on polyester:
1) Interior color, white.
2) Exterior color, brown.
3. Windload Design: Provide to meet the Design/Performance requirements specified.
4. Hardware: Galvanized steel hinges and fixtures. Ball bearing rollers with hardened steel races.
5. Lock:
a. Interior mounted slide lock with interlock switch for automatic operator.
6. Weatherstripping:
a. Flexible bulb-type strip at bottom section.
b. Flexible Jamb seals.
c. Flexible Header seal.
7. Track: Provide track as recommended by manufacturer to suit loading required and clearances available.
a. Size:
1) 2 inch (51 mm).
2) 3 inch (76 mm).
b. Type:
1) Standard lift.
a. Horizontal track shall be reinforced with continuous angle of adequate length and gauge to minimize deflection.
b. Vertical track shall be graduated to provide wedge type weathertight closing with continuous angle mounting for steel or wood jambs, and shall be fully adjustable to seal door at jambs.

8. Manual Operation: Chain hoist.
9. Electric Motor Operation: Provide UL listed electric operator, equal to Genie Commercial Operators, size and type as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per second.
    a. Heavy Duty
        1) Model GH – hoist
        2) Model GT - trolley
    b. Operator Controls:
        1) Push-button operated control stations with open, close, and stop buttons.
        2)
        3) Push-button and key operated control stations with open, close, and stop buttons.
        4) .
    c. Special Operation:
        1) Radio control operation.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until openings have been properly prepared.

B. Verify wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.

C. Verify electric power is available and of correct characteristics.

D. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install overhead doors and track in accordance with approved shop drawings and the manufacturer's printed instructions.

B. Coordinate installation with adjacent work to ensure proper clearances and allow for maintenance.

C. Anchor assembly to wall construction and building framing without distortion or stress.

D. Securely brace door tracks suspended from structure. Secure tracks to structural members only.

E. Fit and align door assembly including hardware.

F. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.

G. Instruct Owner's personnel in proper operating procedures and maintenance schedule.

3.4 ADJUSTING

A. Test for proper operation and adjust as necessary to provide proper operation without binding or distortion

B. Adjust hardware and operating assemblies for smooth and noiseless operation.

3.5 CLEANING

A. Clean doors, frames and glass using non-abrasive materials and methods recommended by manufacturer.

B. Remove labels and visible markings.

C. Touch-up, repair or replace damaged products before Substantial Completion.

3.6 PROTECTION

A. Do not permit construction traffic through overhead door openings after adjustment and cleaning.

B. Protect installed products until completion of project.

END OF SECTION

SECTION 084100-ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Aluminum doors, door frames and aluminum windows.
B. Glass

1.2 SYSTEM DESCRIPTION

A. System performance to provide for expansion and contraction within system components caused by temperature cycling.

B. Air leakage through assembly shall not exceed 0.06 cfm/sq ft. of fixed wass area with test pressure 6.24 psf, in accordance with ASTM E283.

C. Water Leakage: None, when measured in accordance with ASTM E331 with a test pressure difference of 8 lb/sq ft (136.85 N/sq m).

D. Design and size members to withstand dead loads caused by pressure and suction of wind.

E. Drain water entering the framing system, to exterior.

1.3 SUBMITTALS

A. Shot Drawings: Indicate system and component dimensions; components within assembly; framed openings requirements and tolerances; anchorage and fasteners; glass and infills; door hardware requirements; and affected related work.

1.4 WARRANTY

A. Provide one (1) year warranty.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Fabricators:

1. Kawneer:
Store-front doors: Series 500 wide stile swing doors. Dark Bronze.
Aluminum windows: TriFab 451T (thermal break) center set window frames. Dark Bronze.

2. Or approved by Architect.

B. Extruded Aluminum: ASTM B221; alloy

C. Sheet Aluminum: ASTM B209; alloy

D. Sheet Steel: ASTM A446: galvanized.

E. Steel Sections: Structural shapes to suit mullion sections: galvanized

F. Primer: Zinc chromate for shop application and field touch-up.

G. Fasteners: Stainless steel.

H. Sealant: Dow 795 sealant for perimeter seal.

2.2 FABRICATED COMPONENTS

A. Door Frames: 2x4-1/2 inch profile, applied glazing stops.

B. Window Frames: 2 inches x 4-1/2 inches. Provide FG-3223 sill flashing at window sills and standard head compensating receptor at head.

C. Reinforced Mullion: Standard profile of aluminum cladding with internal reinforcement of shaped structural steel section.

D. **Doors: 1-3/4 inches thick, 5 inch wide top rail, 5 inch wide vertical stiles, 8-1/4 inch mid rail, 10 inch wide bottom rail: beveled glazing stops.**

E. Flashings: Aluminum, finish to match mullion sections where exposed.

2.3 GLASS AND GLAZING MATERIALS

A. Glass and Glazing Materials: As specified in Section 088100 to the following type description.

1. Glass in Exterior Lights: Type 1- inch glass (tempered). Bronze tinted.

2. Glass in Exterior Doors: Type 1- inch glass (tempered). Bronze tinted.

3. Glass in Interior Lights: Type ¼-inch tempered glass.

2.4 HARDWARE

A. Weather Stripping: Resilient bulb seal type, continuous, replaceable.

B. Sill Sweep Strips: Retracting resilient bulb seal type, of neoprene compound.

C. Threshold: Extruded aluminum, one piece per door opening, ribbed non-slip surface, meet A.D.A requirements.

D. Hinge: Continuous Hinge

E. Refer to hardware specification for additional requirements.

2.5 FABRICATION

A. Fabricate frames allowes 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.

D. Prepare components with internal reinforcement.

2.6 FINISHES

A. Natural Anodized Finish: Provide NAAMM AA-M12C22A31, Class II (mechanical finish, non-specular as fabricated; chemical etch, medium matte; minimum thickness 0.4 mil) dark bronze anodic coating.

B. Concealed Steel Items: Galvanize to 2.0 oz./sq ft (610 g/sq m).

C. Apply bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar materials.

PART 3 – EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section. Windows shall not be installed until window openings are properly flashed as per manufacturer’s recommendations.

3.2 INSTALLATION

A. Install frames, glazing, hardware and flashings in accordance with manufacturer’s instructions.

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. Install hardware using templates provided.

E. Install glass in accordance with Section 08800, using exterior dry method of glazing, as per manufacturer's recommendations for method of glazing.

F. Install perimeter type sealant and backing materials per installation requirements and in accordance with manufacturer's recommendations.

3.3 TOLERANCES

A. Variation from Plane: 0.03 inches per foot maximum or 0.25 inches per 30 feet; whichever is less.

END OF SECTION

SECTION 088100-GLASS GLAZING

PART 1 – GENERAL

1.1 SUMMARY

A. Includes but Not Limited To:

1. Quality of glazing used in doors and windows.

1.2 QUALITY ASSURANCE

A. Safety glazing standard: Safety glass is required throughout the entire project. Provide type of safety glass products which comply with ANSIZ97.1 and testing requirements of 16 CFR Part 1201 for Category II Materials

B. Certifications: Labels showing strength, grade, thickness, type, and quality are required on each piece of glass

C. Insulating Glass Certification Program: Provide insulating glass units permanently marked either on spacers or on component pane of units by IGCC or ALI.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Manufacturers:

1. Manufacturer List for Low E Glazing

a) Cardinal Glass Industries, Inc. (LoE-172)

b) Pilkington North America Inc. (Energy Advantage Low e/E), Visteon

c) PPG Industries.

B. Exterior Window Glazing: Heat – Treated Float Glass

1. Thickness: ¼ inch minimum, Low-E coated (surface no. 2) Fully tempered, transparent flat glass, glazing select quality. Bronze tint.

2. Thickness for Units: Overall unit shall be 1” with ½” air space

C. Interior Glass (glass not required to be provided for fire rated assemblies) shall be clear, fully tempered, uncoated, transparent flat glass, glazing select quality

1. ¼” thickness

D. Fabrication:

1. Except where glass exceeds 66 inches in width, cut clear glass so any wave will run horizontally when glazed.

2. Sealed, Insulating Glazing Units:

a) Double pane, sealed insulating glass units meeting requirements of ASTM E 774, Class A. Install at exterior windows and exterior aluminum-framed storefront.

b) Unit Thickness: 5/8 inch minimum, one inch maximum

c) Insulated obscure units shall consist of one pane pf specified obscure glass and one pane of standard glass

d) Type Seal:

1) Metal-to-glass bond and separated by ½ inch dehydrated air space

2) Use non-hardening sealants.

e) Approved Fabricators.

1) Members of Sealed Insulating Glass Manufacturer's Association

2.2 SEALED INSULATING GLASS MATERIALS

A. Insulated Glass Units – Exterior Store-Front windows system:

1. Units shall consist of one outboard lite of ¼" flat glass and inboard lite of ¼ "Low E glass, separated by a ½" aluminum spacer, filler with a moisture absorbing desiccant. Units shall have a primary seal of polyisobutylene and a secondary seal pf two-part silicone.

2. Performance shall comply to Class "A" or better of ASTM specification E774-84a for sealed insulated glass.

2.3 GLAZING COMPONENTS

A. Manufacturers: Use Dow795 sealant at window perimeter

2.4 GLAZING ACCESSORIES

A. Setting Blocks: Neoprene 80 to 90 shore A Durometer hardness

B. Glazing Spline: Resilient neoprene extruded shape to suit glazing channel retaining slot; black color

PART 3 – EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify that openings for glazing are correctly sized, within tolerance, and glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

3.2 INTALLATION – EXTERIOR DRY METHOD (PREFORMED GLAZING)

A. Cut glazing spline to length; install on glazing pane. Seal corners with butyl sealant.

B. Place set blocks at ¼ points.

C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact

D. Install removable stops without displacing glazing spline. Exert pressure for full continuous contact.

3.3 INSTALLATION – INTERIOR DRY METHOD (TAPE AND TAPE)

A. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch above sight line.

B. Place setting blocks at ¼ points with edge block no more than 6 inches from corners.

C. Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.

D. Place glazing tape on free perimeter of glazing in same manner described above.

E. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.

F. Knife trim protruding tape.

3.4 CLEANING

A. Remove glazing materials from finish surfaces.

B. Remove labels after Work is complete.

C. Clean glass and adjacent surfaces.

END OF SECTION

SECTION 092900-GYPSUM BOARD ASSEMBLIES

PART 1 – GENERAL

1.1 SECTIN INCLUDES

A. Interior gypsum wallboard.

B. Tile Backer Board for application at wall tile and FRP.

C. Provide Gypsum board assemblies attached to suspended grid system.

D. Provide Cementitious Backer Board (CBB).

E. Provide Fiberglass Armor

1.2 SUBMITTALS

A. Product Data for each type of product indicated.

1.3 FIRE TEST RESPONSE CHARACTERISTICS

A. For gypsum board assemblies with fire-resistance ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

1.4 SOUND TRANSMISSION CHARACTERISTICS

A. For gypsum board assemblies with STC ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by a qualified independent testing agency.

1.5 QUALITY ASSURANCE

A. Fire-resistance ratings: Where fire-resistance ratings are indicated, provide materials/assemblies complying with ASTM E 119 and as required by local authorities.

B. Comply with recommendations of Gypsum Association GA-216.

C. Comply with ASTM 1396, “Specification for Gypsum Board”.

1.6 FIELD CONDITIONS

A. Temperature shall be 50 deg F and 95 deg F maximum day and night during entire joint operation and until execution of certificate of Substantial Completion. Provide ventilation to eliminate excessive moisture. Avoid hot air drafts that will cause rapid drying.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Gypsum Board Products; Georgia-Pacific Corp., Gold Bond Building Products, United States Gypsum.

1. Or approved by Architect

2.2 PANEL PRODUCTS, GENERAL: provide sizes in maximum lengths and widths available that will minimize joints in each area and correspond with support system indicated.

A. Gypsum Wallboard: ASTM C36.

1. Type X: Fire-resistance-rated.

2. Thickness: 5/8” minimum.

3. Edges: Tapered

B. Tile Backer Board unit (TBB): Silicone Based Tile Backer Board installed behind ceramic wall tile and FRP as manufactured by “Denshield” by Georgia Pacific or approved.

1. Thickness: 5/8” minimum.

2.. Edges: Tapered

C. Cementitious Backer Board: “Hardi Backer” by James Hardie installed behind all shower wall tile.

1. Thickness: 1/2”

2.3 INTERIOR TRIM: ASTM C1047

A. Cornerbead: Use at outside corners.

B. LC-Bead (J-Bead): Use at exposed panel edges.

C. L-Bead: Use where indicated or where needed to finish gypsum board edges.
D. U-Bead: Use where indicated:

E. Expansion (Control) Joint: One-piece control joint, formed with v-shaped slot and removable strip covering slot opening.

2.4 JOINT TREATMENT MATERIALS, GENERAL: Comply with ASTM C 475

A. Joint Tape:

1. Interior Gypsum Wallboard: Paper.

B. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Joint Compound: Vinyl-type powder or ready-mixed for interior use.

a) Grade: Single multi-purpose grade for entire application.

2. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.

3. Embedded and First Coat: For embedded tape and first coat on joints, flanges of trim accessories, and fasteners, use setting-taping compound.

a) Use setting-type compound for installing paper-faced metal trim accessories

4. Fill Coat: For second coat, use setting-type, sandable topping compound.

5. Finish Coat: For third coat, use setting-type, sandable topping compound.

6. Skim Coat: For final coat of Level 4 finish, use drying-type, all-purpose compound.

C. Joint Compound for Exterior Applications:

1. Exterior Gypsum Soffit Board: Use USG Sheetrock setting-type (Durabond) taping, Durabond LC, Sheetrock Lightweight (easy-sand) or approved equal and setting-type, sandable topping compounds as occurs; see architectural drawings.

D. Joint Compound for Tile Backing Panels:

1. Water-Resistant Gypsum Backing Board: Use special water-resistant setting-type taping and setting-type, sandable topping compounds.

2.5 ACOUSTICAL SEALANT FOR EXPOSED AND CONCEALED JOINTS

A. Nonsag, paintable, nonstaining, latex sealant complying with ASTM XC 834 that effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

2.6 ACOUSTICAL SEALANT FOR CONCEALED JOINTS:

A. Nondrying, nonhardening, non-skinning, non-staining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce airborne sound transmission.

2.7 AUXILIARY MATERIALS:

A. Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

1. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

a) Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.

b) Fastening gypsum board to wood members.

c) Fastening gypsum board to gypsum board.

PART 3 – EXECUTION

3.1 POLYETHYLENE VAPOR RETARDER: Install to comply with requirements specified in Division 7 Section "Insulation."

3.2 GYPSUM BOARD APPLICATION: Comply with ASTM C 840 and GA-216.

A. Space screws a maximum of 12 inches (304.8mm) o.c. for vertical applications.

B. Space fasteners in panels that are tile substrates a maximum of 8 inches (203.2mm) o.c.

C. On ceilings, apply gypsum panels before wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated. Install ceiling boards across framing to minimize the number of end-butt joints and avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

1. Install ceiling board on furring system specified as recommended by manufacturer of system.

D. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing), unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

E.

1. Stagger abutting end joints not less than one framing member in alternate courses of board.

2. At high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.

F. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.

G. Single-Layer Fastening Methods: Apply gypsum panels to supports with steel drill screw.

H. Laminate to Substrate: Comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.

I. Provide Control Joints and expansion joints at locations of potential building movement, with space between edges of panels, prepared to receive trim accessories.

J. Cover both faces of partition framing with gypsum panels in concealed spaces (above ceiling, etc.), except in chase walls which are braced internally.

K. Tile Backer Board: Install with ¼ - inch (6.4-mm) gap where panels abut other construction or penetrations.

1. Use at all plumbing walls and all FRP locations

L. Multi-Layer Fastening: Apply base layers of gypsum panels and face layer to supports with screws.

3.3 INSTALLING TRIM ACCESSORIES:

A. General: For trim accessories with back flanges, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges to comply with manufacturer's recommendations.

B. Install corner beads at external corners.

C. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed. Provide type face flange to receive joint compound. Install L-type trim where work is tightly abutted to other work. Install U-type trim where edge is exposed, revealed, gasketed or sealant-filled (including expansion joints).

D. Install control joints (beaded-type) where indicated and where not indicated according to ASTM C 840. Provide at maximum spacing of 30'-0" or in locations approved by Architect for visual effect.

E. Install miscellaneous work as shown and/or in accordance with manufacturer's instructions and recommendations. Where required, modify standard units, providing all accessories,

supporting, finish work and installation of durability and appearance acceptable to the Architect.

3.4 FINISHING GYPSUM BOARD ASSEMBLIES:

A. Treat gypsum board joint, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

1. Prefill open joints and damaged surface areas

2. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape

3. **Gypsum Board Finish Levels:** Finish panels to levels indicated below, according to ASTM C 840. For locations indicated:

a) Level 1: Embed tape at joints in ceiling plenum areas, concealed areas, and where indicated, unless a higher level of finish is required for fire-resistance-rated assemblies and sound-rated assemblies.

b) Level 2: Embed tape and apply separate first coat of joint compound to tape, fasteners, and trim flanges where panels are substrate for tile and where indicated.

c) Level 3: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges at all gypsum board walls and ceilings to receive paint.

END OF SECTION

SECTION 096500 - RESILIENT FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes Luxury Vinyl Tile. (LVT)
B. Section includes Sheet Vinyl. (SV)

1.2 SYSTEM DESCRIPTION

A. Resilient Flooring: Conform to applicable code for flame/smoke rating in accordance with ASTM F1514 and ASTM E662.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer’s product data.

B. Samples:
   1. Submit manufacturer's complete set of color samples for initial selection.

1.4 CLOSE-OUT SUBMITTALS

A. Operation and Maintenance Data: Submit maintenance instruction and data.

1.5 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

B. Installer: Company specializing in performing Work of this section with minimum three years experience.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

B. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 - PRODUCTS

2.1 RESILIENT FLOORING

A. Luxury Vinyl Tile (LVT) by J+J Flooring
   1. Product: Make Your Mark 5mm V5012
   2. Color: Shadow 1063

3. Added Antimicrobial: ZPT
4. Thickness: 5mm
5. Finish / Coating: Enhanced UV Urethane w/ Ceramic Bead
6. Ceramic bead with immersion rate greater than 5 micrograms/sf
7. Pattern Repeat: Random
8. Dimensions: 9” x 48”
9. Backing Class: Commercial Grade
10. Commercial Traffic: Heavy Commercial

B. Sheet Vinyl (SV) by AHF Contract
1. Product: Composed & Distinct Collection
2. Collection: Distinct INS2M707, Dreamy Way
3. Construction: Inlaid Heterogeneous Sheet
4. Color: Dreamy Way (Multi-Color)
5. Gloss: Low Gloss
6. Finish: Urethane
7. Edge Detail: Square Edge / Square Ends
8.

C. Resilient Base (RB): ASTM F-1861 vinyl; top set coved
1. Height: 4 inch.
2. Thickness: 0.125 inch thick.
3. Length: Roll.
4. Color: Johnsonite, 20 Charcoal or as selected

2.2 ACCESSORIES

A. Subfloor Filler: Premix latex; type recommended by floor material manufacturer.

B. Primers and Adhesives: Waterproof, types recommended by floor material manufacturer.

C. Moldings and Edge Strips: Vinyl.

D. Underlayment: As approved by manufacturer. 5 ply at Sheet Vinyl & Luxury Vinyl Tile.

E. Sealer and Wax: Types recommended by floor material manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that floors are acceptable to line, grade and surface.

3.2 PREPARATION

A. Clean substrate.

B. Fill minor low spots and other defects with sub-floor filler.

C. Apply primer as required to prevent "bleed-thru" or interference with adhesion by substances that cannot be removed. Apply primer to surfaces.

D. Moisture tests shall be conducted on all concrete floors regardless of the age or grade level. Conduct calcium chloride tests in accordance with the latest version of ASTM F 1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride. Measure the internal relative humidity of the concrete slab in accordance with the latest version of ASTM F 2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes. One test of each type should be conducted for every 1,000 square feet of flooring (minimum of 3). The tests should be conducted around the perimeter of the room, at columns, and anywhere moisture may be evident. Concrete moisture vapor emissions must not exceed 5.0 lbs. per 1,000 square feet in 24 hours when using Forbo T 940 adhesive, 8.0 lbs. per 1,000 square feet in 24 hours when using Forbo Sustain 885m adhesive or 10.0 lbs. per 1,000 square feet in 24 hours when using Forbo Sustain 1195 adhesive. Concrete internal relative humidity must not exceed 75% when using Forbo T 940 adhesive, 85% when using Forbo Sustain 885m adhesive or 95% when using Sustain 1195 adhesive. A diagram of the area showing the location and results of each test should be submitted to the Architect, General Contractor or End User. If the test results exceed these limitations, the installation must not proceed until the problem has been corrected.

3.3 INSTALLATION

A. Spread adhesive and set flooring in place. Press sheet flooring with 150 pound roller to attain full adhesion.

B. Install tile flooring with joints and seams parallel to building lines. Allow minimum 1/2 full size tile width at room or area perimeter.

C. Use matching color transition strips at all locations of dissimilar flooring.

D. Scribe flooring to produce tight joints at items that penetrate flooring.

E. Where floor finishes are different on opposite sides of door, terminate flooring under centerline of door.

F. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated. Secure vinyl strips after installation of flooring with adhesive as recommended by manufacturer.

G. Adhere base tight to wall and floor surfaces.

H. Fit joints tightly and make vertical. Miter internal corners.

3.4 CLEANING

A. Remove excess adhesive from surfaces without damage.

END OF SECTION

SECTION 096501 - RESILIENT BASE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes resilient base.

1.2 SYSTEM DESCRIPTION

A. Resilient Flooring: Conform to applicable code for flame/smoke rating in accordance with ASTM E 648.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer’s product data.

B. Samples:
   1. Submit manufacturer's complete set of color samples for initial selection.

1.4 CLOSE-OUT SUBMITTALS

A. Operation and Maintenance Data: Submit maintenance instruction and data.

1.5 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

B. Installer: Company specializing in performing Work of this section with minimum three years experience.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

B. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 - PRODUCTS

2.1 RESILIENT BASE

A. Resilient Base (RB): ASTM F-1861 vinyl; top set coved

1. Height: 4 inch.
2. Thickness: 0.125 inch thick.
3. Length: Roll.
4. Premolded Corners
5. Color: Johnsonite, 20 Charcoal or as selected.

2.2 ACCESSORIES

A. Primers and Adhesives: Waterproof, types recommended by material manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that walls are acceptable to line, grade and surface.

3.2 PREPARATION

A. Clean substrate.

B. Fill minor low spots and other defects.

C. Apply primer as required to prevent "bleed-thru" or interference with adhesion by substances that cannot be removed. Apply primer to surfaces.

3.3 INSTALLATION

A. Adhere base tight to wall and floor surfaces.

B. Fit joints tightly and make vertical. Miter internal corners. At external corners, use premolded units.

3.4 CLEANING

A. Remove excess adhesive from surfaces without damage.

END OF SECTION

SECTION 096800 – CARPET

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Carpet tile, direct glued to substrate.
B. Walk-Off Carpet (Walk-OFF CPT)
C. Accessories: As required.

1.2 REFERENCES

A. Carpet & Rug Institute (CRI):

1. CRI Indoor Air Quality Testing and Labeling Program.

1.3 PERFORMANCE REQUIREMENTS

A. Comply with the following Performance Requirements:

1. Static: (AATCC-134) Under 3.5 KV

2. Flammability: (ASTM E 648) Class 1(Glue Down)

3. Smoke Density: (ASTM E-662): Less Than 450

B. Warranties

1. Lifetime warranty against excessive surface wear. Excessive wear means no more than 10% loss of pile fiber weight measured before and after use as tested under ASTM D-3936.
2. Lifetime static protection, meaning built-in protection below 3.0 kv as tested under AATCC-134.
3. Tuft Bind (edge ravel, yarn pulls, zippering)
4. Delamination
5. Lifetime Moisture Barrier (excluding Premier Bac)
6. Lifetime Dimensional Stability (for modular products only)

1.4 SUBMITTALS

A. Manufacturer's Data; Submit two (2) copies of manufacturer's specifications and installation instructions for carpet and related items specified.

B. Fiber and Backing Verification. Submit certification from the fiber and backing producer verifying use of the branded fiber and backing in the submitted carpet product.
C. Shop Drawings; For carpeted areas submit shop drawings showing installation of

carpeting, pattern direction, necessary installation accessories, and provisions for work of other trades. Show location of different patterns or styles of carpet. Also, show locations of any threshold conditions, columns, enclosing walls, partitions, built-in cabinets, and locations where cutouts are required in carpet.

1. The contractor will supply reproducible prints on request, to facilitate shop drawing preparation.

D. Samples: Submit standard-size carpet samples of each type of carpet, in each specified pattern, color, and construction.

1. Any alternates to specified products must be submitted for approval by a representative of the end user or owner at least ten (10) working days prior to bid or proposal.

2. Final Sample Submittal.
Submit two (2) sets of samples for each carpet type.

3. No carpet shipments are permitted until acceptance of final samples is given by representative of the owner certifying that samples are the approved color, pattern, and texture.

4. Custom Color Only: High-quality color samples shall be signed by a representative of the Owner, certifying that samples are the approved color, pattern, and texture.

5. Samples submitted are assumed to the manufacturer's best obtainable match to the carpet described under Materials Section.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: Include maintenance procedures, recommended cleaning and stain-removal materials, and recommended cleaning schedule. Include product data and Material Safety Data Sheets (MSDS) for cleaning and stain-removal materials.

1.6 QUALITY ASSURANCE

A. Single Source Responsibility: Provide products from a single manufacturer for each carpet type specified.

1.7 QUALIFICATIONS

A. Manufacturer: Company with minimum three (3) years experience specializing in manufacturing specified carpet (fiber to fiber and backing to backing) similar to type specified in this document; and whose published product literature clearly indicates compliance of products.
B. Installer: Company specializing in installing carpet with minimum five (5) years experience.

1.8 PRE-INSTALLATION MEETINGS

A. Convene one (1) week prior to commencing work of this section.

B. Require attendance of installer contractor, owner, and other parties directly affecting the work of this section.

1.9 DELIVERY, STORAGE AND HANDLING

A. Deliver carpet in sealed protective containers. Bind carpet materials with secure protective wrapping. Mark each carpet according to style, color, pattern, dye lot, run number, and quantity.

B. Store products in an enclosed and dry area protected from damage and soiling.

1.10 ENVIRONMENTAL REQUIREMENTS

A. Do not install carpet until areas have been fully enclosed and environmental conditions have reached the levels indicated during occupancy.

B. Maintain ambient temperature and humidity conditions during and after installation of carpet at levels indicated during occupancy.

C. Allow carpet to reach room temperature or minimum temperature recommended by manufacturer before beginning installation.

D. Static Resistance: Provide 2.0 KV of lower resistance for 20% R.H. at 70 degrees AATCC 134.

E. Tests: When installed on concrete slab on grade, submit results of all bond and moisture tests prior to installation including:

1. ASTM F 710: "Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring." Provide temperature and humidity readings per ASTM F 710. Maximum limits for moisture and vapor pressure tests shall not exceed the limits set forth in Table 1. Schedule the referenced tests to be taken after the space to receive flooring is brought to "in-use" conditions through the use and operation of the permanent HVAC system. Tests shall be taken no more than 7 days prior to the installation of the flooring materials.

    a. Testing shall take place within the building envelope when it is conditioned to the same ambient design temperature and relative humidity levels that will be maintained during the operation of the space(s) after Substantial Completion.

2. ASTM F 2170 "Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using *in situ* Probes."

3. ASTM F 1869 “Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydros Calcium Chloride.”

G. Alkalinity Tests: Alkalinity of the concrete surface shall not be less than pH 7.5, minimum, and shall not exceed pH 8.5, maximum. The test for alkalinity shall be taken at the floor surface only following completion of all abrasive removal operations (shot blasting, sanding, or grinding).

1.11 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on Drawings.

1.12 SEQUENCING

A. Sequence installation so as to minimize possibility of damage and soiling of carpet.

B. Do not commence installation until painting and finishing work are complete, and ceiling and overhead work have been tested, approved, and completed.

C. Heat, ventilate and air condition the space to “in-use” conditions for a sufficient period of time to allow for proper cure and adhesion of flooring adhesives. Minimum time limits and temperatures are specified as indicated.

D. Perform alkalinity testing of concrete floors. If alkalinity exceeds pH 7.5 – 8.5, remedy by providing an approved floor sealer at no expense to the Owner.

E. Perform moisture testing. If calcium chloride moisture test exceeds 3 lbs-pressure/1000SF/24hr (maximum) for flooring products, continue to condition the room until the manufacturer’s requirements are met. As an alternative, if Testing indicates less than 7 lbs-pressure/1000SF/24hr, provide an approved floor sealer at no expense to the Owner.

F. Verify with the Contractor that no liquid or membrane-forming curing compound has been used, and if one has been used, remove completely and continue drying process until concrete floor slab is acceptable for proper material installation and adhesive cure.

G. Clean by vacuuming all construction joints thoroughly and prepare for installation of specified leveling and patching compounds.

H. Meet all manufacturer’s printed directions and instructions for project conditions prior to installation.

1.13 WARRANTY

1. Lifetime warranty against excessive surface wear. Excessive wear means no more than 10% loss of pile fiber weight measured before and after use as tested under ASTM D-3936.

2. Lifetime static protection, meaning built-in protection below 3.0 kv as tested under AATCC-134.
3. Tuft Bind (edge ravel, yarn pulls, zippering)
4. Delamination
5. Lifetime Moisture Barrier
6. Lifetime Dimensional Stability

1.14 EXTRA MATERIALS

A. Provide three (3) percent overage of calculated yardage for each type of carpet (include carpet needed for complete installation plus waste and usable scraps in calculated yardage).

B. Deliver specified overrun and usable pieces of carpet to owner's designated storage space, properly packaged and identified.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. J+J Flooring (Carpet)

1. Valley Modular 7501 manufactured by J&J Flooring
2. Color: Ravine 3473
3. Construction: Patterned Loop
4. Backing: Nexus Modular
5. Dye Method: Solution Dyed
6. Fiber Type: Encore SD Ultima
7. Face Weight: 18 ox/sy
8. Pile Density: 5875 oz./y3
9. Gauge: 1/12
10. Stitches: 10 stitches/in
11. Size: 24” x 24”

B. Philadelphia Commercial (Walk-Off CPT)
1. Style: Succession II TL #54695
2. Color: After Dark #00500
3. Type: Tile
4. Size: 24x24
5. Fiber: 100% High UV Polypropylene
6. Collection: Indoor Outdoor Collection

2.2 ADHESIVES

A. Commercialon Premium Modular Pressure Sensitive Adhesive, a premium modular flooring adhesive specifically formulated for bonding J+J Flooring’s Nesux Modular PVC backed carpet to the floor.

2.3 ACCESSORIES

A. Leveling Compound: Type as recommended by carpet manufacturer; compatible with carpet adhesive and curing/sealing compound used on concrete.

B. Multi-Purpose Adhesive: Low VOC permanent strippable carpet adhesive as recommended by carpet manufacturer for direct glue down of carpet; Use slow-set permanent adhesive for patterned carpet to facilitate pattern match.

C. Non-Metallic Carpet Edge Guard: Extruded or molded heavy-duty vinyl or rubber carpet edge guard of size and profile indicated; minimum two (2) inch wide anchorage flange; colors selected by owner from manufacturer's standard range of colors.

PART 3 EXECUTION

3.1 EXAMINATION

A. Exam substrates for conditions under which carpeting is to be installed.

B. Verify that floor surfaces are smooth and flat within ¼ '' per 10' and are ready to receive work..

C. Beginning of installation means installer accepts substrate conditions.

3.2 PREPARATION

A. Substrates are required to be structurally sound and free of foreign substances that may compromise the carpet or its installation. Patching compounds are required to be suitable for the intended application. Select polymer-fortified patching compounds according to the carpet manufacturer's instructions. (Refer to current version of ASTM E1155).

B. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.

C. Vacuum floors again immediately before installation of carpeting.

D. Preheat areas to receive carpet to a minimum temperature of 68 degrees F for 72 hours prior to installation. Maintain minimum temperature of 68 degrees F thereafter. Carpet and adhesive must be stored at a minimum temperature of 68 degrees F for 72 hours prior to installation.

E. Provide a primer on the substrate to improve bond strength of the patch. Primer shall be as recommended and approved by the carpet manufacturer.

3.3 INSTALLATION

A. Install carpet in accordance with manufacturer's instructions and CRI 104.

B. Install carpet under open-bottom obstructions and under removable flanges and furnishings and into alcoves and closets in each space.

C. Provide cutouts where required. Conceal cut edges with protective edge guards or flanges.

D. Run carpet under open-bottom items and install tight against walls, columns, and cabinets so that the entire floor area is covered with carpet. Cover over floor-type door closers.

E. Install edging guard at openings and doors wherever carpet terminates, unless indicated otherwise.

F. Perform cutting in accordance with manufacturer's recommendation using tools designed for carpet being installed. Verify carpet match before cutting to ensure minimal variation between dye lots.

G. Use leveling compound where necessary. Feather floor leveling compound minimum of 4 ft.

H. FULL SPREAD ADHESIVE SYSTEM- J+J Flooring requires a full spread adhesive system for installation of Nexus Modular (carpet tile). Fully spread Commercialon® Premium Modular Pressure Sensitive Adhesive using a 1/32 x 1/16 x 1/16 “U” or “V” notch trowel or spread using a 3/8” foam paint roller. Keep the roller saturated and wet with adhesive throughout the installation in order to maintain a constant spread rate. Allow to completely dry so adhesive does not transfer when touched. The spread rate for Commercialon Premium Modular Adhesive is approximately 120 sq. yds. per four gallon bucket. Nexus® Modular Spray Adhesive is available in a 14 lbs cylinder (coverage is approx. 165 sq yds). Note: Inadequate amounts of adhesive can cause modules to shift and move and will not be covered under warranty. Warranty coverage requires the use of Commercialon Premium Modular Adhesive. J+J Flooring will not be responsible for the adhesive bond where other adhesives have been used.

I. TILE PLACEMENT - Arrows are embossed or printed on the module backing to show pile direction. To ensure proper alignment, check spacing every ten modules. Measure ten modules; proper spacing should be within ¼ inch. Continue to check spacing every ten modules throughout the entire installation.

J. PALLET AND BUNDLE SEQUENCING - It is very important to install carpet modules in the order they were manufactured; this is easily accomplished by selecting pallets in sequential order and following the numbers located on each bundle. Typically, an installation will begin with the lowest bundle numbers and progress through the highest numbers until the project is complete. Installing modules by bundle sequence will assure the most even uniform look possible. (For layout and installation instructions refer to J+J Flooring Carpet Installation Handbook or CRI 104 Standards.)

K. FLATWIRE CABLE / TRENCH HEADERS - Cable should be centered under modules and no adhesive used unless approved by the manufacturer. Trench headers require a control grid of adhesive on either side of header panels to prevent movement. It is highly recommended that these areas be installed ashlar.

L. STAIRS- Use single or double undercut stair nosing and cut tiles to fit nosing, both step and riser. Use full spread adhesive or SRT tape under modules.

M. FINISHED INSTALLATION- Roll entire job with 75-100 lb. roller after completion of installation.

3.4 FIELD QUALITY CONTROL

A. Inspect completed carpet installation on each floor.

B. Verify that installation is complete; work is properly done and acceptable.

C. Remove and replace, at no additional cost to owner, any work found not to be acceptable.

3.5 CLEANING

A. On completion of installation in each area, remove dirt and carpet scraps from surface of carpet. Remove soiling, spots, or excess adhesive on carpet with cleaning materials recommended by carpet manufacturer.

B. Remove debris from site and dispose of properly.

C. At completion of work, vacuum carpet using commercial vacuuming equipment as recommended by carpet manufacturer. Remove spots and replace carpet where spots cannot be removed. Remove rejected carpeting and replace with new carpeting. Remove any protruding yarns with shears or sharp scissors.

3.6 PROTECTION

A. Do not permit traffic over unprotected floor surface.

B. Protect carpet against damage during construction. Cover with 6-mil thick polyethylene covering with taped joints during construction period whenever protection is required, so that carpet will be without any indication of deterioration, wear, or damage at time of completion.

C. Maintain protection of carpeting on each floor or area until work is accepted.

END OF SECTION

SECTION 099120 – PAINTS AND COATINGS

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes surface preparation and the application of paint systems on the following substrates:

1. Concrete masonry units (CMU).
2. Steel.
3. Wood.
4. Gypsum board.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches square.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.

C. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. Printout of current “MPI Approved Products List” for each product category specified in Part 2, with the proposed product highlighted.

1.3 QUALITY ASSURANCE

A. MPI Standards:

1. Products: Complying with MPI standards indicated and listed in “MPI Approved Products List.”
2. Preparation and Workmanship: Comply with requirements in “MPI Architectural Painting Specification Manual” for products and paint systems indicated.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.

2. Remove rags and waste from storage areas daily.

1.5 PROJECT CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1.6 EXTRA MATERIALS

A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.

1. Quantity: Furnish an additional 5 percent, but not less than 4 gal. of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Benjamin Moore & Co.

2. PPG Architectural Finishes, Inc.

3. Sherwin-Williams Company (The).

4. Rodda Paint

2.2 PAINT, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. Colors: As selected by Architect.

C. Finishing System: Premium Grades unless otherwise indicated.

2.3 BLOCK FILLERS

A. Interior/Exterior Latex Block Filler: MPI #4.

1. VOC Content: E Range of E2.

2.4 PRIMERS/SEALERS (INTERIOR)

A. Interior Latex Primer/Sealer: MPI #50.

1. VOC Content: E Range of E2

B. Interior Alkyd Primer/Sealer: MPI #45.

1. VOC Content: E Range of E2

C. Wood-Knot Sealer: Sealer recommended in writing by topcoat manufacturer for use in paint systems indicated.

2.5 METAL PRIMERS (INTERIOR)

A. Quick-Drying Alkyd Metal Primer: MPI #76.

1. VOC Content: E Range of E2

2.6 WOOD PRIMERS (INTERIOR)

A. Interior Latex-Based Wood Primer: MPI #39.

1. VOC Content: E Range of E2.

2.7 LATEX PAINTS (INTERIOR)

A. High-Performance Architectural Latex (Eggshell): MPI #139 (Gloss Level 3).

1. VOC Content: E Range of E2.

2.8 METAL TRIM, DOORS & FRAMES (INTERIOR & EXTERIOR)

A. Quick-Drying Enamel (Semi-gloss): MPI #163 (Gloss Level 5).

1. VOC Content: E Range of E2.

2.9 DRY FOG/FALL COATINGS (INTERIOR)

A. Interior Latex Dry Fog/Fall: MPI #118.

1. VOC Content: E Range of E2.

2.10 METAL PRIMERS (EXTERIOR)

A. Quick-Drying Alkyd Metal Primer: MPI #76.

1. VOC Content: E Range of E1.

B. Waterborne Galvanized-Metal Primer: MPI #134.

1. VOC Content: E Range of E1.

2. Environmental Performance Rating: EPR 1.

2.11 ACRYLIC LATEX (EXTERIOR)

A. Exterior Acrylic Latex (Satin): MPI #10, 15 (Gloss Level 2).

1. VOC Content: E Range of E2.

2.12 LINE MARKING PAINT

A. Line Marking Paint: Alkyd resin-type, ready-mixed complying with AASHTO M 248, Type I.

2.13 EPOXY PAINT:

A. Epoxy Paint Walls and Floor: 2 coats 2 component, polyamide epoxy coating low sheen: MPI #108.

B. Epoxy Paint Shower and Toilet floors: 2 coats 2 component, polyamide epoxy coating low sheen: MPI #108.

1. Provide Rust-Oleum Durability additive at Shower and Toilet stall.

2.14 MASONRY SEALER: (Exterior)

A. Weather Seal Blok-Guard & Graffiti Control II.

2.15 CONCRETE FLOOR SEALER (INTERIOR)

A. Rust-Oleum Clear-Seal

2.16 CONCRETE SIDEWALK SEALER (EXTERIOR)

A. Rust-Oleum Clear-Seal

B. Green Umbrella SoloCure

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Masonry (Clay and CMU): 12 percent.

2. Wood: 15 percent.

3. Gypsum Board: 12 percent.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.

B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and re-prime substrate with compatible primers as required to produce paint systems indicated.

D. Concrete Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

E. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.

F. Wood Substrates:

1. Scrape and clean knots and apply coat of knot sealer before applying primer.

2. Sand surfaces that will be exposed to view and dust off.

3. Prime edges, ends, faces, undersides, and backsides of wood.

4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

G. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions.

1. Use applicators and techniques suited for paint and substrate indicated.

2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.

3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Painting Mechanical and Electrical Work: Paint items exposed in equipment rooms and occupied spaces including, but not limited to, the following:

1. Mechanical Work:

a. Uninsulated metal piping.

b. Uninsulated plastic piping.

c. Pipe hangers and supports.

d. Tanks that do not have factory-applied final finishes.

e. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.

f. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.

g. Mechanical equipment that is indicated to have a factory-primed finish for field painting.

2. Electrical Work:

a. Panelboards.

b. Electrical equipment that is indicated to have a factory-primed finish for field painting.

3.4 FIELD QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:

1. Owner will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.

2. Testing agency will perform tests for compliance with product requirements.

3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

A. Steel Substrates:

1. Quick-Drying Enamel System: MPI INT 5.1A.

a. Prime Coat: Quick-drying alkyd metal primer.

b. Intermediate Coat: Quick-drying enamel matching topcoat.

c. Topcoat: Quick-drying enamel (semi-gloss).

2. Alkyd Dry-Fall System: MPI INT 5.1D at all exposed ceiling areas.

a. Prime Coat: Quick-drying alkyd metal primer.

b. Topcoat: Interior alkyd dry fog/fall.

B. Dressed Lumber Substrates:

1. High-Performance Architectural Latex System: MPI INT 6.4A.

a. Prime Coat: Interior latex-based wood primer.

b. Intermediate Coat: High-performance architectural latex matching topcoat.

c. Topcoat: High-performance architectural latex (semi-gloss).

C. Gypsum Board Substrates:

1. High-Performance Architectural Latex System: MPI INT 9.2B.

a. Prime Coat: Interior latex primer/sealer.

b. Intermediate Coat: High-performance architectural latex matching topcoat.

c. Topcoat: High-performance architectural latex (semi-gloss).

D. Concrete Masonry Units MPI 4.2D (interior & exterior)

1. Latex Block Filler at interior locations MP4

2. Latex, 2 coats of high performance at interior locations MPI-139

3. Latex, 2 coats of MPI Exterior Latex (MPI # 10, 15), exterior locations.

END OF SECTION 099120

SECTION 101400 - SIGNS

PART 1 GENERAL

1.1 SUMMARY

A. Interior Signage

1. Provide surface mounted panel signs.

B. Exterior Signage

1. Provide parking and directional signage.

2. Provide metal address numerals.

1.2 REFERENCES

A. Standards of the following referenced:

1. American National Standards Institute (ANSI).

B. Industry Standards:

1. Department of Justice, Office of the Attorney General, “Americans with Disabilities Act”, Public Law 1010-336, (ADA).

2. ANSI A117.1: Providing Accessibility and Usability for Physically Handicap People, 1986 edition.

3. Federal Register part III, Department of Justice, Office of the Attorney General 28 CFR Part 36: Nondiscrimination of the Basis of Disability by Public Accommodations and in Commercial Facilities, Final Rule, July 26, 1992.

4. Federal Register part II, Architectural and Transportation Barrier Compliance Board, 36 CFR Part 1191: Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Amendment to Final Guidelines, September 6, 1991.

1.3 DEFINITIONS

A. Terms:

1. Braille: Grade 2 Braille including 189 part-word or whole word contractions in addition to grade 1 Braille 63 characters. Tactile is required whenever braille is required; see “System Description” Section, below.
2. Non-tactile: Letters and numbers on signs with width-to- height ratio between 3:5 and 1:1 and stroke width ration between 1:5 and 1:10 using upper case “X” to calculate ratios. Use type styles with medium weight; upper and lower-case lettering is permitted; serif type styles are permitted See “System Description” below.

3. Symbols: Symbol itself is not required to be tactile but equivalent verbal description is required both in tactile letters and braille.

4. Tactile: 1/32" raised capital letters without serifs at least 5/8" height and not more than 2" height based on upper case "X". Braille is required whenever tactile is required; see "System Description" Section below.

1.4 SYSTEM DESCRIPTION

A. Signage under this Section is intended to include items for identification, direction, control, and information of building where installed as complete integrated system from a single manufacturer, for each sign type.

B. Tactile Signage requiring tactile graphics per ADA:

1. Surface mounted panel signs (those designating permanent rooms and spaces such as room numbers and restroom, office, and fire exit identifications). Individually applied characters are prohibited.

a. Refer to the signage schedule indicated on the drawings.

1.5 SUBMITTALS

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

B. Product Data: Include manufacturer's construction details relative to materials, dimension of individual components, profiles, and finishes for each type of sign required.

1. After review and approval, submit to Architect.

C. Shop Drawings: Provide shop drawings for fabrication location and erection of signs. Include plans, elevations, and large-scale sections of typical members and other components. Show anchors, grounds, reinforcement, accessories, layout, and installation details.

1. Provide message list for each sign required, including large-scale details of wording and layout of lettering.

2. For signs supported by or anchored to permanent construction, provide setting drawings, templates, and directions for installation of anchor bolts and other anchors to be installed as a unit of work in other Sections.

3. After review and approval, submit to Architect.

D. Samples: Provide the following samples of each sign component for initial selection of color, pattern and surface texture as required and for verification of compliance with requirements indicated.

1. Samples for verification of color, pattern, and texture selected, and compliance with requirements indicated:

    a. Panel Signs: Provide a sample panel about 8- 1/2" by 11" for each material indicated. Include a panel for each color, texture and pattern required. On each panel include a representative sample of the graphic and image process required, showing graphic style, and colors and finishes of letters, numbers, and other graphic devices.
    b. Aluminum: Samples of each finish type and color, on 6" long sections of extrusions and not less than 4" squares of sheet or plate. Where finishes involve normal color and texture variations include sample sets showing the full range of variations expected.

2. After review and approval, submit to Architect.

1.6 QUALITY ASSURANCE

A. Single-Source Responsibility: For each separate type of sign required, obtain signs from one source from a single manufacturer, regularly engaged in work of this magnitude and scope for minimum of five (5) years.

B. Design Concept: The Drawings indicate sizes, profiles, and dimensional requirements of signs and are based on the specific types and models indicated. Sign units by other manufacturers may be considered provided deviations in dimensions and profiles do not change the design concept as judged by the Architect. The burden of proof of equality is on the proposer.

PART 2 PRODUCTS

2.1 MANUFACTURERS/PRODUCTS

A. Surface mounted panel signs:

1. Manufacturer: to meet requirements of sign specifications as listed.

2. Product: ADA tactile, 1/8" thick photopolymer phenolic signs.

3. Braille portion mechanically embossed into face material.

4. Name slot: Tamper resistant, Lexan covered.

5. Colors: As selected by Architect. Several colors shall be selected.

6. Font: Style as selected by Architect.

2.2 MATERIALS AND FABRICATION

A. Surface Mounted Panel Signs: ADA tactile signs, 1/8" thick photopolymer phenolic signs for interior use. Braille portion raised minimum 1/32", mechanically embossed into face material.

1. Several colors shall be selected by Architect from full range of signage manufacturer's colors (24 colors minimum).

2. Name slot shall be tamper resistant, Lexan covered.

3. Font: As selected.

B. Parking Signs: Provide aluminum sheet of alloy and temper recommended by the aluminum producer or finisher for the type of use and finish indicated, and with not less than the strength and durability properties specified in ASTM B209 for 5005-H15.

1. Provide permanent sign and sign posts; one at the head of each handicap designated parking space.

2. Sign board shall be corrosion resistant metal, minimum size to meet Idaho State regulatory requirements. Provide permanent graphics on sign face showing "International Symbol of Access" and bearing the words "Reserved Parking, State Disabled Parking Permit Required" "Van Accessible" of colors and design acceptable to authorities and Architect.

3. Provide galvanized steel pipe post for each sign and tamper resistant sign board mounting fasteners. Provide finish top cap to prevent water intrusion.

C. Metal Letters: Provide (6) 12" metal letters to comply with the requirements indicated for the manufacturing process, materials, finish, style, size, and message content.

1. Cast Letters and Numerals (Address): Form letters by casting. Produce letters with smooth, flat faces, sharp corners, precisely-formed lines and profiles, free from pits, scale, sand holes, or other defects. Cast lugs into the back of the characters and tap to receive threaded mounting studs.

a. Metal: Aluminum.
b. Font: Palatino.

2.3 FINISHES

A. Colors and Surface Textures: For exposed sign material that requires selection of materials with integral or applied colors, surface textures or other characteristics related

to appearance, provide color as selected by the Architect from the manufacturer's standards, except where custom colors are indicated.

1. Provide surface mounted panel signs from full line of colors, as selected by Architect.

2. Provide metal letters and numerals in custom color as selected by Architect.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install sign units level, plumb and at the height as indicated with signs free from distortion or other defects in appearance.

1. Locate sign units and accessories where indicated or scheduled, using mounting methods of the type described and in compliance with the manufacturer’s directions.

B. Install signs with adhesive and tamper resistant fasteners.

C. Panel Signs:

1. Screw attach panel signs to wall surfaces using countersunk mounting holes located as indicated. Mount units with backs in full contact with wall surfaces.

2. At panel signs mounted to glazing, provide blank panel on opposite side of glazing; same size and finish as panel sign.

3.2 CLEANING AND PROTECTION

A. At completion of the installation, clean soiled sign surfaces in accordance with the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

B. Replace damaged signage prior to installation. Replace installed signs that are damaged prior to Substantial Completion.

END OF SECTION 10 14 00

SECTION 102812 - COMMERCIAL TOILET ACCESSORIES

PART 1 – GENERAL

1.1 SUMMARY

A. Products Furnished and Installed Under This Section:

1. Selected accessories for Rest Rooms.

2. Custodial Room accessories.

1.2 SUBMITTALS

A. Action Submittals:

1. Shop Drawings: Schedule showing items used, location where installed, and proper attaching devices for substrate.

B. Closeout Submittals:

1. Operations and Maintenance Data: Include manufacturer's literature or cut sheets in Operations and Maintenance Manual specified in Section 017800.

2. Warranty Documentation: Include final, executed warranty in Operations and Maintenance Manual.

1.3 WARRANTY

A. Manufacturer's standard warranty against rusting.

PART 2 – PRODUCTS

2.1 MANUFACTURED UNITS

A. Manufacturers:

1. Manufacturer List:

A) American Specialties Inc (ASI), Yonkers, NY

b) Bobrick Washroom Equipment Inc, North Hollywood, CA

c) Bradley Corp, Menomonee Falls, WI

B. Materials:

1. Approved Products.

a) Rest Rooms:

1) Mirrors: Glass with stainless steel channel frame with No. 4 Satin finish. Bobrick B-165 2436 Series

2) Grab Bars:

a. Concealed mount, 18 ga, type 304 stainless steel, 1-1/2-inch diameter, and nonslip finish in configuration shown on Drawings.

3) Soap Dispenser

a. Surface Mounted Soap Dispenser Bobrick B-4112

4) Surface-Mounted Paper Towel Dispenser

a. Paper Towel Dispenser Bobrick B-9262.

5) Surface-Mounted Multi-Roll Toilet Tissue Dispenser

a. Toilet Tissue Dispenser Bobrick B-4288

6) Surface-Mounted Seat-Cover Dispenser

a. Seat-Cover Dispenser Bobrick B-4221

b) Janitor/Utility Rooms:

1) Mop Holder: Series B-224 x 36

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install using mounting devices proper for base structure.

B. Where possible, mount like items in adjoining compartments back-to-back on same partition.

END OF SECTION

SECTION 104416 - FIRE EXTINGUISHERS, CABINETS, AND ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

A. Provide fire extinguisher cabinets (FEC), fire extinguishers, mounting brackets (FE) and accessories for a complete installation.

B. All equipment and accessories supplied shall be UL rated.

C. Conform to NFPA 10 requirements for portable fire extinguishers.

1.2 SUBMITTALS

A. Product Data for each type of product specified.

1.3 QUALITY ASSURANCE

A. Single-Source Responsibility: Obtain fire extinguishers and cabinets from one source from a single manufacturer.

B. Conform to NFPA 10 requirements for portable fire extinguishers.

C. UL-Listed Products: Provide new fire extinguishers which are UL- listed and bear UL “Listing Mark” for type, rating, and classification of extinguisher.

PART 2 PRODUCTS

2.1 MANUFACTURERS/PRODUCTS

A. Fire extinguishers:

1. Manufacturer: J.L. Industries, Inc.

2. Product: “Cosmic 10E” multi-purpose dry chemical type with UL rated multi-purpose dry chemical type 4-A: 60-B: C, 10 lb. nominal capacity.

3. Approved: Larsen’s Manufacturing Co.

4. Other manufacturers must request approval.

B. Brackets:

1. Provide type designed to prevent accidentally dislodging extinguisher, of sizes required for type and capacity of extinguisher, in painted finish.

C. Fire extinguisher cabinets (FEC):

1. Manufacturer: J.L. Industries, Inc. (Design Standard)

2. Product: “Ambassador”, with tempered glass, 2-1/2” rolled edge, semi-recessed units with one-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and will return at outer edge (backbend)

3. Finish: Baked enameled steel.

4. Door style: “Contemporary V.” Provide continuous hinge and friction latch with keyed lock (one key, minimum, with each cabinet, keyed alike) and “red vertical lettering for “FIRE EXTINGUISHER.”

5. Approved: Larsen’s Manufacturing Co.

6. Other manufacturers must request approval.

D. Provide proper fire-related (UL label) cabinets in fire-rated walls.

PART 3 EXECUTION

3.1 INSTALLATION (provide 8 total fire extinguishers)

A. Install fire extinguisher and brackets in strict conformance with manufacturer’s directions

END OF SECTION 104416

SECTION 108000 - MISCELLANEOUS SPECIALTIES

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes but is not limited to:

1. Knox Box for Fire Department access.

2. Knox Box Installation.

1.2 QUALITY ASSURANCE

A. Uniformity: Provide products of same manufacturer.

B. Shelving products shall meet Shelving Manufacturer's Association specification for the design, testing, utilization, and application of industrial grade steel shelving.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's specifications and installation instructions including all dimensions and rough in requirements for each type of specialty unit or system, including data indicating compliance with requirements.

1.4 DELIVERY AND STORAGE

A. Deliver products to project site in manufacturer's undamaged protective containers, after spaces to receive them have been fully enclosed.

PART 2 PRODUCTS

2.1 KNOX BOX FOR FIRE DEPARTMENT ACCESS

A. Fire Department Key Box:

1. Knox Box Model No. 3200 or as required by local jurisdiction.

PART 3 EXECUTION

3.1 INSTALLATION

A. General: Install all miscellaneous specialties as recommended by manufacturer.

B. Provide all accessories required for complete assembly installations, whether or not specifically indicated, and whether or not required accessories are manufacturer's standard supplied items.

3.2 CLEANING, RESTORING FINISHES

A. After completion of installation of each portion of work specified herein, remove protective coverings, if any, and clean all work as recommended by manufacturers.

END OF SECTION 108000

SECTION 122100 – WINDOW BLINDS

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes but is not limited to:

1. Provide horizontal operating blind assembly and all accessories and equipment for a complete system.

2. Provide blinds at all exterior windows

1.2 SUBMITTALS

A. For Horizontal Blinds: submit product data and manufacturers installation instructions.

1. Samples for color for verification consisting of sections of exposed components with integral or applied finishes showing colors and materials.

1.3 QUALITY ASSURANCE

A. General: Provide units produced by one manufacturer for each type required, with complete standard assemblies including hardware accessory items, mounting brackets, and fastenings.

B. NFPA Flame-Test: passes NFPA 701. Materials tested shall be identical to products proposed for use.

PART 2 – PRODUCTS

2.1 HORIZONTAL LOUVER BLINDS

A. Manufacturers for 1” Horizontal Blinds:

1. Hunter Douglas

2. Kirsch

3. As approved by Architect

B. Product: CL82-1”

1. Slat size/type: 1”, aluminum alloy, 8 ga. heat treated and spring tempered bounce back construction.

2. Full tilting operation

C. Finish: Provide manufacturer's standard finish. Finish exposed accessories and hardware to match rail color.

1. Colors: As selected by Architect

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install blinds according to manufacturer's directions.

3.2 HORIZONTAL LOUVER BLIND SCHEDULE

A. Install horizontal blind units at all exterior classroom windows.

3.3 CLEANING

A. Remove protective coverings and devices and clean blinds. Replace any damaged or rejected units at no cost to the Owner.

END OF SECTION

SECTION 02300 - EARTHWORK

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Site grading, removal of topsoil and subsoil, building excavating and trenching, backfilling, and compacting.

PART 2 PRODUCTS

1.2 SOIL MATERIALS

A. Topsoil: Reusable excavated and/or imported friable loam; free of subsoil, roots, grass, excessive amount of weeds, large stone, and foreign matter.

B. Subsoil: Imported and/or excavated material, graded free of lumps larger than 6 inches, rocks larger than 3 inches, and debris.

1.3 FILL MATERIALS

A. Type A- ¾ inch gravel: no clay soils, free of organic material and debris; graded within the following limits:
1. 100 % passing through ¾ inch sieve.
2. Not more than 10 – 12 % passing through 200 sieve.

B. Type B - Pea Gravel: Natural stone; washed, free of clay, shale, organic matter;
1. Minimum Size: 1/4 inch
2. Maximum Size: 5/8 inch

C. Type C - Sand: Natural river or bank sand; washed; free of silt, clay, loam, friable or soluble materials, and organic matter.

D. Type D - Subsoil: Reused, and/or imported, free of rock larger than 3 inch size, no clay soil, and free from organic material & debris.

E. Type E - Building pad: Imported fill ASTMD 2487 soil classification groups GW, GP, GM, SP, or a combination of these group symbols, depth as required, free of rock larger than 3 inch size, no clay soils, free from organic materials, frozen materials & debris, 95% compaction of standard proctor & near optimum moisture, maximum 8 inch lifts of loose material.

F. Type F – Rock: 1 ½ inch to 3 inch washed river rock (decorative landscape.)

PART 3 EXECUTION

1.4 EXAMINATION AND PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Notify Architect of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.

C. Identify and flag known utility locations. Notify utility company to remove and relocate utilities.

D. Maintain and protect existing utilities to remain.

E. Verify foundation walls are braced to support surcharge forces imposed by backfilling operations.

1.5 PROTECTION OF ADJACENT WORK

A. Underpin adjacent structures which may be damaged by excavation work, including service utilities and pipe chases.

B. Grade excavation top perimeter to prevent surface water run-off into excavation or to adjacent properties.

1.6 TOPSOIL EXCAVATING

A. Do not excavate wet topsoil.

B. Excavate topsoil and stockpile in area designated on site. Remove excess topsoil not being reused from site.

1.7 SUBSOIL EXCAVATING

A. Excavate subsoil from marked areas required for building foundations, construction operations, and other Work.

B. Slope banks to angle of repose or less, until shored.

C. Excavation shall not interfere with 45 degree bearing splay of any foundation.

D. Correct unauthorized excavation at no extra cost to Owner.

E. Fill over-excavated areas under structure bearing surfaces in accordance geotechnical report, civil and structural drawings.

F. Stockpile subsoil in area designated on site. Remove excess subsoil not being reused from site.

1.8 TRENCHING

A. Excavate for sanitary sewer, water and gas piping to municipal utilities.

B. Cut trenches sufficiently wide to enable installation of utilities and allow inspection.

C. Hand trim excavation and leave free of loose matter.

D. Support pipe and conduit during placement and compaction of bedding fill.

E. Backfill trenches to required contours and elevations.

F. Place and compact fill materials as for backfilling.

1.9 BACKFILLING

A. Backfill areas to contours and elevations. Use unfrozen and unsaturated materials.

B. Backfill systematically, as early as possible, to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

C. Place and compact fill materials in continuous layers not exceeding 8 inches loose depth.

D. Place and compact soil material in continuous layers not exceeding 8 inches loose depth.

E. Employ a placement method so not to disturb or damage foundations, foundation dampproofing, or utilities in trenches.

F. Maintain optimum moisture content of backfill materials to attain required compaction density.

G. Backfill against supported foundation walls. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.

H. Slope grade away from building minimum 2 inches in 10 ft, unless noted otherwise.

1.10 PLACING BUILDING PAD

A. The entire area on which the building pad is to be constructed shall be stripped of existing topsoil.

B. Native subgrade shall be proof-rolled to identify wet or soft areas. Any soft or wet areas shall be over excavated to competent subgrade soils and back-filled with type E structural fill compacted to 95% of maximum dry density (ASTMD 698 standard proctor). Refer to Geotechnical Report.

C. Back fill building pad areas to contours and elevation indicated on drawings with Type E fill soils in maximum lifts of 8 inch depth (loose material) and compact to 95% of maximum dry density (ASTDM D 698 standard proctor).

D. Each lift shall be tested for compaction at the rate of one test per each approximately 1500 square feet of building pad area. Test locations shall be uniformly distributed over the pad area. Actual test locations to be determined by field condition.

3. 8 PLACING STOCKPILED TOPSOIL

A. Place topsoil uniformly to within one tenth of a foot in areas where seeding, sodding, and planting is scheduled.

B. Fine grade topsoil eliminating rough or low areas. Maintain levels, profiles, and contours of sub-grade.

C. Remove large stone, roots, grass, weeds, debris, and foreign material while spreading.

D. Lightly compact and roll placed topsoil.

E. Leave stockpile area and site clean and raked, ready to receive landscaping.

3. 9 TESTS

A. Tests and analysis of fill material will be performed in accordance with ASTM D698 and ASTM D1557.

3.10 TOLERANCES

A. Top Surface of Exposed Subgrade: Plus or minus one inch .

B. Top of Topsoil: Plus or minus 1/2 inch.

3.11 SCHEDULE

A. Exterior Slab-On-Grade: Type A fill, 4 inches thick, compacted to 95 percent compaction of standard proctor & near optimum moisture. .

B. Under Building Slab: 15 mil vapor retarder. Tape all joints with minimum 6'' overlap.

C. Exterior Side of Foundation Walls and Retaining Walls over Granular Filter Material and Foundation Perimeter Drainage: Type D fill, to sub-grade elevation, each lift compacted to 90 percent.

D. Fill Under Landscaped Areas: Type D fill, to 4 inches below finish grade, compacted to 85 percent.

E. Fill Under Asphalt Paving: Type A fill below finish paving elevation, compacted to 95 percent.

F. Building Pad/Building Footings: Type E fill (not on undisturbed soils).

F. 3´´ of Type “F” fill - Install over weed barrier by Dewitt or approved equal. Needle punch woven 4.1 ounce shall be place under all landscape rock areas.

END OF SECTION

SECTION 02230 - SITE CLEARING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Removal of surface debris, grass and deleterious matter.

B. Removal of topsoil, rough grading and site contouring.

C. Removal of asphalt and concrete.

1.2 REGULATORY REQUIREMENTS

A. Conform to all applicable codes for disposal of debris and burning debris on site.

B. Coordinate clearing Work with utility companies.

PART 2 PRODUCTS

2.1 MATERIALS

None specified.

PART 3 EXECUTION

3.1 PROTECTION

A. Identify and protect utilities from damage.

B. Protect trees, plant growth, and features designated to remain as final landscaping. Identify and tag.

C. Verify that survey benchmark and intended elevations for the Work are as indicated.

3.2 CLEARING

A. Clear areas required for execution of Work to a minimum depth of 6 inches.

B. Remove surface rock.

3.3 ROUGH GRADING

A. Identify required lines, levels, contours and datum.

B. Identify known underground, above ground and aerial utilities. Stake and flag locations.

C. Notify utility company to remove and relocate utilities.

D. Excavate topsoil and subsoil from areas to be further excavated, re-landscaped or re-graded.

E. Stockpile topsoil and subsoil in area designated on site.

3.4 CLEAN UP

A. Remove debris, rock and extracted plant life from site.

END OF SECTION

SECTION 312213 – ROUGH GRADING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The Work of this Section applies to the Drawings, Specifications, and provisions of the Contract. The General Conditions Supplementary General Conditions, Special Conditions, and other Division 0 and 1 Specification Sections apply to the Work of this Section.

1.02 SECTION INCLUDES

A. Cutting, grading, filling, rough contouring, and compacting site for structures.

1.03 RELATED SECTIONS

A. Section 31 05 13 - Soils for Earthwork.

B. Section 31 10 00 - Site Clearing.

C. Section 31 23 16 – Excavation.

D. Section 31 23 17 – Trenching.

1.04 REFERENCES

A. The latest edition of the Standard Specification for Road, Bridge, and Municipal Construction.

B. ASTM International:

1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3).

3. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.

4. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (6,000 ft-lbf/ft^3).

5. ASTM D2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.

6. ASTM D2434 - Standard Test Method for Permeability of Granular Soils (Constant Head).

7. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

8. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.05 CLOSEOUT SUBMITTALS

A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with ISPWC Standards and the Geotechnical Report.

PART 2 PRODUCTS

2.01 MATERIALS

A. Subsoil Fill: Type as specified in related sections.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify survey bench mark and intended elevations for the Work are as indicated on Drawings.

3.02 PREPARATION

A. Call Local Utility Line Information service not less than three working days before performing Work.

1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Identify required lines, levels, contours, and datum.

C. Notify utility company to remove and relocate utilities.

D. Protect utilities indicated to remain from damage.

E. Protect plant life, lawns, rock outcropping and other features remaining.

F. Protect bench marks, survey control point, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.03 TOPSOIL EXCAVATION

A. Excavate topsoil from marked areas, without mixing with foreign materials for use in finish grading.

B. Do not excavate wet topsoil.

C. Stockpile in area designated on site to depth not exceeding 8 feet and protect from erosion. Stockpile material on 36 mil Hypalon material and cover over with same material, until disposal.

D. Remove excess topsoil not intended for reuse from site.

3.04 SUBSOIL EXCAVATION

A. Excavate subsoil from marked areas.

B. Do not excavate wet subsoil or excavate and process wet material to obtain optimum moisture content.

C. When excavating through roots, perform Work by hand and cut roots with sharp axe.

D. Remove excess subsoil not intended for reuse from site.

E. Stockpile excavated material in area designated on site.

F. Benching Slopes: Horizontally bench existing slopes greater than 1: 4 to key placed fill material to slope to provide firm bearing.

G. Stability: Replace damaged or displaced subsoil as specified for fill.

3.05 FILLING

A. Fill areas to contours and elevations with unfrozen materials.

B. Place fill material in continuous layers and compact in accordance with Geotechnical Report.

C. Place material in continuous layers as set forth in Geotechnical Report.

D. Maintain optimum moisture content +/- 2% of fill materials to attain required compaction density.

E. Make grade changes gradual. Blend slope into level areas.

F. Repair or replace items indicated to remain damaged by excavation or filling.

3.06 TOLERANCES

A. Top Surface of Subgrade: Plus or minus 0.10 foot from required elevation. An inspection by the Engineer shall be required prior to placing any aggregate base.

3.07 FIELD QUALITY CONTROL

A. The Contractor shall be responsible for all costs associated with compaction and compaction testing.

B. Perform laboratory material tests in accordance with ASTM D1557.

C. Perform in place compaction tests in accordance with the following:

1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D2922. Compact to 95% of density at a frequency of 1 test per 5,000 square feet. Once copy of the test results shall be sent to the Owner, Engineer, and Architect.

2. Moisture Tests: ASTM D3017.

D. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

END OF SECTION 31 22 13

SECTION 312316 – EXCAVATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The Work of this Section applies to the Drawings, Specifications, and provisions of the Contract. The General Conditions Supplementary General Conditions, Special Conditions, and other Division 0 and 1 Specification Sections apply to the Work of this Section.

1.02 SECTION INCLUDES

A. Excavating for foundation for new building.

B. Excavating for asphalt paving.

1.03 RELATED SECTIONS

A. Section 31 05 13 - Soils for Earthwork.

B. Section 31 22 13 - Rough Grading.

C. Section 31 23 17 – Trenching.

D. Document: Geotechnical Report.

1.04 REFERENCES

A. ASTM International:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/^{f3t}).

2. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.

3. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

4. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

B. Local utility standards when working within 24 inches of utility lines.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PREPARATION

A. Call Local Utility Line Information service not less than three working days before performing Work.

1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Identify required lines, levels, contours, and datum.

C. Notify utility company to remove and relocate utilities.

D. Protect utilities indicated to remain from damage.

E. Protect plant life, lawns, and other features remaining as portion of final landscaping.

F. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.02 SOIL DENSIFICATION - VIBRO-COMPACTION

A. Vibro-compact substrates below footing bearing surfaces for footings as indicated on Drawings before excavating site.

B. Tolerances:

1. Maximum Deviation from Center of Completed Compaction: 8 inches from indicated position.

2. Maximum Deviation from Vertical: 4 degrees during vibrator insertion.

3.03 EXCAVATION

A. Underpin adjacent structures which may be damaged by excavation work.

B. Excavate subsoil to accommodate segmental wall foundations and paving.

C. Compact disturbed load bearing soil in direct contact with foundations to original bearing capacity; perform compaction in accordance with ISPWC Standard Specifications.

D. Slope or shore excavations per ISPWC.

E. Do not interfere with 45 degree bearing splay of foundations.

F. Grade top perimeter of excavation to prevent surface water from draining into excavation.

G. Trim excavation. Remove loose matter.

H. Remove lumped subsoil, boulders, and rock.

I. Notify Architect/Engineer of unexpected subsurface conditions.

J. Correct areas over excavated with structural fill specified in Geotech report.

K. Remove excess and unsuitable material from site.

L. Stockpile subsoil in area designated on site to depth not exceeding 8 feet and protect from erosion.

M. Repair or replace items indicated to remain damaged by excavation.

3.04 FIELD QUALITY CONTROL

A. Refer to Geotechnical Report.

B. Request visual inspection of bearing surfaces by inspection agency before installing subsequent work.

3.05 PROTECTION

A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.

B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

C. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.

END OF SECTION

SECTION 312317 – TRENCHING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The Work of this Section applies to the Drawings, Specifications, and provisions of the Contract. The General Conditions Supplementary General Conditions, Special Conditions, and other Division 0 and 1 Specification Sections apply to the Work of this Section.

1.02 SECTION INCLUDES

A. Compacted fill from top of utility bedding to subgrade elevations.

B. Backfilling and compaction.

1.03 RELATED SECTIONS

A. Section 31 05 13 - Soils for Earthwork.

B. Section 31 22 13 - Rough Grading.

C. Section 31 23 16 – Excavation.

1.04 REFERENCES

A. The latest edition of the Standard Specifications for Road, Bridge, and Municipal Construction.

B. American Association of State Highway and Transportation Officials:
1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Hammer and a 457-mm (18-in.) Drop.

C. ASTM International:

1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3).

3. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.

4. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (6,000 ft-lbf/ft^3).

5. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

6. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

7. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.05 DEFINITIONS

A. Utility: Any buried pipe, duct, conduit, or cable.

1.06 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

PART 2 PRODUCTS

2.01 FILL MATERIALS

A. Subsoil Fill: Type as specified in Section 31 05 13.

B. Structural Fill: Type as specified in Section 31 05 13.

PART 3 EXECUTION

3.01 LINES AND GRADES

A. Lay pipes to lines and grades indicated on Drawings.

1. Architect/Engineer reserves right to make changes in lines, grades, and depths of utilities when changes are required for Project conditions.

B. Use laser-beam instrument with qualified operator to establish lines and grades.

3.02 PREPARATION

A. Call Local Utility Line Information service not less than three working days before performing Work.
1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Identify required lines, levels, contours, and datum locations.

C. Protect plant life, lawns, and other features remaining as portion of final landscaping.

D. Protect bench marks, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

E. Maintain and protect above and below grade utilities indicated to remain.

F. Establish temporary traffic control and detours when trenching is performed in public right-of-way. Relocate controls and reroute traffic as required during progress of Work.

3.03 TRENCHING

A. Excavate subsoil required for utilities to utility service.

B. Remove lumped subsoil, boulders, and rock.

C. Perform excavation within 24 inches of existing utility service in accordance with utility's requirements.

D. Do not advance open trench more than 50 feet ahead of installed pipe.

E. Cut trenches sufficiently wide to enable installation and allow inspection. Remove water or materials that interfere with Work.

F. Excavate bottom of trenches maximum 2 feet wider than outside diameter of pipe.

G. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and pipe.

H. Do not interfere with 45 degree bearing splay of foundations.

I. When Project conditions permit, slope side walls of excavation starting 2 feet above top of pipe. When side walls can not be sloped, provide sheeting and shoring to protect excavation as specified in this section.

J. When subsurface materials at bottom of trench are loose or soft, excavate to greater depth as directed by Architect/Engineer until suitable material is encountered. notify Architect/Engineer, and request instructions.

K. Cut out soft areas of subgrade not capable of compaction in place. Backfill with Subsoil Fill and compact to density equal to or greater than requirements for subsequent backfill material.

L. Trim excavation. Hand trim for bell and spigot pipe joints. Remove loose matter.

M. Correct areas over excavated areas with compacted backfill as specified for authorized excavation or replace with fill concrete as directed by Architect/Engineer.

N. Remove excess subsoil not intended for reuse, from site.

O. Stockpile subsoil in area designated on site to depth not exceeding 8 feet and protect from erosion.

P. All trenches to be backfilled and compacted to at least 95 percent of maximum density as determined by ASTM D1557 (Modified Proctor).

3.04 SHEETING AND SHORING

A. Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.

B. Support trenches more than 4 feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.

C. Design sheeting and shoring to be removed at completion of excavation work.

D. Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.

E. Repair damage to new and existing Work from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

3.05 BACKFILLING

A. Backfill trenches to contours and elevations with unfrozen fill materials.

B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

C. Place material in continuous layers per Geotechnical Report.

D. Employ placement method that does not disturb or damage foundation perimeter drainage, and utilities in trench.

E. Maintain optimum moisture content of fill materials to attain required compaction density.

F. Do not leave any trench open at end of working day.

G. Protect open trench to prevent danger to the public.

3.06 TOLERANCES

A. Top Surface of Backfilling: Plus or minus 1 inch from required elevations.

B. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

3.07 FIELD QUALITY CONTROL

A. The Contractor shall be responsible for all costs associated with compaction and compaction testing.

B. Perform laboratory material tests in accordance with ASTM D1557.

C. Perform in place compaction tests in accordance with the following:

1. Density Tests: ASTM D2922. Compact to 95% of density per ASTM D1557.

2. Moisture Tests: ASTM D3017.

D. When tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest.

E. Frequency of Tests: Every 75 feet.

3.08 PROTECTION OF FINISHED WORK

A. Reshape and re-compact fills subjected to vehicular traffic during construction.

END OF SECTION

SECTION 321313 – CONCRETE PAVING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The Work of this Section applies to the Drawings, Specifications, and provisions of the Contract. The General Conditions Supplementary General Conditions, Special Conditions, and other Division 0 and 1 Specification Sections apply to the Work of this Section.

1.02 SUMMARY

A. Section Includes:

1. Concrete sidewalks.

2. Concrete integral curbs and gutters.

B. Related Sections:

1. Section 31 22 13 - Rough Grading: Preparation of site for paving.

2. Section 32 12 16 - Asphalt Paving: Asphalt.

1.03 REFERENCES

A. American Concrete Institute:

1. ACI 301 - Specifications for Structural Concrete.

2. ACI 304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete.

3. ACI 305R – Guide to Hot Weather Concreting

B. ASTM International:

1. ASTM C33 - Standard Specification for Concrete Aggregates.

2. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.

3. ASTM C150 - Standard Specification for Portland Cement.

4. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.

5. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

6. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.

7. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.

8. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

1.03 PERFORMANCE REQUIREMENTS

A. Curb, Gutter and Sidewalk Paving: Designed for commercial pedestrian and vehicle traffic and winter freeze/thaw conditions.

1.03 SUBMITTALS

A. Section 01001 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data on joint filler, concrete mix design, concrete admixtures and sealer/hardener concrete curing compounds.

1.04 QUALITY ASSURANCE

C. Perform Work in accordance with American Public Works Association (APWA) and American Concrete Institute (ACI) standards.

D. Maintain one copy of the APWA Standard Specifications and referenced ACI Standards on site.

E. Obtain cementitious materials from same source throughout.

1.05 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing work of this section with minimum 3 years documented experience.

1.06 ENVIRONMENTAL REQUIREMENTS

C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

D. Follow ACI 305R guidelines and Sections 3.05 through 3.11 of this specification during the summer months. Use ACI 305R placing procedures between June 1st and October 1st unless otherwise directed by the Engineer.

PART 2 PRODUCTS

2.01 FORM MATERIALS

A. Form Materials: Conform to ACI 301.

B. Joint Filler: ASTM D1751.

C. Coat forms with a non-staining form release agent that will not discolor or deface surface of concrete.

2.02 CONCRETE MATERIALS

A. Concrete Materials: As specified in Section 03 30 00.

B. Fine and Coarse Mix Aggregates: ASTM C33. Maximum size of ¾”.

C. Water: Potable, low alkali, not detrimental to concrete. Do not add water to truck without authorization of Architect.

D. Air Entrainment: ASTM C260. 5-7%.

E. Slump: 4” maximum.

F. Expansion Joint Filler Material: Preformed strips of asphalt saturated fiberboard with plastic caps, complying with ASTM D1751, 3/8” thickness unless indicated otherwise.

G. Sealing Curing Compound: Comply with ASTM C303, unless other type acceptable to Architect, install per manufacturer’s instructions.

1. Products: Subject to compliance with requirements, provide one of the following or approved equal:

A. Rust-Oleum Clear-Seal

B. Green Umbrella SoloCure

H. Bonding Compound: Polyvinyl acetate or acrylic base, re-wettable type suitable for intended use.

I. Cold Applied Joint Sealant: Silicone sealant for concrete, one-part, low modules, neutral silicone sealant, complying with ASTM C290 for Type S, Grade P, Class 215.

2.03 DETECTABLE WARNING SURFACE

A. All detectable warning surfaces for on-site sidewalks and perimeter sidewalks immediately adjacent to the project site shall be per ISPWC specifications.

2.04 SOURCE QUALITY CONTROL AND TESTS

A. Submit proposed concrete mix design to Architect for review prior to commencement of Work.

B. Tests on cement, aggregates, and mixes must be provided to ensure conformance with specified requirements.

C. Test samples in accordance with ACI 301.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify compacted subgrade is acceptable and ready to support concrete paving and imposed loads.

B. Verify gradients and elevations of base course are correct.

C. Visual inspection by the Architect or Engineer is required.

3.02 PREPARATION

A. Moisten base course to minimize absorption of water from fresh concrete. Do not pond water on the base course.

B. Notify Architect a minimum of 24 hours prior to commencement of any and all concreting operations.

3.03 FORMING

A. Place and secure forms to correct location, dimension, profile, and gradient. Check completed formwork for grade and alignment to the following tolerances:

1. Cross section of all walks not to exceed 2% slope.

2. Top of forms not more than 1/8” in 10 feet.

3. Vertical face on longitudinal axis, not more than ¼” in 10’.

4. Top of curb shall slope to pavement side at 2% slope.

B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.04 PLACING CONCRETE

A. Place concrete in accordance with ACI 318 when the ambient air temperature is between 50° F and 80° F (See section C. below).

B. Place concrete in accordance with ACI 305 Hot Weather Concreting when the ambient air temperature is or will be above 80°F and there is a lack of a protected environment for concrete placement and finishing (such as an enclosed building).

C. Use ACI 305 placing procedures and procedures outlined in Sections 3.05 through 3.07 of this specification between June 1st and October 1st unless otherwise directed by the Engineer. Notify the assigned testing laboratory and Engineer a minimum of 24 hours prior to commencement of operations.

D. Place concrete in accordance with ACI 306 Cold Weather Concreting if there is a period when the average daily air temperature drops below 40°F for more than 3 successive days and stays below 50°F for more than one-half of any 24 hour period.” Notify testing laboratory and Engineer minimum 24 hours prior to commencement of operations.

E. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.

F. Place concrete to joint pattern indicated on the Drawings.

3.05 DETAILED HOT WEATHER CONCRETE PLACEMENT REQUIREMENTS

A. The basic requirements for good results in hot weather concrete placing and curing are no different than in other weather. However, the potential for permanently damaging the surface of the concrete is greater during hot weather conditions. For this reason, the following specific concrete placement and curing requirements must be followed:

1. Concrete shall be handled and transported with a minimum of segregation and slump loss.

2. Concrete shall be placed where it is to remain.

3. Concrete shall be placed in layers shallow enough to assure vibration well into the layer below and that the elapsed time between layers shall be minimized to avoid cold joints.

4. Construction joints shall be made on sound, clean concrete (refer to ACI 224.3R)

5. Finishing operations and timing shall be guided only by the readiness of the concrete and nothing else.

6. Curing shall be conducted so that at no time during the prescribed period will the concrete lack ample moisture and temperature control to permit full development of its potential strength and durability. Details of placing, consolidation, and curing procedures are described in ACI 304R, 308R, and 309R.

B. Planning Hot Weather Placements

1. Before the start of the project, plans shall be made to minimize the exposure of the concrete to adverse conditions. Whenever possible on building sites, slab placement shall be scheduled after the roof structure and walls are in place to minimize drying winds and direct sunlight. A roof also reduces thermal shock from rapid temperature drops caused by wide day and night temperature differences or cool rain on concrete heated by the sun earlier in the day.

2. Under hot weather conditions, scheduling concrete placements at other-than-normal hours may be advisable. Pertinent considerations include ease of handling and placing, and minimizing the risk of plastic shrinkage and thermal cracking.

C. Preparing for Ambient Conditions

1. Personnel in charge of concrete construction shall be aware of the damaging combinations of high air temperature, direct sunlight, drying winds, and high concrete temperature. Local weather reports shall be monitored, and routine recordings of site conditions shall be made, including air temperature, sun exposure, relative humidity, and prevailing winds. These data, together with projected or actual concrete temperatures, enable supervisory personnel to determine and

prepare the required protective measures. Equipment shall also be available at the site to measure the evaporation rate.

2. The determination on the level of protective measures for this project is borne by the Owner and/or their authorized representative(s).

D. Expediting Concrete Placement

1. Preparations shall be made to transport, place, consolidate, and finish the concrete at the fastest possible rate. Concrete delivery to the job shall be scheduled so that it is placed promptly on arrival, particularly the first batch. Avoid ordering the concrete too early before the job is ready since slump control will be lost at this most critical time. Traffic arrangements at the site shall ensure easy access of delivery trucks to the unloading points over stable roadways. Site traffic shall be coordinated for a quick turnaround of concrete trucks. If possible, large or critical placements shall be scheduled during periods of low urban traffic loads to minimize time on the road.

E. Concrete Placing Equipment

1. Equipment for placing the concrete shall be of suitable design and have ample capacity to perform efficiently. All equipment shall have adequate power for the work and be in first-class operating condition. Breakdowns or delays that stop or slow the placement can seriously affect the quality and appearance of the work. Arrangements shall be made for readily available backup equipment. Concrete pumps, where used, shall be capable of pumping the specified class of concrete through the length of line and elevation at required rates per hour. Where placement is by crane and buckets, wide-mouth buckets with steep-angled walls shall be used to permit rapid and complete discharge of bucket contents. Adequate means of communication between bucket handlers and placing crew shall be provided to ensure that concrete is charged into buckets only when the placing crew is ready to use the concrete without delay.

2. Concrete shall not be allowed to rest exposed to the sun and high temperature before it is placed into the form. To minimize the heat gain of the concrete during placement, delivery units, conveyors, pumps, and pump lines shall be kept in the shade where possible. In addition, pump lines shall be painted white. Lines can also be cooled by being covered with damp burlap or kept wet with a soaker hose.

F. Concrete Consolidation Equipment

1. There shall be ample vibration equipment and workers to consolidate the concrete immediately as it is received in the form. Procedures and equipment are described in ACI 309R. Provisions shall be made for an ample number of standby vibrators—at least one standby for each three vibrators in use. Where a site is subject to occasional power outages, portable generators shall be available for uninterrupted vibrator operation. Apart from the unsightliness of poorly consolidated concrete, insufficient compaction in the form can seriously impair the durability and structural performance of reinforced concrete.

G. Preparations for Protecting and Curing the Concrete

1. Ample water shall be available at the project site for moistening the subgrade, as well as for fogging forms and reinforcement before concrete placement. For moist curing, use water with a temperature no more than 20°F (11°C) cooler than the concrete temperature to avoid thermal shock where applicable. Fog nozzles shall produce a fog blanket. They shall not be confused with common garden-hose nozzles, which generate an excessive washing spray. Pressure washers with a suitable nozzle attachment can be a practical means for fogging on smaller jobs. Materials and means shall be on hand for erecting temporary windbreaks and shades as needed to protect against drying winds and direct sunlight. Plastic sheeting or sprayable compounds for applying temporary moisture-retaining films shall be available to reduce evaporation from flatwork between finishing passes.

2. When concrete is placed under hot weather conditions and it is exposed to rapid temperature drops, thermal protection shall be provided to protect the concrete against thermal shrinkage cracking (refer to Section 3.11 D).

3. Curing materials shall be readily available at the project site to permit prompt protection of all exposed surfaces from premature drying upon completion of the placement (refer to Section 3.11).

H. Preparing Incidental Work

1. Due to faster setting and hardening of the concrete in hot weather, timing of various final operations, such as saw cutting joints and applying surface retarders, becomes more critical; therefore, these operations shall be planned in advance. Plans shall be made for the timely sawing of contraction joints in flat-work to minimize cracking due to excessive tensile stress. Typically, joints that are cut using the conventional wet or dry process are made within 4 to 12 hours after the slab has been finished; 4 hours in hot weather, to 12 hours in cold weather. For early entry dry-cut saws, the waiting period will typically vary from 1 hour in hot weather to 4 hours in cold weather (ACI 302.1R).

3.06 JOINTS

A. General: Construct expansion, weakened-plane (contraction) and construction joints true to line with face perpendicular to surface of concrete. Construct transverse joints at right angles to the centerline, unless otherwise indicated.

B. Expansion Joints (EJ): Provide preformed strips of asphalt saturated fiberboard, ASTM D1751, ½" thick for expansion joints abutting concrete curbs, catch-basins, manholes, inlets, structures, walks and other fixed objects, unless otherwise indicated. Place expansion joints at 20 foot intervals and points of curvature on curb returns. Align curb, gutter, and sidewalk joints.

C. Place joint filler between paving components and other appurtenances. Recess top of filler 1/8 inch for sealant placement.

D. Provide trowelled or sawn joints as indicated. Saw cut contraction joints 3/16 inch wide at an optimum time after finishing. Cut 1/3 into depth of slab (Refer to the Construction Plans for details).

E. Construction (Cold) Joints: Place construction joints at end of placements and at locations where placement operations are stopped more than ½ hour, except where such placements terminate at expansion joints.

1. Where load transfer-slip dowel devices are used, install so that one end of each dowel bar is free to move.

3.07 FINISHING

A. General

1. Expeditious placement and finishing of concrete significantly reduces hot weather difficulties. Delays in placement increase slump loss and invite the use of additional water to offset those losses. Each operation in finishing shall be carried out promptly when the concrete is ready. The concrete shall not be placed faster than it can be properly consolidated and finished. When the placing rate is not coordinated with the available work force and equipment, the quality of the work will be marred by cold joints, poor consolidation, and uneven surface finishes. These deficiencies will not be acceptable to the Owner. Complete replacement of damaged or poor quality concrete will be required at no additional expense to the Owner.

B. Placing Formed Concrete

1. In hot weather, it is usually necessary to place concrete in shallower layers than those placed in moderate weather to ensure coverage of the lower layer while it will still respond readily to vibration. The interval between concrete batch placements becomes very short in hot weather. This interval can be extended by the proper use of set-retarding admixtures. All admixtures must be approved for use by the Owner prior to construction.

2. The determination on the level of concrete protective measures required for this project will be made by the Engineer. The Contractor shall not place any concrete until the Engineer has determined the level of protection that will be required for the work.

C. Placement of Flatwork

1. When concrete is deposited for flatwork on the ground, the subgrade shall be moist, but free of standing water and soft spots. When placing concrete slabs of any kind in hot weather, it may be necessary to keep the operation confined to a small area and to proceed on a front with a minimum amount of exposed surface to which concrete is added.

2. A fog nozzle shall be used to cool the air, to cool any forms and steel immediately ahead and to lessen rapid evaporation from the concrete surface before and after each finishing operation. Excessive fog application (which would wash the fresh concrete surface or cause surplus water to cling to reinforcement or stand on the concrete surface during floating and troweling) shall be avoided.

3. Other means of reducing moisture loss include spreading and removing impervious sheeting or applying a liquid penetrable sealer/hardener compound (refer to Section 3.11).

4. Finishing of flatwork shall begin after the surface sheen of the film has disappeared. Liquid penetrable sealer/hardener compounds shall not be used as finishing aids or worked into the surface, as concrete durability can be reduced. The product manufacturer shall be contacted for information on proper application and dosage. Sealing procedures may cause a slight increase in concrete temperature due to reduced evaporative cooling. Generally, the benefit from reduced moisture evaporation is more important than the increase of in-place concrete temperature.

D. Finish Requirements:

1. Sidewalk Paving Finish

a. Light broom, radius to ½ inch radius, and trowel joint edges.

2. Curbs and Gutters:

a. Machine formed, sack rubbed finish

E. Direction of Texturing:

1. Transverse to pavement direction.

F. Place sealer on exposed concrete surfaces immediately after finishing (see section 3.11)

3.08 JOINT SEALING

A. Separate pavement from vertical surfaces with ¼ inch thick joint filler.

B. Place joint filler in pavement pattern placement sequence shown on the Construction Plans. Set top surface to required elevations. Secure to resist movement by wet concrete.

C. Extend joint filler from bottom of pavement to within 1/8 inch of finished surface.

3.09 TOLERANCES

A. Maximum Variation of Surface Flatness: ¼ inch in 10 ft.

B. Maximum Variation From True Position: ½ inch.

3.10 FIELD QUALITY CONTROL

A. The assigned testing firm will take test cylinders and perform slump and air entrainment tests in accordance with ACI 301.

B. One additional test cylinder will be taken during cold weather and cured on site under same conditions as concrete it represents.

C. One slump test will be taken for each set of test cylinders taken.

D. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

E. Provide copies of all testing to the Owner, Architect, and Engineer within 3 days.

3.11 CURING AND PROTECTION

A. Use ACI 305 curing procedures between June 1st and October 1st unless otherwise directed by the Engineer. Notify the testing laboratory and the Engineer a minimum 24 hours prior to commencement of concrete operations.

B. Immediately following completion of finishing operations, efforts shall be made to protect the concrete from low humidity, drying winds, and extreme ambient temperature differential. Whenever possible, the concrete and surrounding formwork shall be kept in a uniform moisture and temperature condition to allow the concrete to develop its maximum potential strength and durability. High initial curing temperatures can negatively affect ultimate strength and durability to a greater degree than high placement temperatures of fresh concrete. Procedures for keeping exposed surfaces from drying shall begin promptly and continue without interruption. Failure to do so can result in excessive drying shrinkage and related cracking, which can impair the surface durability of the concrete. Damaged concrete surfaces that were caused by improper curing protection will not be acceptable to the Owner. Complete replacement of the damaged concrete will be required at no additional expense to the Owner.

C. Plastic Shrinkage Cracking Protection

1. A curing method that is approved by the Engineer shall be implemented immediately after finishing operations and continued for at least 7 days. If more than one curing method is used during this period, any changes in method shall be approved by the Owner.

2. Concrete surfaces shall not be allowed to become surface-dry at any point during the finishing and 7-day curing process. A variety of curing methods are described in ACI 308R, which addresses the concept of initial curing during the plastic stage of the concrete.

3. Initial curing techniques such as fog spray, can be used to ensure timely replacement of bleedwater and avoidance of plastic shrinkage cracking.

D. Thermal Shrinkage Cracking Protection

1. Concrete shall also be protected against thermal shrinkage cracking due to rapid temperature drops, particularly during the first 24 hours. Thermal shrinkage cracking is associated with a cooling rate of more than 5°F per hour, or more than 50°F in a 24-hour period for concrete with a least dimension less than 12 in. This

type of temperature change is not uncommon during the summer months in Southern Idaho. The Contractor shall pay particular attention to the potential for thermal shrinkage cracking.

2. Concrete exposed to rapid cooling develops lower tensile strain capacity and is more susceptible to other types of shrinkage cracking than concrete that cools at a slower rate (refer to ACI 207.4R). Hot weather patterns increase the potential for thermal cracking due to vast day and night temperature differences. Additionally, seasonal weather patterns often include passing cold fronts that produce rain, which can induce thermal shock to exposed concrete sections. Under these conditions, concrete shall be protected by placing an approved waterproof material over the exposed concrete, or by using other insulating methods and materials described in ACI 306R.

E. Curing Methods

1. Moist curing of flatwork: Moist curing is usually the best method for maximizing strength and durability and minimizing early-age drying shrinkage of concrete flatwork. Examples of moist curing methods are:

- Fog-spraying
- Ponding
- Covering exposed concrete surfaces with a plastic membrane or fabric kept continuously wet
- Covering exposed concrete surfaces with clean sand kept continuously wet
- Continuous sprinkling

These methods require a sufficient water supply and disposal of any runoff. Where sprinkling is used, care shall be taken that surface erosion does not occur. A common and practical method of moist curing is to cover the concrete with impervious sheeting or fabric mats kept continuously wet with a soaker hose or similar means. Other suitable coverings are described in ACI 308R.

Curing materials shall be kept in contact with the concrete surface at all times. Alternating cycles of wetting and drying are not acceptable and this practice will result in pattern cracking. Pattern cracking will not be acceptable. Complete replacement of the damaged concrete will be required at no additional expense to the Owner.

The temperature of water used for initial curing shall be as close as possible to that of the concrete to avoid thermal shock.

2. Liquid penetrable sealer/hardener curing of flatwork: Where job conditions are not favorable for moist curing, the most practical method of curing is liquid penetrable sealer/hardener compounds. The liquid penetrable sealer restricts the loss of moisture from the concrete, thereby allowing the development of strength, durability, and abrasion resistance of the surface. Membrane forming surface coatings such as acrylics, urethanes or epoxies are not acceptable since these compounds tend to cause "popping" of the concrete surface over time.

   Concrete surfaces exposed to direct sunlight shall be shaded during curing whenever possible. For use in hot weather conditions, a material shall be selected that ensures equal or greater moisture retention than required by ASTM C309, and limits the moisture loss in a 72-hour period to 6.4 lb/yd^3 or less when tested per ASTM C156. The liquid penetrable sealer shall also include a liquid hardener. Dry-shake hardeners are not acceptable.

   Application of an approved sealer/hardener material shall immediately follow the disappearance of surface water sheen after the final finishing pass. When a spray application is required or approved, the spray nozzle(s) shall be positioned sufficiently close to the surface to ensure the correct application rate and prevent wind-blown dispersion. Manual spray application shall be performed in two passes, with the second pass perpendicular to the first pass. Two coats of the liquid penetrable sealer/hardener curing compound will be required with the second coat being applied 24 hours after the first.

3. Concrete in formwork: Forms shall be covered and kept continuously moist during the early curing period. Formwork shall be loosened or removed at the earliest practical age without damage to the concrete, and provisions shall be made for an approved curing method to begin.

   Following formwork removal, tie holes and significant defects can be filled and repairs made by exposing the smallest practical section of concrete at one time to perform the work. All repairs shall be completed within the first few days following form stripping so to the repaired areas cure with the surrounding concrete.

   At the end of the curing period, the covering shall be left in place without wetting for several days (4 days is suggested) so that the concrete surface will dry slowly and be less prone to surface shrinkage cracking. Surface cracking due to drying can be minimized by applying a liquid penetrable sealer/hardener curing compound to the exposed surfaces at the end of the moist-curing period.

F. Freezing protection

1. Protect concrete footings from freezing for minimum 5 days.

3.12 DEFECTIVE CONCRETE

A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements. Concrete will be considered defective if thermal, plastic or pattern cracking develops due to improper curing and/or excessive dryness.

B. Repair or replacement of defective concrete will be determined by the Enigneer. Concrete that has cracked due to shrinkage, including spider-cracking, must be removed and replaced. Concrete that has popped due to the use of improper or substandard sealants must be removed and replaced.

C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of the Engineer.

3.13 SCHEDULES

A. Concrete Sidewalks: 3,000 psi 28 day air-entrained concrete, 4 inches thick, light broom finish.

B. Concrete Curb and Gutter: 4,000 psi air-entrained 28 day concrete, formed by curbing machine.

END OF SECTION