BID PACKAGE

PART 4

SPECIFICATIONS

DMH Project#2021-019

Quincy Lobby Renovation
At

Quincy Mental Health Center
460 Quincy Ave.
Quincy, MA

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF HUMAN SERVICES
DEPARTMENT OF MENTAL HEALTH

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

FOR

LOBBY RENOVATION

AT

QUINCY MENTAL HEALTH CENTER
460 QUINCY AVENUE
QUINCY, MASSACHUSETTS

PROJECT 2021-019

DEPARTMENT OF MENTAL HEALTH
OFFICE OF FACILITIES MANAGEMENT
HADLEY BUILDING - 167 LYMAN STREET
WESTBOROUGH, MA 01581

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REVIEWED BY:

DATE: JULY, 2020

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SECTION 011000
SUMMARY OF THE WORK

PART 1 – GENERAL

1-01 CONTRACT REFERENCES

A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within Division 1 – GENERAL REQUIREMENTS that are hereby made a part of this Section of the Specifications.

B. Equality of material, article, assembly or system other than those named or described in this Section shall be determined in accordance with the provisions of the CONTRACT and GENERAL CONDITIONS.

1-02 WORK UNDER THIS CONTRACT

A. The work described under this Contract is for the renovation of the Lobby located at 460 Quincy Avenue, Quincy, MA 02169. Install new finishes in the Lobby, modify an existing bathroom to comply with Massachusetts Architectural Access Board (MAAB) codes or regulations, and add a Police Desk room.

B. The work includes, but is not limited to:

1. Selective Demolition
2. Install new plumbing and restroom fixtures.
3. Install new ceilings, floors, and drywall partitions.
4. Furnish and install counters.
5. Install new aluminum interior storefront doors and windows. Update door hardware to existing entrance doors and connect to existing security system.
6. Install new lighting. Add cameras to existing security system.
7. Painting
7. HVAC
8. Electrical
9. Miscellaneous patching and repair.

1-02 PROJECT/SITE CONDITIONS

A. Coordinate with the facilities management for access and coordination of all work.

B. The existing building is occupied and will continue to be so during construction. The work shall be done so as to not disrupt existing operation of Owner or his tenants.

C. Any shutdowns of electricity shall be coordinated with the Owner's representatives at least 48 hours in advance. Minor disruptions not affecting the operation may be allowed during normal working hours. Other disruptions will only be allowed on off hours, shall be properly scheduled in advance, and shall not be greater than a 4-hour continuous duration.

D. No existing system shall be left inoperable at any time, except for short periods during normal working hours.

E. Any new work required to pass through occupied areas shall be done at other than normal working hours.

F. The Contractor shall be completely responsible for protection and guarding of the job site so as to not create a hazard.

G. Comply with the Owner's requirements concerning work rules in existing buildings, especially with respect to noise, drilling and cutting, etc.

1-03 PROJECT MEETINGS

A. Project meetings shall be held on a weekly basis subject to the discretion of the Project Engineer.

B. As a prerequisite for monthly payments, weekly payroll reports shall be submitted by the General Contractor.

C. In order to expedite construction progress on this project, the general contractor shall order all materials immediately after the approval of submittals and shop drawings and shall obtain a fixed date of delivery to the project site for all materials ordered which shall not impede or otherwise interfere with construction progress.

D. Scheduling shall be discussed with all concerned parties, and methods shall be presented by the General Contractor, which shall reflect construction completion not being deferred, at no additional expense to the Commonwealth.

E. Weekly project meeting shall be chaired by the Project Engineer.

1-04 PERMITS, INSPECTION AND TESTING REQUIRED BY GOVERNING AUTHORITIES

A. If the contract documents, laws, ordinances, rules, regulations or orders of

any public authority having jurisdiction required any portion of the work to be inspected, tested or approved, the General Contractor shall give the Project Engineer notice of its readiness so the Project Engineer may observe such inspection and testing.

B. Prior to the start of construction, the General Contractor shall complete application to the applicable Building Code enforcement authority for a Building Permit. Such Permit shall be displayed in a conspicuous location at the project site. The General Contractor shall pay all costs associated with the Building Permit.

****** END OF SECTION ******

SECTION 013300
SUBMITTALS

PART 1 – GENERAL

1-01 PROVISIONS INCLUDED

Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the specification.

1-02 REQUIREMENTS

Shop drawings, product data, samples and schedules of values.

1-03 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. General:

Review and submit to the Project Engineer, shop drawings, product data and samples required by specification Section.

B. Shop Drawings:

1. Original drawings shall be prepared by General Contractor, Subcontractor, supplier or distributor, which illustrates some portion of the work showing the fabrication, layout, setting or erection details.

    a. Shop drawings shall be prepared by a qualified detailer.

    b. Details shall be identified by reference to sheet and detail number shown on contract drawings.

    c. Maximum sheet size shall be 30 inch by 42 inch.

    d. Reproductions for submittals shall be reproducible transparencies with the required number of opaque prints specified herein.

C. Project Data:

1. Manufacturer’s standard schematic drawings:

    a. Modify drawings to delete information which is not applicable to project.

b. Supplement standard information to provide additional information applicable to project.

2. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data:

a. Clearly mark each copy to identify pertinent materials, products or models.

b. Show dimensions and clearances required.

c. Show performance characteristics and capacities.

d. Show wiring diagrams and controls.

D. Samples: Physical examples to illustrate materials, equipment or workmanship, and to establish standards by which completed work is judged.

1. Office Samples: Of sufficient size and quantity to clearly illustrate:

a. Functional characteristics of product or materials, with integrity related parts and attachment devices.

b. Full range of color samples.

c. After review, approved samples may be incorporated into the project construction if not retained for comparison.

E. General Contractors Responsibilities:

1. Coordinate each submittal with requirements of work and contract documents.

2. The General Contractors responsibility for errors and omissions in submittals is not relieved by Project Engineer's review of submittals.

3. Notify the Project Engineer in writing at time of submission, of deviations in submittals from requirements of contract documents or previous submissions.

4. Work that requires submittals shall not commence unless submittals have Project Engineer's stamp and initials or signature indicating review and approval.

5. After Project Engineer's review, distribute required copies.

F. Submission Requirements:

1. Make submittals promptly and in such sequence as to cause no delay in the work.

2. Submit one (1) Portable Document Format (PDF) file of shop drawings, and number of hard copies of product data which contractor requires for distribution, plus two (2) hard copies which will be retained by the Project Engineer.

3. Submit number of samples specified in each specification Section.

4. Forward submittals with transmittal letter.

5. Submittals shall include:

   a. Date and revision date.
   b. Project title.
   c. The names of:
      1. General Contractor
      2. Subcontractor
      3. Supplier
      4. Manufacturer
   d. Identification of product or material.
   e. Relation to adjacent structure of materials.
   f. Field dimensions, clearly defined as such.
   g. Specification Section number.
   h. Applicable standards, such as ASTM number.
   i. A blank space 5 inches by 4 inch, for the Engineer's stamp.
   j. Identification of deviations from contract document.
   k. General Contractors stamp, initialized or signed, certifying review and approval of submittals.

G. Resubmission Requirements:

1. Shop Drawings:

   a. Drawings, data or samples shall be designated approved, approved as noted, revise and resubmit or rejected.

   b. Revise drawings as required and resubmit as specified for previous submittal.

2. Product Data and Samples: Submit new data and samples as required from previous submittals.

H. Distribution of Submittals after Review:

1. Distribute copies of shop drawings and project data which display Project Engineer's stamp to appropriate Subcontractors.

1-04 SCHEDULE OF VALUES

Prior to the first request for payment, the General Contractor shall submit to the Project Engineer a Schedule of Values of the various portions of the work in sufficient detail to reflect various major components of each trade, including quantities when requested, aggregating the total contract sum, and divided so as to facilitate payments for work under each Section. Each item in the Schedule of Values shall include its proper share of overhead and profit. This schedule shall be used only as a basis for the contractor's request for payment.

1-05 SUBCONTRACT LIST

Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.

2. Number and title of related Specification Section(s) covered by subcontract.

3. Drawing number and detail references, as appropriate, covered by subcontract.

4. Number of Copies: One (1) PDF copy and two (2) hard copies to the Architect.

    a. Mark up and retain one returned copy as a Project Record Document.

1-06 ARCHITECT/ENGINEER ACTION

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

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each

submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

1. "REVIEWED": The portion of Work covered by the submittal may proceed provided it complies with the Contract Documents.

2. "REVIEWED WITH NOTATIONS": The portion of Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal, and with the Contract Documents.

3. "REVISE AND RESUBMIT" or "DISAPPROVED": Revise or prepare a new submittal in accordance with notations; resubmit. Do not proceed with that portion of the Work covered by the submittal.

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

D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review, as "DISAPPROVED."

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

****** END OF SECTION ******

SECTION 015000
CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 – GENERAL

1-01 GENERAL PROVISIONS

Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1-02 DESCRIPTION

The contractor shall be responsible for providing and maintaining temporary construction facilities and controls as specified herein.

1-03 HOISTING EQUIPMENT AND MACHINERY

All hoisting equipment and machinery required for the proper and expeditious prosecution and progress of the work shall be furnished, installed, operated and maintained in safe condition by the General Contractor for the use of all Subcontractor's material and/or equipment delivered to the designated hoisting area except that which is specifically required to be provided by the Subcontractors themselves and is so stated in each appropriately related Section of the Specifications. All costs for hoisting operating services shall be borne by the General Contractor unless specifically excepted in the Contract Documents.

1-04 STAGING AND TEMPORARY LADDERS, RAMPS, RUNWAYS, ETC.

All staging, exterior and interior, required to be over eight feet in height, shall be furnished and erected by the General Contractor and maintained in safe condition by him without change to, and for the use of all trades as needed by them for proper execution of their work, except where specified to the contrary in any filed sub-bid Section of the Specifications.

1-05 DUST CONTROL

A. The General Contractor shall provide adequate means for the purpose of preventing dust caused by construction operations throughout the period of the construction contract.

B. This provision does not supersede any specific requirements for methods of construction or applicable general conditions set forth in the contract articles with added regard to performance obligations of the General Contractor.

C. The General Contractor shall provide and maintain floor mats at access points to prevent the tracking of dust.

1-06 NOISE CONTROL

A. Develop and maintain a noise-abatement program and enforce strict discipline over all personnel to keep noise to a minimum.

B. Execute construction work by methods and by use of equipment which will reduce excess noise.

1. Equip air compressors with silencers and power equipment with mufflers.

1-07 ENCLOSURES

A. Provide temporary, insulated, weathertight closures of openings in exterior surfaces for providing acceptable working conditions and protection of materials, allowing for heating during construction, and preventing entry of unauthorized persons. Provide doors with self-closing hardware and locks.

B. Provide temporary partitions and ceilings as required to separate work areas from User Agency's occupied areas, to prevent penetration of dust and moisture into User Agency's occupied areas, to prevent damage to existing areas and equipment. Construction shall be framing and sheet materials with closed joints and sealed edges at intersections with existing surfaces; STC rating 35 in accordance with ASTM E90.

C. Provide sheet material and tape to seal HVAC supplies and exhaust. Insure that dust does not enter the ductwork.

1-08 CLEANING DURING CONSTRUCTION

A. Unless otherwise specified under the various trade Sections of the Specifications, the General Contractor shall perform clean-up operations during construction as herein specified.

B. Control accumulation of waste materials and rubbish, periodically dispose of off-site. The general contractor shall bear all costs, including fees resulting from such disposal.

C. Store volatile wastes in covered metal containers, and remove from premises.

D. Prevent accumulation of wastes which create hazardous conditions.

E. Provide adequate ventilation during use of volatile or noxious substances.

F. Conduct cleaning and disposal operation to comply with local ordinances and anti-pollution laws.

1. Do not burn rubbish and waste materials on site.

2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.

G. Use only those materials which will not create hazards to health or property and which will not damage surfaces.

H. Use only those cleaning materials and methods recommended by manufacturer of surface materials to be cleaned.

I. Provide on-site containers for collection of waste materials, debris and rubbish.

J. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas off the construction site.

1-09 SUPPLEMENTAL GUIDELINES FOR CONSTRUCTION

A. Limiting Exposures:

1. Workers should follow the General On-the-Job Guidance to Prevent Exposure & Limit the Transmission of the Virus of the COVID-19 Employee Health, protection, guidance and prevention guide.

2. In addition, Contractors should advise workers of best practice to limit exposures off the construction site.

3. When leaving a construction site for breaks, lunch, or other reasons are required to wash hands with soap for at least 20 seconds or use an alcohol-based hand sanitizer with at least 60% ethanol or 70% isopropanol before leaving the site and must maintain social distancing if traveling to other locations off the construction site. Frequent use of handwashing or alcohol-based hand sanitizers should be encouraged and handwashing facilities and/or alcohol-based hand sanitizers should be made readily available at work sites.

B. Worker Infection Protocol:

1. As provided in the guidance document, there is a zero tolerance for sick workers reporting to work. Employees should be instructed that even those with mild symptoms of respiratory infection (cough, shortness of breath, sore throat) or fever should stay off work. Contractors shall take immediate steps to limit infections at the job site in the event that a worker discovered to have tested positive for COVID-19 or has COVID-19 related symptoms.

2. Although it is understood that contractors are enforcing Work Site Risk Prevention Practices including social distancing rules and use of PPE, consistent with guidelines it is also recognized that there may be occasions where someone who has tested positive for COVID-19 or who has COVID-19 symptoms has been present in a work area.

3. Prompt identification and isolation of potentially infectious individuals is a critical step in protecting workers, vendors, visitors, and others at a worksite.

    a. IDENTIFICATION OF EXPOSURE. The Contractor shall direct workers with COVID-19 related symptoms to leave the jobsite immediately and contact their healthcare provider. The Massachusetts Department of Health (DPH) or a local board of health will make appropriate notifications to those who had direct prolonged contact with the COVID-19 positive workers.

    b. NOTIFICATION AND QUARANTINE REQUIREMENTS. As provided by law, the identity of the worker must be kept confidential. Upon learning of an infection, the contractor must immediately notify the designated COVID-19 safety officer, the site safety officer, and the owner.

    c. SANITIZATION REQUIREMENTS. Contractor shall take immediate steps to sanitize common areas and direct work places. This includes all on-site bathrooms facilities, any break facilities, and any other common areas on the job site that may have been in close contact with the infected worker. Sanitation will be conducted with personnel, equipment, and material approved for COVID-19 sanitization. Identified areas should remain isolated from workers until sanitation process has been completed and area is deemed safe for use.

d. RETURNING TO WORK. All impacted workers should follow CDC and DPH recommended steps concerning return to work. Workers who are considered close contacts to a COVID19 case by public health authorities should not return for 14 days and are subject quarantine by public health. Workers who leave during the work day due to COVID-19 symptoms and develop COVID-19 as confirmed by laboratory testing or diagnosis by a healthcare provider shall not return to the site until either released from isolation by healthcare provider or public health.

e. IN ALL CASES, keep all employee names confidential as required by law. Other employees may be sent home while a workspace is being cleaned but will return to work after cleaning unless advised otherwise by a health care provider. Other employees should be asked to contact their health provider if they have any questions Remind other employees to continue to practice proper sanitation and monitor for flu like symptoms.

****** END OF SECTION ******

SECTION 016000
PRODUCT REQUIREMENTS

PART 1 – GENERAL

1-01 GENERAL PROVISIONS

Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1-02 PRODUCTS

A. Products include material, equipment and systems.

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

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

D. Do not use materials and equipment removed from existing structures, except as specifically required, or allowed, by the contract documents.

1-03 WORKMANSHIP

A. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.

B. Perform work by persons qualified to produce workmanship of specified quality.

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

1-04 MANUFACTURER'S INSTRUCTIONS

A. When work is specified to comply with manufacturer's instructions, submit copies as specified in Section 013300, SUBMITTALS.

B. Perform work in accordance with details of instructions and specified requirements.

1-05 TRANSPORTATION AND HANDLING

A. Refer to CONTRACT and GENERAL CONDITIONS and Specifications Sections for requirements pertaining to transportation and handling of materials and equipment.

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

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

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

1-06 STORAGE AND PROTECTION

A. Refer to CONTRACT and GENERAL CONDITIONS and Specifications Sections for requirements pertaining to storage and protection of materials and equipment.

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

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

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

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

****** END OF SECTION ******

SECTION 017000
CLOSEOUT PROCEDURES

PART 1 – GENERAL

1-01 GENERAL PROVISIONS

Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1-02 FINAL CLEANING

A. Unless otherwise specified under the various Sections of the Specifications, the General Contractor shall perform final cleaning operations as herein specified prior to final inspection.

B. Maintain project site free from accumulations of waste, debris, and rubbish caused by operation. At completion of work, remove waste materials, rubbish, caused by operation. At completion of work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces; leave project clean and ready for occupancy.

C. Cleaning shall include all surfaces, interior and exterior in which the General Contractor has had access whether existing or new.

D. Refer to Section of the Specifications for cleaning or specific products or work.

E. Use only those materials which will not create hazards to health or property and which will not damage surfaces.

F. Use only those cleaning materials and methods that are recommended by the manufacturer of surface material to be cleaned.

G. Employ experienced workmen or professional cleaners for final cleaning operations.

H. Remove grease, mastic, adhesives, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight-exposed interior and exterior surfaces.

I. Wash and polish mirrors.

J. Repair, patch and touch up marred surfaces to specified finish, to match adjacent surfaces.

K. Polish glossy surfaces to a clear shine.

L. Prior to final completion, or User Agency Use and Occupancy, the General Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces, and all work areas, to verify that the entire work is clean.

1-03 RECORD DRAWINGS

A. Record Drawings shall consist of **all** the contract drawings.

B The General Contractor and all Subcontractors shall be required to maintain one set of Record Drawings, as the work relates to their Sections of the Specifications, at the site.

1-04 GUARANTEES AND WARRANTIES

Submit to the Project Engineer all extended guarantees and warranties that have been specified in various, individual Sections of the Specifications.

****** END OF SECTION ******

SECTION 024119
SELECTIVE DEMOLITION

PART 1 – GENERAL

1-01 GENERAL PROVISIONS

Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1-02 DESCRIPTION

A. It is not the intent herein to describe all the items and work required to be removed under this Section. The General Contractor shall assure himself that all of the work to be removed, not otherwise specified herein or described under other Sections, but shown on the Drawings, shall be removed under this Section at no additional cost to the Commonwealth.

B. The General Contractor shall also examine other Sections of these Specifications and familiarize himself with their provisions regarding the removal of existing items and work. He shall understand that all items and work not specifically mentioned to be removed by the requirements of other Sections of these Specifications shall be removed as part of the work under this Section.

C. The scope of work consists of material and services to be furnished under this Section, and without limiting the generality thereof, includes labor, equipment and services required for the removal of existing work, special protection and all work incidental thereto as specified herein and as shown on the Drawings.

1-03 RELATED WORK SPECIFIED ELSEWHERE

A. The following work is not included in this Section and is to be performed under the designated Sections:

1. Movable items and items of User Agency's equipment in the areas of the existing building affected by the work under this Contract will be removed by the User Agency.

2. Cutting and core drilling for new electrical, heating and plumbing work shall be performed by these respective trades.

3. The patching and repair of ceilings, floors and walls caused by work performed under this Section is included under Sections of these Specifications describing similar construction. The General Contractor shall do his utmost to keep such necessary patching and repairing to a minimum.

4. Disconnecting of existing services as required will be done by the respective Mechanical and Electrical trades specified under Plumbing; Heating; Ventilating and Air Conditioning; and Electrical Work Sections.

1-04 PERMITS AND CODES

A. Work specified herein shall conform to the Drawings and Specifications and shall comply with all rules, regulations, laws and ordinances of the Commonwealth of Massachusetts.

B. The General Contractor shall procure and pay for all permits and licenses required for the complete work specified or inferred under this Section.

1-05 SCHEDULING

A. Before beginning the removal of work and demolition, the General Contractor shall consult jointly with the Facility and Project Engineer to determine the schedule of work, exact places, times and days during which the removal and demolition work may, or may not be carried on, and to determine further reasonable requirements, particularly in regards to noise prevention, dust prevention, weather protection, and safety precautions.

B. No work shall be started in existing building without prior approval of the Facility. The General Contractor shall give the Facility adequate advance notice of his readiness to start such work in order that they may properly rearrange activities or evacuate the spaces to be affected.

1-06 EXAMINATION OF PREMISES

The Contractor will be held to have examined the premises before submitting proposals for the work and to have satisfied himself as to the existing conditions under which he will be obliged to operate or that will in any way affect the work under this Contract, also the character and amount of materials and debris to be removed. No allowances will be made in this connection for error or negligence of the Demolition Contractor.

1-07 USE OF PREMISES

A. All apparatus, storage, and the operation of workmen in connection with activities under this Section shall be confined to limits of the Contract. Storage will not be permitted on the property without the approval of the Facility.

B. All parking regulations shall be observed.

C. All trucks carrying loose, dry material such as debris, broken concrete block, plaster, etc., shall be covered by tarpaulins to prevent blowing away or spillage of contents. All spillage of whatever nature shall be promptly taken up and removed.

1-08 PROTECTION

A. The removal of all portions of the structure to be removed shall be done with utmost care, using tools and methods that will not transfer any heavy shocks to the remaining portions of the existing building. All possible care shall be taken to avoid vibration and other disturbances.

B. All existing items directed by the Project Engineer to be retained as the User Agency's property or relocated as shown on the drawings or noted herein, shall be handled and removed with full consideration for their preservation. It is the full responsibility of the General Contractor to replace, without additional charge to the Commonwealth, all such items which are lost or damaged due to the removal operations or handling.

C. When removing materials and making openings in walls, floors, etc., the General Contractor shall take all precautions and use whatever protective devices, shoring, guardrails, and the like as may be required to assure that the remaining and adjacent portions of the existing work which is to remain is substantially supported and./or not loaded beyond safe limits.

D. Consult with the Program Manager regarding the electrical/mechanical equipment.

PART 2 – MATERIALS

2-02 DISPOSAL OF WORK REMOVED

A. All non-salvageable refuse and debris which accumulate as a result of work under this Section shall be removed. No refuse or debris of any nature shall be allowed to accumulate to the detriment of the work.

B. All existing items removed under this Section shall become the responsibility of the Demolition Contractor, and legally be disposed of off-site at his expense, unless such existing items to be removed are

specifically noted on the drawings to be relocated or unless otherwise directed by the Project Engineer to be rendered to and become the property of the Commonwealth.

C. Remove debris in covered containers on a route designated by the Facility.

PART 3 – EXECUTION

3-01 PREPARATION

Before starting the removal of work, the Contractor shall arrange for the disconnection of active utility services in the areas to be worked in. All work on existing utilities shall be accomplished by the respective sub trades or utility companies having jurisdiction.

3-02 REMOVAL OF EXISTING WORK

A. Remove existing cabinets and countertops.

1. Store existing equipment and appliances for reinstallation only as noted.

B. Remove existing floor covering and cove down to sub-floor floor.

C. Remove drywall, insulation, suspended ceilings and other miscellaneous materials as noted on drawings.

D. Provide dust protection to contain dust and debris to the work area.

E. Disconnect all utilities as required.

3-04 CLEAN-UP

At the completion of work, all rubbish, debris, waste, materials, and salvaged materials shall be removed from the site. All tools, scaffolds, apparatus and appliances used in connection with work under this Section shall be removed by the Contractor, and the premises shall be left in clean condition, ready for the alteration work as described under other Sections of these Specifications.

****** END OF SECTION ******

SECTION 061000
ROUGH CARPENTRY

PART 1 – GENERAL

1-01 GENERAL

A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. This section specifies wood blocking, framing, sheathing, furring, nailers, subflooring, rough hardware, and light wood construction.

1-02 RELATED SECTIONS

A. Section 06 61 00, SOLID POLYMER FABRICATIONS.

B. Section 08 41 13 ALUMINUM STOREFRONT

1-03 SUBMITTALS

A. Product Date: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for fire-retardant treatment and chemical treatment manufacturer and certification by treating plant and treated materials comply with requirements. Include physical properties of treated materials, both before and after exposure to elevated temperatures when tested according to ASTM D 5516 and ASTM D 5664.

2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to project site.

3. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1-04 DELIVERY, STORAGE AND HANDLING

A. Stack lumber, plywood, and any other miscellaneous materials; place spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 – PRODUCTS

2-01 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of lumber grading agencies certified by the American Lumber Standards Committee Board of Review.

1. Factory mark each piece of lumber with grade stamp of grading agency.

2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.

3. Provide dressed lumber, S4S, unless otherwise indicated.

4. Provide dry lumber with 15 percent maximum moisture content at time of dressing for 2-inch nominal thickness or les, unless otherwise noted.

B. Plywood Panels:

1. Plywood: Either DOC PS 1 or DOC PS 2, unless otherwise noted.

2. Thickness: As needed to comply with requirements specified but not less than thickness indicated.

2. Factory mark panels according to indicated standard.

2-02 FIRE RETARDANT-TREATED MATERIALS

A. General: For all interior use materials, provide materials that are fire-retardant treated and comply with performance requirements in AWPA C20 (lumber) and AWPA C27 (plywood). Identify fire-retardant-treated wood with appropriate classification marking of UL, US Testing, Timber Products Inspection, or another testing and inspecting agency acceptable to authorities having jurisdiction.

1. Use treatment for which chemical manufacturer publishes physical properties of treated wood after exposure to elevated temperatures, when tested by a qualified independent testing agency according to ASTM D 5664, for lumber and ASTM D 5516, for plywood.

2. Use treatment that does not promote corrosion of metal fasteners.

2-03 MISCELLANEOUS LUMBER

A. General: Provide lumber for support or attachment of other construction, including the following:

1. Blocking.

2. Nailers.

B. For items of dimension lumber size, provide Construction, Stud, or No. 2 grade lumber with 15 percent moisture content.

2-04 PANEL PRODUCTS

A. Miscellaneous Concealed Plywood: Exposure 1 sheathing, span rating to suit framing in each location, and thickness as indicated but not less than 1/2 inch. Provide fire-retardant treated plywood where indicated.

2-05 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.

1. Where carpentry is exposed to weather, in ground contact, or in an area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Nails, Wire, Brad, and Staples: FS FF-N-105.

C. Power-Driven Fasteners: CABO NER-272.
D. Wood screws: ASME B18.6.1.

E. Screws for Fastening to Cold-Formed Metal Framing: ASTM C954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.

F. Bolts: Steel bolts complying with ASTM A 307, Grade A with ASTM A 563 hex nuts and, where indicated, flat washers.

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

1. Material: Carbon-Steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.

2-06 MISCELLANEOUS MATERIALS

A. Adhesive, including gluing furring and sleepers to concrete or masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.

1. Use adhesive that have a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 – EXECUTION

3-01 INSTALLATION, GENERAL

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

B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

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

D. Countersunk fastener heads on exposed carpentry work and fill holes with wood filler.

E. Use fasteners of appropriate type and length. Predrill members when necessary to avoid splitting wood.

3-02 WOOD BLOCKING, AND NAILER INSTALLATION

A. Install where indicated and where required for attaching other work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

******END OF SECTION******

SECTION 066100
SOLID POLYMER FABRICATIONS

PART 1 – GENERAL

1-01 GENERAL

A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. This section specified solid polymer countertops

1-02 RELATED SECTIONS

A. Section 06 10 00, ROUGH CARPENTRY.

B. Section 07 90 00, SEALANTS AND CAULKING.

C. Section 09 21 16, GYPSUM BOARD SYSTEM.

1-03 REFERENCES

A. ANSI/NPA A208.2-09 – Medium Density Fiberboard (MDF) For Interior Application.

B. ASTM International (ASTM):

1. C920-14a – Standard Specification for Elastomeric Joint Sealants.

2. D638-10 – Standard Test Method for Tensile Properties of Plastics.

3. D785-08 – Standard Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials.

4. D790-10 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

5. D5420-10 – Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Failing Weight (Gardner Impact).

6. E84-14 – Standard Test Method for Surface Burning Characteristics of Building Materials.

7. E228-11 – Standard Test Method for Linear Thermal Expansion of Solid Materials with a Push-Rod Dilatometer.

8. G21-13 – Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

9. G22-76(96) – Standard Practice for Determining Resistance of Plastics to Bacteria.

10. G155-13 – Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials.

C. CSA B45.5-11/IAPMO Z124-2011 – Plastic Plumbing Fixtures.

D. NFPA 255-06 – Standard Method of Test of Surface Burning Characteristics of Building Materials

E. NSF/ANSI 51-07 – Food Equipment Materials.

F. SCAQMD Rule 1168 – Adhesive and Sealant Application (amended January 2005).

G. Underwriters Laboratory (UL):

1. 723 – Standard for Test for Surface Burning Characteristics of Building Materials.

2. 2824 – GREENGUARD Certification Program, Method for Measuring Microbial Resistance from Various Sources Using Static Environmental Chambers.

1-04 SUBMITTALS

A. Submit in accordance with Section 01 33 00, SUBMITTALS.

B. Product Data: Description including solid surface sheets, sinks, bowls, fabrication information and compliance with specified performance requirements. Submit product data with resistance to list of chemicals.

C. Shop Drawings: Submit drawings for work in this section. Indicate plans, sections, dimensions, component sizes, edge details, thermosetting requirements, fabrication details, attachment provisions, sizes of furring, blocking, including concealed blocking and coordination requirements with adjacent work. Show locations and sizes of cutouts and holes for

plumbing fixtures, faucets, soap dispensers, waste receptacles and other items to be installed in solid surface.

D. Samples: Submit actual samples of surfacing materials to illustrate full range of colors, patterns, and finish available.

E. Test and Evaluation Reports: Submit flammability test reports and food preparation zone certification/listing conforming compliance with NSF/ANSI 51.

F. Operational and Maintenance Data:

1. Submit manufacturer's care and maintenance data, including repair and cleaning instructions. Include in Project closeout documents.

2. Provide a commercial care and maintenance kit and video. Review maintenance procedures and warranty details with Owner upon completion.

1-05 DELIVERY, STORAGE AND HANDLING

A. Delivery and Acceptance Requirements: Deliver no components to Project site until areas are ready for installation.

B. Storage and Handling Requirements:

1. Store components indoors prior to installation.

2. Handle materials to prevent damage to finished surfaces.

PART 2 – PRODUCTS

2-01 MANUFACTURER

A. Acceptable Manufacturers: Dupont surfaces, or approved equal.

2-02 MATERIALS

A. Solid Surface:

1. 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.

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

3. Food Equipment Material Compliance: Food Zone to NSF/ANSI 51.

   a. Ensure material has minimum physical and performance properties specified under "Performance/Design Criteria."

   b. Ensure superficial damage to a depth of 0.010" is repairable by sanding and polishing.

4. Performance/Design Criteria:

Property	**Requirement**	**Test**
a. Tensile Strength	6000 psi min	ASTM D638
b. Tensile Modulus	1.5×10^6 psi min	ASTM D638
c. Tensile Elongation	0.4% min	ASTM D638
d. Flexural Strength	10000 psi min	ASTM D790
e. Flexural Modulus	1.2×10^6 psi min	ASTM D790
f. Hardness	>85-Rockwell "M" scale min	ASTM D785
g. Thermal Expansion	2.2×10^{-5} in/in/°F	ASTM E228
h. Fungi and Bacteria	Does not support microbial growth	ASTM G21 and G22
i. Microbial Resistance	Highly resistant to mold growth	UL 2824
j. Ball Impact	No fracture – ½ lb Ball: 6 mm slab – 36" drop 12 mm slab – 144" drop	NEMA LD3, Method 3.8
k. Weatherability	ΔE*95<5 in 1,000 hours	ASTM G155
l. Flammability		ASTM E84, NFPA 255, and UL 723
m. Flame Spread	<25	
n. Smoke Developed	<25	
o. Class	A	NFPA 101

5. Colors: Color to be selected from manufacturer's full range of colors.

2-03 COMPONENTS

A. Countertops:

1. Material Thickness: Nominal ½ inch material thickness on MDF backing with layout as shown on Drawings.

2. Size: Countertops shall be dimension and profile as shown on Drawings.

3. Color match silicone adhesive at joints.

4. Warranty: 25 years.

5. Color: Corian "Canvas", or approved equal.

B. Fabrication:

1. Fabricate components in shop to greatest extent practical to sizes and shapes indicated, in accordance with approved shop drawings and solid polymer manufacturer requirements. Form joints between components using manufacturer's standard joint adhesive without conspicuous joints. Provide factory cutouts for fittings and accessories as indicated on Drawings.

2. Where indicated, thermoform corners and edges or other objects to shapes and sizes indicated on Drawings, prior to seaming and joining. Cut components larger than finished dimensions and sand edges to remove nicks and scratches. Heat entire component uniformly prior to forming.

3. Ensure no blistering, whitening, and cracking of components during forming.

4. Fabricate joints between components using manufacturer's standard joint adhesive. Ensure joints are inconspicuous in appearance and without voids. Attach 2 inch wide reinforcing strip of solid polymer material under each joint.

5. Provide holes and cutouts for plumbing and bath accessories as indicated on Drawings.

6. Rout and finish component edges to a smooth, uniform finish. Rout cutouts, then sand edges smooth. Repair or reject defective or inaccurate work.

7. Fabricate Tolerances:

a. Variation in Component Size: +/- 1/8 inch.

b. Location of Openings: +/- 1/8 inch from indicated locations.

PART 3 – EXECUTION

3-01 EXAMINATION

A. Verification of Conditions:

1. Examine substrates and conditions, with fabricator present for compliance with requirements for installation tolerances and other conditions affecting performance of work. Proceed with installation only after unsatisfactory conditions have been corrected.

2. Verify actual site dimensions and location of adjacent materials prior to commencing work.

3. Examine cabinets upon which counter tops are to be installed. Verify cabinets are level to within 1/8 inch in 10 feet.

4. Notify Architect in writing of any conditions which would be detrimental to installation.

B. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3-02 INSTALLATION

A. Install components plumb, level, rigid, scribed to adjacent finishes in accordance with reviewed shop drawings and product installation details.

B. Fabricate field joints using manufacturer's recommended adhesive, with joints being inconspicuous in finished work. Exposed joints/seams are not permitted. Keep components and hands clean when making joints. Reinforce field joints as specified herein. Cut and finish component edges with clean, sharp returns.

C. Route radii and contours to template. Anchor securely to base component or other supports. Align adjacent components and form seams to comply with manufacturer's written recommendations using adhesive in color to match work. Carefully dress joints smooth, remove surface scratches and clean entire surface.

D. Install countertops with nor more than 1/8 inch sag, bow or other variation from a straight line.

E. Seal between wall and components with joint sealant as specified herein and in Section 07 90 00, SEALANTS AND CAULKING, as applicable.

F. Keep components and hands clean during installation. Remove adhesives, sealants and other stains. Ensure components are clean on date of Substantial Completion.

G. Coordinate connections of electric fixtures.

3-03 REPAIR

A. Repair minor imperfections and cracked seams and replace areas of severely damaged surfaces in accordance with manufacturer's technical bulletins.

3-04 FIELD QUALITY CONTROL

A. Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Architect at no cost to Owner.

3-05 CLEANING

A. Remove excess adhesive and sealant from visible surfaces.

B. Clean surfaces in accordance with manufacturer's "Care and Maintenance Instructions."

3-06 PROTECTION

A. Provide protective coverings to prevent physical damage or staining following installation for duration of Project.

B. Protect surfaces from damage until date of Substantial Completion.

******END OF SECTION******

SECTION 079000
SEALANTS AND CAULKING

PART 1 – GENERAL

1-01 GENERAL

A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.

B. This section specifies interior and exterior sealant and their application.

1-02 RELATED SECTIONS

A. Section 08 41 13, ALUMINUM STOREFRONT.

B. Section 09 21 16, GYPSUM BOARD SYSTEM.

C. Section 06 61 00, SOLID POLYMER FABRICATIONS

1-03 REFERENCES

A. ASTM International (ASTM):

1. C510 – Standard Test Method for Staining and Color Change of Single or Multicomponent Joint Sealants.

2. C661 – Standard Test Method for Indentation Hardness of Elastomeric Type Sealants by Means of Durometer.

3. C719 – Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle).

4. C794 – Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants.

5. C834 – Specification for Latex Sealants.

6. C920 – Specification for Elastomeric Joint Sealants.

7. C1087 – Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems.

8. C1193 – Guide for Use of Joint Sealants.

9. C1247 – Standard Test Method for Durability of Sealants Exposed to Continuous Immersion in Liquids.

10. C1248 – Test Method for Staining of Porous Substrate by Joint Sealants.

11. C1311 – Specification for Solvent Release Sealants.

12. C1330 – Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.

13. D412 – Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension.

14. D624 – Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.

15. D2203 – Standard Test Method for Staining from Sealants.

16. D2240 – Test Method for Rubber Property – Durometer Hardness.

B. California Department of Public Health:

1. Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers.

C. NSF International (NSF):

1. Standard 51 – Food Equipment Materials.

D. Sealant, Waterproofing, and Restoration Institute (SWRI):

1. SWRI Validation Program.

E. U.S. Environmental Protection Agency (EPA):

1. 40 CFR 59, Subpart D – National Volatile Organic Compound Emission Standards for Architectural Coatings.

F. U.S. Food and Drug Administration (FDA):

1. 21 CFR 117.2600 – Title 21 Part 177 Indirect Food Additives: Polymers.

1-04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate installation of joint sealants with cleaning of joint sealant substrates and other operations that may impact installation or finished joint sealant work.

1-05 SUBMITTALS

A. Submit in accordance with Section 01 33 00, SUBMITTALS.

B. Product Data:

1. Preparation instructions and recommendations.

2. Standard drawings illustrating manufacturer's recommended sealant joint profiles and dimensions applicable to Project.

C. Samples for Color Selection: For each joint sealant type.

D. Samples for Verification: For each exterior joint sealant product, for each color selected.

E. Greenguard Certificates: For each sealant and accessory product specified to meet volatile organic emissions standards for the Greenguard Children and Schools Certification.

F. Sealant, Waterproofing, and Restoration Institute (SWRI) Validation Certificate: For each sealant specified to be validated by SWRI's Sealant Validation Program.

G. Warranty: Sample of unexecuted manufacturer and installer specified warranties.

H. Preconstruction Compatibility and Adhesion Test Reports: From manufacturer. Include written interpretation of reports and recommendations for primers and substrate preparation.

I. Preconstruction field-adhesion test reports.

J. Joint Sealant Schedule: Include application, location, drawing designation, manufacturer and product name, and selected color.

K. Field quality control adhesion test reports.

1-06 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has specialized in installing joint sealants similar in material, design, and extent to those indicated for this Project ad whose work has resulted in joint-sealant installations with a record of successful in-service performance.

B. Single Source Responsibility: Provide exterior joint sealants by a single manufacturer responsible for testing of Project substrates to verify compatibility and adhesion of joint sealants.

C. Preconstruction Manufacturer Laboratory Compatibility, Staining, and Adhesion Testing: Submit samples for each substrate or adjacent material that will be in contact with or affect joint sealants. Current manufacturer test data of products on matching substrates will be acceptable.

1. Adhesion: Use ASTM C719 and ASTM C794 to determine requirements for joint preparation, including cleaning and priming.

2. Compatibility: Use ASTM C1087 to determine materials forming joints and adjacent materials do not adversely affect sealant materials and do not affect sealant color.

3. Stain Testing: Use ASTM C510, ASTM C1248, or ASTM D2203 to verify nonstaining characteristics or proposed sealants on specified substrates.

4. Immersion Adhesion: Use ASTM C1247 to determine performance of proposed immersed sealant in contact with potable water.

5. Pre-construction manufacturer laboratory testing is not required when sealant manufacturer can furnish data acceptable to Architect based on previous testing for materials matching those of the Work.

6. Mockups: Provide joint sealant application within mockups required in other sections identical to specified joint sealants and installation methods.

1-07 DELIVERY, STORAGE AND HANDLING

A. Acceptable materials on site in manufacturer’s unopened original packaging.

B. Store primers and sealants in dry location with ambient temperature range of 60 to 80°F.

1-08 ENVIRONMENTAL REQUIREMENTS

A. Do not install primers or sealants when atmospheric temperatures or joint surface temperatures are less than 40°F.

1-09 SCHEDULING

A. Schedule work so waterproofing, water repellents and preservative finishes are installed after sealants, unless sealant manufacturer approves otherwise in writing.

B. Ensure sealants are cured before covering with other materials.

1-10 WARRANTY

A. Manufacturer's Warranty: Manufacturer's standard form in which joint sealant manufacturer agrees to furnish joint sealants to repair or replace those that demonstrate deterioration or adhesive or cohesive failure under normal use within warranty period specified.

1. Five years from date of Substantial Completion.

B. Installer's Warranty: Original statement on Installer's letterhead in which Installer agrees to repair or replace joint sealants that demonstrate deterioration or failure within warranty period specified.

1. Two years from date of Substantial Completion.

PART 2 – PRODUCTS

2-01 MANUFACTURERS

A. Acceptable Manufacturers:

1. Tremco, Inc.

2. Pecora Corp.

3. Dow Corning Corp.

2-02 MATERIALS, GENERAL

A. The products listed as the basis of design are to establish quality and performance. Products of other acceptable manufacturers shall meet the characteristics of the listed products, subject to approval.

B. VOC Content for Interior Applications: Provide sealants and sealant primers complying with the following VOC content limits per 40 CFR 59, Subpart D (EPA Method 24):

1. Architectural Sealants: 250 g/L.

2. Sealant Primers for Nonporous Substrates: 250 g/L.

3. Sealant Primers for Porous Substrates: 775 g/L.

C. Low-Emitting Sealants for Interior Applications: Provide sealants and sealant primers complying with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. Compatibility: Provide joint sealants and accessory materials that are compatible with one another, and with adjacent materials, as demonstrated by sealant manufacturer using ASTM C1087 testing and related experience.

E. Joint Sealant Standard: Comply with ASTM C920 and other specified requirements for each joint sealant.

F. Stain Test Characteristics: Where sealants are required to be nonstaining, provide sealants tested per ASTM C1248 as non-staining on porous joint substrates specified.

G. Food Contact Suitability: Where sealants are required to be suitable for contact with food provide sealants complying with 21 CFR 177.2600.

2-03 SILICONE JOINT SEALANTS

A. Single-Component, Non-sag, Non-Staining, Neutral-Curing Silicone Joint Sealant (S-1): ASTM C920, Type S, Grade NS, Class 50, Use NT; SWRI validated.

1. Basis of Design Product: Tremco, Inc., Spectrem

2. Volatile Organic Compound (VOC) Content: 50 g/L maximum.

3. Volatile Organic Emissions (VOE): Not greater than Greenguard Children & Schools Certification emissions levels.

4. Staining, ASTM C1248: None on concrete, marbles, granite, limestone, and brick.

5. Color: As selected by Architect/Engineer from manufacturer's standard line of colors.

B. Mildew-Resistant, Single-Component, Acid-Curing Silicone Joint Sealant (S-2): ASTM C920, Type S, Grade NS, Class 25, Use NT.

1. Basis of Design Product: Tremco, Inc., Tremsil 200 Sanitary.

2. Volatile Organic Compound (VOC) Content: 1 g/L maximum.

3. Volatile Organic Emissions (VOE): Not greater than Greenguard Children & Schools Certification emission levels.

4. Color: As selected by Architect/Engineer from manufacturer's standard line of colors.

2-04 ACCESSORIES

A. Cylindrical Sealant Backing: ASTM C1330, Type B non-absorbent, bi-cellular material with surface skin, or Type O open-cell polyurethane, as recommended by sealant manufacturer for application.

B. Bond Breaker Tape: Polymer tape compatible with joint sealant and adjacent materials and recommended by sealant manufacturer.

C. Joint Substrate Primers: Substrate primer recommended by sealant manufacturer for application.

D. Cleaners: Chemical cleaners acceptable to joint sealant manufacturer.

E. Masking Tape: Non-staining, non-absorbent tape product compatible with joint sealants and adjacent joint surfaces.

PART 3 – EXECUTION

3-01 EXAMINATION

A. Examine joint profiles and surfaces to determine if work is ready to receive joint sealants. Verify joint dimensions are adequate for development of sealant movement capability. Verify joint surfaces are

clean, dry, and adequately cured. Proceed with joint sealant work once conditions meet sealant manufacturer's written recommendations.

3-02 PREPARATION

A. Joint Surface Cleaning: Clean joints prior to installing joint sealants using materials and methods recommended by sealant manufacturer. Comply with ASTM C1193.

1. Remove curing compounds, laitance, form-release agents, dust, and other contaminants.

2. Clean nonporous and porous surfaces utilizing chemical cleaners acceptable to sealant manufacturer.

3. Protect elements surrounding the Work of this section from damage and disfiguration. Apply masking tape to adjacent surfaces when required to prevent damage to finishes from sealant application.

3-07 SEALANT APPLICATION

A. Sealant and Primer Installation Standard: Comply with ASTM C1193 and with manufacturer's written instructions.

B. Joint Backing: Select joint backing materials recommended by sealant manufacturer as compatible with sealant and adjacent materials. Install backing material at depth required to produce profile of joint sealant allowing optimal sealant movement.

1. Install joint backing to maintain the following joint ratios:

a. Joints up to ½ inch wide: 1:1 width to depth ratio.

b. Joints greater than ½ inch wide: 2:1 width to depth ratio; maximum ½ inch joint depth.

2. Install bond breaker tape over substrates when sealant backings are not used.

C. Masking: Mask adjacent surfaces to prevent staining or damage by contact with sealant or primer.

D. Joint Priming: Prime joint substrates when recommended by sealant manufacturer or when indicated by preconstruction testing or experience. Apply recommended primer using sealant manufacturer's recommended application techniques.

E. Liquid Sealant Application: Install sealants using methods recommended by sealant manufacturer, in depths recommended for application. Apply in continuous operation from bottom to top of joint vertically and horizontally in a single direction. Apply using adequate pressure to fill and seal joint width.

1. Tool sealants immediately with appropriately shaped tool to force sealants against joint backing and joint substrates, eliminating voids and ensuring full contact.

2. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

3. Tool exposed joint surfaces concave using tooling agents approved by sealant manufacturer for application.

F. Cleaning: Remove excess sealant using materials and methods approved by sealant manufacturer that will not damage joint substrate materials.

1. Remove masking tape immediately after tooling joint without disturbing seal.

2. Remove excess sealant from surfaces while still curing.

3-08 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Perform adhesion tests in accordance with manufacturer's instructions and with ASTM C1193, Method A.

1. Perform 5 tests for the first 1,000 feet of joint length for each kind of sealant and joint substrate, and one test for each 1,000 feet of joint length thereafter or one test per each floor per building elevation, minimum.

2. For sealant applied between dissimilar materials, test both sides of joint.

B. Remove sealants failing adhesion test, clean substrates, reapply sealants, and re-test. Test adjacent sealants to failed sealants.

C. Submit report of field adhesion testing to Architect indicating tests, locations, dates, results, and remedial actions taken.

3-09 SCHEDULE

A. Interior Caulking:

1. Typical Narrow Joint ¼ inch or less at Walls and Adjacent Components: Type S-5.

2. Perimeter Doors, Windows, Access Panels which Adjoin Concrete or Masonry Surfaces: Type S-5.

3. Joints at Masonry Walls and Columns, Concrete Walls or Exterior Walls: Type S-5.

4. Perimeter Plaster or Gypsum Wallboard Walls: Type S-5.

5. Exposed Isolation Joints at Top of Full Height Walls: Type S-5.

6. Glass to Glass Joints: Type S-1.

******END OF SECTION******

SECTION 084113
ALUMINUM STOREFRONT

PART 1 – GENERAL

1-01 GENERAL

A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Interior entrance doors.

1-02 RELATED SECTIONS

A. Section 06 10 00, ROUGH CARPENTRY

B. Section 07 90 00, SEALANTS AND CAULKING.

C. Section 08 71 00, HARDWARE and section 08 71 10, INSTALLATION OF DOORS AND HARDWARE.

D. Section 08 81 00, GLASS AND GLAZING.

E. Section 09 29 00, GYPSUM BOARD SYSTEM.

1-03 REFERENCES

A. Aluminum Association (AA):

1. DAF-45 – Designation System for Aluminum Finishes.

B. American Architectural Manufacturer's Association (AAMA):

1. 501 – Methods of Test for Exterior Walls.

2. 501.2 – Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems.

3. 2605 – Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

4. 611 – Voluntary Specification for Anodized Architectural Aluminum.

5. 701 – Voluntary Specifications for Pile Weatherstripping and Replaceable Fenestration Weatherseals.

6. 1503 – Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors, and Glazed Wall Sections.

7. 1801 – Voluntary Specification for the Acoustical Rating of Windows, Doors, and Glazed Wall Sections.

8. CW-10 – Care and Handling of Architectural Aluminum From Shop to Site.

9. SFM1 - Aluminum Storefront and Entrance Manual.

C. American Society for Testing and Materials (ASTM):

1. A36 – Structural Steel.

2. A123 – Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

3. B209 – Aluminum and Aluminum - Alloy Sheet and Plate.

4. B221 – Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes.

5. E283 – Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors.

6. E330 – Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.

7. E331 - Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.

D. Federal Specifications (FS):

1. TT-P-641G(1) – Primer Coating, Zinc Dust-Zinc Oxide (For Galvanized Surfaces).

2. TT-P-645A - Primer, Paint, Zinc Chromate, Alkyd Type.

1-04 SYSTEM PERFORMANCE

A. Design Criteria/Concept: All doors shall be Kawneer Series 500 Wide Stile Entrance Door by Kawneer or approved equal.

B. Test Units

1. Air test units shall be minimum size of 3'-0" x 7'-0".

C. Test Procedures and Performances

1. Entrance doors shall conform to all requirements for the door type referenced in 1.04.A. In addition, the following specific performance requirements shall be met.

2. Air Infiltration Test

a. With door closed and locked, test unit in accordance with ASTM E283 at a static air pressure difference of 1.57 psf.

b. Air infiltration shall not exceed .50 cfm per foot of perimeter crack length for single doors.

1-05 QUALITY ASSURANCE

A. Installer Qualifications: An installer which has had successful experience with installation of the same or similar units required for the project and other projects of similar size and scope.

B. Manufacturer Qualifications: A manufacturer capable of providing aluminum-framed storefront system that meet or exceed performance requirements indicated and of documenting this performance by inclusion of test reports, and calculations.

C. Source Limitations: Obtain aluminum-framed storefront system through one source from a single manufacturer.

D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum-framed storefront system and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements". Do not modify size and dimensional requirements.

1-06 SUBMITTALS

A. Submit in accordance with Section 01 33 00 - SUBMITTALS.

B. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, hardware, finishes, and installation instructions for each type of aluminum-framed storefront system indicated.

C. Shop Drawings: Include plans, elevations, sections, details, hardware, and attachments to other work, operational clearances and installation details.

D. Samples for Verification: For aluminum-framed storefront system and components required.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for each type of aluminum-framed storefront.

1-07 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

B. Packing, Shipping, Handling, and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

C. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

1-08 PROJECT WARRANTY

A. Warranty: Guarantee system subject to the terms of Article WARRANTY specified in Section, GENERAL CONDITIONS.

B. Manufacturer Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under the Contract Documents.

1-09 PROJECT CONDITIONS / SITE CONDITIONS

A. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

PART 2 – PRODUCTS

2-01 ACCEPTABLE MANUFACTURERS

A. Manufacturers: Basis of Design Interior Storefront: Kawneer, Trifab® 451, or approved equal.

2-02 MATERIALS

A. Aluminum: ASTM B221, alloy 6063-T5 for extrusions; ASTM B209, alloy 5005- H16 for sheets; or other alloys and temper recommended by manufacturer appropriate for specified finish.

1. Color and Finish: Aluminum storefront to match Alcoa Architectural Products Reynobond Colorweld 500 “Clear Anodized”, or approved equal.

B. Internal Reinforcing:

1. ASTM A36 for carbon steel.

2. Shapes and sizes to suit installation.

3. Steel components factory coated with alkyd type zinc chromate primer complying with FS TT-P-645.

C. Anchorage Devices:

1. Manufacturer's standard formed or fabricated steel or aluminum assemblies of shapes, plates, bars or tubes.

2. Hot-dip galvanize steel assemblies after fabrication; comply with ASTM A123, 2.0 ounce minimum coating.

D. Fasteners:

1. Aluminum, non-magnetic stainless steel or other non-corrosive materials compatible with items being fastened.

2. Provide concealed fasteners wherever possible.

3. For exposed locations, provide Phillips flathead screws with finish matching item fastened.

4. For concealed locations, provide manufacturer's standard fasteners.

E. Expansion Anchor Devices: Lead-shield or toothed-steel, drilled-in, expansion bolt anchors.

F. Protective Coatings: Cold-applied asphalt mastic complying with SSPC, compounded for 30 mil thickness for each coat; or alkyd type zinc chromate primer complying with FS TT-P-645.

G. Touch-Up Primer for Galvanized Components: Zinc oxide conforming with FS TTP- 641.

H. Glazing Gaskets:

1. Compression type design, replaceable, molded or extruded, of neoprene, polyvinyl chloride (PVC), or ethylene propylene diene monomer (EPDM).

2. Profile and hardness as required to maintain uniform pressure for watertight seal.

2-03 FABRICATION

A. Coordination of Fabrication:

1. Check actual frame or door openings required in construction work by accurate field measurements before fabrication.

2. Fabricate units to withstand loads that will be applied when system is in place.

B. General:

1. Conceal fasteners wherever possible.

2. Reinforce work as necessary for performance requirements, and for support to structure.

3. Separate dissimilar metals and aluminum in contact with concrete utilizing protective coating or preformed separators, which will prevent contact and corrosion.

C. Aluminum Framing:

1. Provide members of size, shape and profile indicated, designed to provide for glazing from interior.

2. Provide manufacturer's standard thermal break between exterior and interior aluminum surfaces.

3. Fabricate frame assemblies with joints straight and tight fitting.

4. Reinforce internally with structural members as necessary to support design loads.

5. Maintain accurate relation of planes and angles, with hairline fit of contacting members.

6. Seal horizontals and direct moisture accumulation to exterior.

7. Provide flashings and other materials used internally or externally that are corrosive resistant, non-staining, non-bleeding and compatible with adjoining materials.

8. Provide manufacturer's extrusions and accessories to accommodate expansion and contraction due to temperature changes without detrimental to appearance or performance.

D. Welding:

1. Comply with recommendations of the American Welding Society.

2. Use recommended electrodes and methods to avoid distortion and discoloration.

3. Grind exposed welds smooth and flush with adjacent surfaces; restore mechanical finish.

2-04 ACCESSORIES

A. Sealant and Backing Materials: As specified in Section 07 90 00.

2-05 DOOR HARDWARE

A. Hardware for Aluminum Entrances shall be furnished and installed in the doors by the door manufacturer, and shall include the following standard hardware as noted in Section 08 71 00.

1. Provide manufacturer’s standard weather stripping and door sweep.

2. Coordinate hardware to fit into existing openings where shown on the drawings.

2-06 FINISHES

A. Finish all exposed areas of aluminum storefront system, aluminum entrance and doors and associated components with Kynar 500® baked on finish or approved equal, AAMA guide spec. 2604-98, AA description AA-M12- C42-R1X. Color to match Alcoa Architectural Products Reynobond Colorweld 500 "Classic Bronze", or approved equal.

PART 3 – EXECUTION

3-01 EXAMINATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weather tight framed aluminum storefront system installation.

1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.

2. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.

3. Proceed with installation only after unsatisfactory conditions have been corrected.

3-02 INSTALLATION

A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing aluminum framed storefront system, accessories, and other components.

B. Install aluminum framed storefront system level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.

C. Set sill members in bed of sealant or with gaskets, as indicated, for weather tight construction.

D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

E. Install aluminum-framed storefront system and components to drain condensation, water penetrating joints, and moisture migrating within aluminum-framed storefront to the exterior.

3-10 ADJUSTING, CLEANING AND PROTECTION

A. Clean aluminum surfaces immediately after installing aluminum framed storefronts. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

B. Clean glass immediately after installation. Comply with glass manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.

C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

D. Adjust operating sashes, screens, hardware, and accessories for a tight fit at contact points and weather stripping for smooth operation and weather tight closure. Lubricate hardware and moving parts.

E. Clean aluminum surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

******END OF SECTION******

SECTION 087100
HARDWARE

PART 1 – GENERAL

1-01 GENERAL

A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Builders hardware and related items necessary for completed installation and operation of doors on new and existing construction.

1-02 RELATED WORK

A. Section 08 41 13, ALUMINUM STOREFRONT.

B. Section 08 71 10, INSTALLATION OF DOORS AND HARDWARE.

1-06 GENERAL

A. Hardware for application on metal and wood doors and frames shall be made to standard templates. Templates shall be furnished to the fabricator of these items in sufficient time so as not to delay the construction.

B. The following items shall be of the same manufacturer, except as otherwise specified:

1. Butt hinges.
2. Lock sets.
3. Closer.
4. Door stop.
5. Kick plate.
6. Silencers.
7. Exit device.

1-07 SUBMITTALS

A. Submit in accordance with Section 01 33 00, SUBMITTALS.

B. Schedules: Submit vertical hardware schedules after the hardware sample list is approved. Horizontal hardware schedules are not acceptable. Contractor is responsible for coordinating and verifying schedules. Schedules shall show quantities, manufacturer's catalog number and federal specifications, types and location (height above finished floor) of all items of builders' hardware required for project. One copy of the schedule shall be sent to Project Director at address specified above for his records.

C. Certificate of Compliance and Test Reports: Submit certificates certifying that hardware conforms to the requirements specified herein. Certificates shall be accompanied by certified copies of reports as referenced in the applicable specification. Submit acceptable Certificates and Test Reports prior to installation of hardware on the project. The testing shall have been conducted either in the manufacturer's plant and certified by an independent testing laboratory or conducted in an independent laboratory, within four years of submittal of reports for approval.

1-08 DELIVERY AND MARKING

A. Deliver items of hardware to job site in their original individual containers, complete with necessary appurtenances including screws, keys, and instructions. Contractor shall select and tag one of each different item of hardware and deliver to Architect/Engineer for reference purposes. Tag shall identify item by Project Specification type or number and manufacturer's catalog number. These items shall remain on file in Architect's office until all other similar items have been installed in project, at which time he will deliver items on file to Contractor for installation in predetermined locations on project.

1-09 INSTRUCTIONS

A. Hardware Set Symbols on Drawings: Except for protective plates, door stops, mutes, thresholds and the like specified herein, hardware requirements for each door are indicated on drawings by symbols. Symbols for hardware sets consist of letters "HW" followed by a number. These numbers each designate a set of hardware items which are listed under a corresponding number in Hardware Sets which form a part of these specifications.

B. Manufacturers' Catalog Number References: Where manufacturers' products are specified herein, products of other manufacturers which are considered equivalent to those specified, may be used.

C. Keying: All cylinders shall be keyed by Owner.

1-10 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification. The publications are referenced in the text by the basic designation only. In text, hardware items are referred to by series, types, etc., listed in such specifications and standards, except as otherwise specified.

B. American National Standards Institute, Inc. (ANSI):

A156.1.....Butts and Hinges
A156.2.....Bored and Preassembled Locks and Latches
A156.4.....Door Controls (Closers)
A156.5.....Auxiliary Locks and Associated Products
A156.6.....Architectural Door Trim
A156.8.....Door Controls-Overhead Holders
A156.13.....Mortise Locks and Latches
A156.15.....Closer Holder Release Devices
A156.16.....Auxiliary Hardware
A115.....Specifications for Door and Frame Preparation

C. Builders Hardware Manufacturers Association (BHMA):
1301.....Materials and Finishes

D. National Fire Protection Association (NFPA):
80.....Standard for Fire Doors and Windows
101.....Life Safety Code

E. Underwriters Laboratories, Inc. (UL):
Building Materials Directory

F. Americans with Disabilities Act (ADA): Guidelines.

G. Massachusetts Architectural Access Barrier Regulations - 521 CMR (MAAB).

PART 2 – PRODUCTS

2-01 HINGES

A. ANSI A156.1. The following types of butt hinges shall be used for the types of doors listed, except where otherwise specified.

1. Interior Doors: ANSI A8111 (heavy weight ball bearing) for doors 3'-6" wide or less. Hinges for interior doors shall have non-removable pins. Hager BB1168 (US26D) or approved equal.

B. Continuous geared hinge shall conform to the following.

1. Full mortised continuous geared hinge manufactured of 6063-T6 anodized aluminum and non-handed.

2. Hinge shall be manufactured of three interlocking components, two hinge leaves and one cover channel. The door leaf and jamb leaf shall be geared together for the entire length of the hinge, and joined by a cover channel. The pinless assembly of the three interlocking extrusions shall be applied to the full height of the door and frame without mortising.

3. All unexposed working metal surfaces shall be coated with TFE dry lubricant.

4. Vertical door loads shall be carried on 32 bearings (heavy duty) through a full 180 degree opening. Bearings to be completely concealed in the cover channel. Hinges with visible knuckles separation are not acceptable.

5. Hinge cover channel is to be monolithic in appearance and withstand 7000 foot pounds of pull apart pressure.

6. Six screw holes shall be concentrated at each end of the hinge and additional screws are proportionally spaced along the full length of the hinge. Self-drilling, hardened and plated steel fasteners 12-24 x 11/16 inch, flat head undercut, Phillips head screws are to be furnished.

7. All aluminum components are to be clear anodized in accordance with HC-II (AAM12C22A44).

8. Concealed electric through-wire and monitoring:

    1. Provide both power transfer and monitoring.

    2. 8 continuous electric conductors.

    3. UL listed.

9. Hinge shall be length appropriate for the door.

10. Manufacturer: "Roton" hinge model no. 780-111 HD and 780-111 HD ETM-8 by Hager (clear anodized) or approved equal.

2-02 LOCKS AND LATCHES

A. Lock cylinders: ANSI A156.2. Locks and latches for doors 1-3/4-inch-thick or over shall have beveled fronts. Lock cylinders shall be Medeco KeyMark or approved equal. Cylinders for all locksets shall be removable core type. Cylinder shall be removable by special key or tool. Construct all cores so that they will be instantly interchangeable into the core housings of all mortise locks, rim locks, cylindrical locks, and any other type lock included in the Master Key System. Disassembly of lever or lockset shall not be required to remove core from lockset. Note: Contractor shall coordinate cylinder requirements with Owner prior to submitting lock sets and latch sets.

B. Heavy Duty Cylindrical Lever Latchset: Cylindrical locksets shall be series ANSI Grade 1. Strikes for all mortise locks and latches (including deadlocks) shall conform to ANSI A156.2. All locksets and latchsets shall have lever handles similar to Schlage "Rhodes" design. Lever handle shall be fabricated from die cast zinc. No substitute lever design or material will be accepted. All locks and latchsets shall be furnished with curved lip strike and wrought box. Manufacturer: Schlage ND-Series "Rhodes" design, finish US26D or approved equal. Lever functions shall be F75 (passage), F86 (storage), F76 (privacy), F82 (office) or as specified.

2-03 EXIT DEVICE

A. Rim Fire Exit Device: UL listed for panic exit hardware. Device shall be ANSI A156.3 - 2001 Grade 1. Center case dimensions are 8-3/16 inches x 1-9/16 inches x 2- 13/32 inches. Outside shall have lever with blank escutcheon - always operable. Manufacturer: Von Duprin Series AX-35A-NL-06-F-3'-US26D; or approved equal.

B. Vertical Rod Fire Exit Device: UL listed for panic exit hardware. Device shall be ANSI A156.3 - 2001 Grade 1. Center case dimensions are 8-3/16 inches x 1-9/16 inches x 2-13/32 inches. Outside shall have lever with blank escutcheon – always operable. Manufacturer: Von Duprin Series AX-3527A-NL-06-F-3'-US26D or approved equal.

2-04 KEYS – BY OWNER

2-05 OVERHEAD CLOSERS

A. ANSI A156.4, Grade 1.

B. Closers shall conform to the following:

1. The closer shall have 50 percent adjustable closing force over minimum value for that closer and have adjustable hydraulic back check effective between 60 degrees and 85 degrees of door opening.

2. Where specified, closer shall have hold open feature.

3. Size Requirements: Closer size shall be 2 through 6. No multi-sized closers will be accepted.

4. Material of closer shall be forged or cast iron.

5. Arm and brackets for closers shall be steel, malleable iron or high strength ductile cast iron.

6. Closers shall have full size cover.

7. Closers shall have adjustable hydraulic back-check and separate valves for closing and latching speed. Closer shall be adjusted to a maximum 5 pound applied opening force.

8. Finish: Manufacturer's standard powder coated finish (BHMA 689).

9. Manufacturer: LCN Closers 4010 Series or approved equal, aluminum finish.

2-06 DOOR STOPS

A. ANSI A156.16.

B. Provide door stops wherever an opened door or any item of hardware thereon would strike a wall, column, equipment or other parts of building construction. For concrete, masonry or quarry tile construction, use lead expansion shields for mounting door stops.

C. Where drywall partitions occur, use wall stops, ANSI A156.16, Type L02101. Hager model no. 230W (US26D) or approved equal.

D. Substitute floor stops, ANSI A156.16, Type L02141 as appropriate, when wall bumpers would not provide an effective door stop. Hager model no. 241F (US26D) or approved equal.

2-07 THRESHOLDS AND WEATHER STRIPPING

A. General: Extruded metal products made from 6063-T5 and 6463 Aluminum alloy with thermal break and finish as specified.

B. Exterior Metal Thresholds: ANSI A156, 4 except as otherwise specified. Thresholds shall be installed in a bed of sealant and per manufacturer's recommendations for specific application. For sealant see Section, SEALANTS. Install thresholds where shown on drawings. Nominal size 1/2" high x width required for door. Thresholds similar to model 451S-MIL as manufactured by Hager or approved equal.

C. Door Sweep: Smoke tested in accordance with UBC7-2 and UL 1784-01. Provide integral curved vinyl strips with extruded aluminum retainer 1" high. 781S MIL as manufactured by Hager, or approved equal.

2-08 REQUEST TO EXIT

A. Alarm Output: Two form C relay contacts.

B. Indicators: One activation LED.

C. Relay Latch Time: Adjustable to 60 sec.

D. Enclosure Dimensions: 1.5 in. x 6.25 in. x 1.5 in.

E. Enclosure Material: High impact ABS plastic enclosure.

F. Power Loss Default Mode: Programmable fail-safe or fail-secure modes.

G. Timer Mode: Programmable reset (accumulative) or non-reset (counting) mode.

H. Bosch DS150i, or approved equal.

2-09 SILENCER

A. Silencer: Provide gray rubber silencers that conforms with ANSI A156.16 L03011. Model similar to Hager 307D or approved equal.

2-10 FINISHES

A. Exposed surfaces of hardware shall have B.H.M.A. Standard 1301, finishes as specified below. Finishes on all hinges, pivots, closers,

thresholds, etc., shall be as specified below under "Miscellaneous Finishes."

B. 606: All surfaces on interior of buildings, except where other finishes are specified.

C. Miscellaneous Finishes:

1. Hinges (interior doors): 626 or (US26D)

2. Pivots: Match door trim.

3. Door Closers: Factory applied paint finish. Dull or Satin Chromium color.

4. Other hardware: 626, 627, 628 or US26D

PART 3 – EXECUTION

3-01 HARDWARE HEIGHTS

A. All hardware mounting heights shall comply with the requirements of MAAB and ADA, no exceptions. Otherwise, locate hardware on doors at heights specified below.

B. Hardware Heights From Finished Floor.

1. Locksets and latch sets centerline of strike 40-5/16 inches.

2. Centerline of peep hole to be 48 inches.

C. Modifications, necessitated by reason of construction, shall be submitted to Architect/Engineer for approval before being made.

3-02 INSTALLATION

A. Closer devices, including those with hold-open features, shall be equipped and mounted to provide maximum door opening permitted by building construction or equipment. Closers shall be mounted regular arm. Where closers are mounted on doors they shall be mounted with sex nuts and bolts; foot shall be fastened to frame with machine screws. Adjust closer speed to comply with MAAB.

B. Substitute parallel arm or top jamb mounting for regular arm mounting where the following conditions occur:

1. Where door swing, in full open position, would be limited to less than 90 degrees due to partition construction and closer location.

C. Hinge Size Requirements:

Thickness of Door	Width of Door	Height of Hinge
1-3/4 inch	3 feet and less	4-1/2 inches

D. Hinge leaves shall be sufficiently wide to allow doors to swing clear of door frame trim.

E. Hinges Required Per Door:
Doors over 5 feet high and not over 7 feet 6 inches high: 3 butts

F. Fastenings: Suitable size and type and shall harmonize with hardware as to material and finish. Provide machine screws and lead expansion shields to secure hardware to concrete, ceramic or quarry floor tile, or solid masonry. Fiber or rawl plugs and adhesives are not permitted. All fastenings exposed to weather shall be of nonferrous metal.

G. After locks have been installed, show in presence of Owner that keys operate their respective locks in accordance with keying requirements. Installation of locks, which do not meet specified keying requirements shall be considered sufficient justification for rejection and replacement of all locks installed on project.

3-03 HARDWARE SETS

HARDWARE SETS

Item	Finish	Model No.
Hardware Set No.1 (HW-1):		
(Doors 1,5)		
2 Cont. gear hinge		780-111 HD
2 Rim exit device	626	AX-35A-NL-06-F-3'-US26D
2 Vertical rod exit device		AX-3527A-NL-06-F-3'-US26D
2 Closer	BHMA 689	4010
1 Electric strike		2930
1 Request to exit	White	DS150i
1 Card reader (reuse existing)		
2 Door stop	US26D	230W
Hardware Set No.2 (HW-2):		
(Door 2)		
1 Cont. gear hinge		780-111 HD

1 Closer	BHMA 689	4010
1 Cylindrical lockset (office)	US26D	ND50PD (F82)
1 Door stop	US26D	230W
Silencers		

Hardware Set No.3 (HW-3):
(Door 3)

1 Cont. gear hinge		780-111 HD
1 Rim exit device	626	AX-35A-NL-06-F-3'-US26D
1 Closer	BHMA 689	4010
1 Request to exit	White	DS150i
1 Card reader (reuse existing)		
1 Door stop	US26D	230W

Hardware Set No.4 (HW-4):
(Door 4)

(2) 1 1/2 Pair butts	US26D	BB1168
1 Cylindrical lockset (storeroom)	US26D	ND80PD (F86)
2 Door stop	US26D	230W
Silencers		

Hardware Set No.5 (HW-5):
(Door 6)

2 Cont. gear hinge		780-111 HD
2 Rim exit device	626	AX-35A-NL-06-F-3'-US26D
1 Vertical rod exit device		AX-3527A-NL-06-F-3'-US26D
2 Closer	BHMA 689	4010
1 Request to exit	White	DS150i
1 Threshold	Anodized	
2 Door bottom	Mil/Gray	781S

******END OF SECTION******

SECTION 087113
AUTOMATIC DOOR OPERATORS

PART 1 – GENERAL

1-01 GENERAL

A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1-02 DESCRIPTION OF WORK

A. This Section includes the following:

1. Low-energy, power-operating door operators for installation on new and existing doors.

B. Safety Device: Device that prevents door from opening or closing.

1-04 REFERENCES

A. American National Standards Institute (ANSI) / Builders' Hardware Manufacturer's Association (BHMA).

1. ANSI/BHMA A156.10: Standard for Power Operated Pedestrian Doors.

2. ANSI/BHMA A156.19: Standard for Power Assist and Low Energy Power Operated Doors.

B. American Association of Automatic Door Manufacturers (AAADM).

1-05 PERFORMANCE REQUIREMENTS

A. General: Provide automatic door operators capable of withstanding structural loads and thermal movements based on testing manufacturer's standard units in assemblies similar to those indicated for this Project.

B. Operating Range: Minus 30 deg Fto 130 deg F.

C. Opening and Closing Forces: Not more than 15 lbf, 1 inch from the latch edge of the door.

1. Automatic door operators provided with a breakaway device shall require no more than 50 lbf applied at 1 inch from the latch edge of the door.

D. Door Energy: The kinetic energy of a door in motion shall not exceed 1.25 lbd-ft.

E. Closing Time:

1. Doors to be field adjusted to close from 90 degrees to 10 degrees in 3 seconds or longer.

2. Doors to be field adjusted to close from 10 degrees to fully closed in not less than 1.5 seconds.

1-06 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for automatic door operators and activation and safety devices.

B. Shop Drawings: Show fabrication and installation details for automatic door operators. Include locations and elevations of entrances showing activation and safety devices, and wiring for electrical supply.

C. Samples for Initial Selection: For each type of exposed component and door control indicated.

D. Samples for Verification: For exposed components and activation and safety devices with factory-applied color finishes.

E. Qualification Data: For manufacturer.

F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product.

G. Operation and Maintenance Data: For automatic door operators to include in emergency, operation, and maintenance manuals.

H. Warranties: Special warranties specified in this Section.

1-07 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Manufacturer Qualifications: Company certificate issued by AAADM.

C. Testing Agency Qualifications: An independent agency with inspector certified by AAADM.

D. Source Limitations: Obtain automatic door operators through one source from a single manufacturer.

E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA70, Article100, bya testing agency acceptable to authorities having jurisdiction, and marked for intended use.

F. UL Standard: Comply with UL325.

G. Power Operated Door Standard: ANSI/BHMA A156.19.

H. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division01 Section "Project Management and Coordination."

1-08 PROJECT CONDITIONS

A. Field Measurements: Verify door openings by field measurements before fabrication of exposed covers for automatic door operators and indicate measurements on Shop Drawings.

1-09 COORDINATION

A. Templates: Review Shop Drawings of other work to confirm that adequate provisions are made for locating and installing automatic door operators to comply with indicated requirements.

B. Electrical System Roughing-in: Coordinate layout and installation of automatic door operators with connections to power suppliesand security access control system.

C. System Integration: Integrate automatic door operators with other systems as required for a complete working installation.

1. Where required for proper operation, provide a time delay relay to signal automatic door operator to activate only after the electric lock system is released.

1-10 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of automatic

door operators that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

   a. Faulty or sporadic operation of automatic door operator or activation and safety devices.

   b. Deterioration of metals, metal finishes, and other materials beyond normal weathering or use.

2. Warranty Period: One year from date of Substantial Completion.

1-11 MAINTENANCE SERVICE

A. Maintenance: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of automatic door operator Installer. Include quarterly planned and preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door operation. Provide parts and supplies same as those used in the manufacture and installation of original equipment.

   1. Engage inspector certified by AAADM to perform safety inspection after each adjustment or repair and at end of maintenance period. Submit completed inspection form to Owner.

   2. Perform maintenance, including emergency callback service, during normal hours.

PART 2 – PRODUCTS

2-01 MANUFACTURERS

A. Basis of Design Product: Subject to compliance with requirements, provide **dormakaba; Model ED900Swing Door Operator** or comparable product by one of the following:

   1. ASSA ABLOY.

   2. Horton Automatics.

   3. Stanley Access Technologies, Magic-Force Series.

2.02 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated, complying with standards indicated below:

1. Sheet: ASTMB209.

2. Extrusions: ASTMB221, Alloy6063-T6.

B. Welding Rods and Bare Electrodes: AWSA5.10/A5.10M.

2-03 AUTOMATIC DOOR OPERATORS, GENERAL

A. General: Provide operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated.

B. Electromechanical Operating System: Unit powered by permanent-magnet dc motor; with closing speed controlled mechanically by gear train and dynamically by braking action of electric motor, and with manual operation including spring closing with power off.

C. Exposed Cover: Fabricated from 0.125-inch-thick extruded aluminum;6 inches square in section; with enclosed end caps, provision for maintenance access, and fasteners concealed when door is in closed position.

1. Finish: Clear anodized.

2.04 LOW-ENERGY, POWER-OPERATING DOOR OPERATORS

A. Standard: Comply with BHMAA156.19.

B. Performance Requirements:1.Not more than 15 lbf1 inch from latch edge of door to prevent stopped door from opening or closing.2.If power fails, not more than 30 lbf1 inchfrom latch edge of door to manually set door in motion.

C. Operation: Power opening and power-assisted spring closing.

1. Power-Assisted Opening: Power-assisted opening that reduces force to open self-closing door. Pushing or pulling on door activates automatic door operator.

2. Closing spring: Helical compression spring, adjustable for positive closing action, without removing the operator from the header.

3. Provide a rheostat module to allow for independent field adjustment of closing and latching speeds using the motor as a dynamic brake.

4. Provide a field adjustable open stop to accommodate opening angles from 80 to 135 degrees without the need for additional components.

5. The operator shall deliver an even, consistent open force across the entire transition from door fully closed to door fully open, with a field adjustable force to accommodate on-site conditions.

6. Design operator to output audible noise ratios less than or equal to 50 dba.

7. Manual Use: The operator is to function as a manual door closer in the direction of swing with or without electrical power.

8. Electrical: 120 VAC, 10 amps.

D. Handing: Non-handed; no tools required to change handing.

E. Capacity: Rated for door panels weighing up to 350 lbs.

F. Operating System: Electromechanical.

G. Microprocessor Control Unit: Solid-state controls.

H. Features:

1. Adjustable opening and closing speed.

2. Adjustable opening and closing force.

3. Adjustable backcheck.

4. Adjustable hold-open time of not less than 0 to 30 seconds.

5. Reverse on obstruction.

I. Mounting: Surface.

2.05 ELECTRICAL CONTROLS

A. Electrical Control System: The electrical control system includes a microprocessor controller and position encoder. The encoder monitors revolutions of the operator shaft and sends signals to the

microprocessor controller to define door position. Systems utilizing external magnets and magnetic switches are not acceptable.

1. Life Cycle Data Counter (LCD): Incorporate a non-resettable counter to track door operation cycles.

2. Controller Protection: Incorporate the following features to ensure trouble-free operation:

   a. Automatic reset upon power up.

   b. Fuse protection.

   c. Electronic surge protection.

   d. Internal power supply protection.

B. Program Dip Switches: Allow selection of change at the following parameters:

1. Carpet or timer logic.

2. Single or dual door.

3. Activation options.

4. Normal back check or large back check.

5. Push-to-open assist on/off.

C. Soft Start/Stop: Provide a "soft-start" "soft-stop" motor driving circuit for smooth reopening and recycling.

D. Emergency Breakout Switch: Provide a cam actuated emergency breakout switch to disconnect power to the motor when an in-swing door is manually pushed in the emergency out direction. The operator will then automatically reset and power will be resumed.

E. Control Switch: Equip each automatic door operator with a three-position function switch to control operation of the door; automatic, off, and hold-open.

2-06 ACTIVATION AND SAFETY DEVICES

A. Wall Push-Plate Switch: Manufacturer's standard door control switch; consisting of square, flat push plate; of material indicated; and

actuator mounted in recessed junction box. Provide engraved message as indicated.

1. Interior push plates: Wall mounted in single or double gang electrical boxes and hardwired to door operator controls.

2. Size: 4-1/2-inches square.

3. Material: Stainless steel.

4. Message: International symbol of accessibility and "Push to Open."

B. Electrical Interlocks: Unless units are equipped with self-protecting devices or circuits, provide electrical interlocks to prevent activation of operator when door is locked, latched, or bolted.

2-07 ACCESSORIES

A. Low-Energy Automatic Door Operator Signage: Comply with BHMA A156.19.

2-08 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2-09 ALUMINUM FINISHES

A. Finish designations prefixedby AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. ClassII, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte**;** Anodic

Coating: Architectural Class II, clear coating 0.010mm or thicker) complying with AAMA611.

PART 3 - EXECUTION

3-01 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances, door and frame supports, and other conditions affecting performance of automatic door operators.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance.

B. Examine roughing-in for electrical systems to verify actual locations of power connections before automatic door operator installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3-02 INSTALLATION

A. General: Install complete automatic door operator system, including activation and safety devices, control wiring, and remote power units.

B. Low-Energy Power Door Operator Installation Standard: Comply with BHMAA156.19 for installation.

1. Mounting: Install surface mounted hardware using concealed fasteners to greatest extent possible.

2. Set headers, arms, and linkages level and true to location with anchorage for permanent support.

3. Install sealant in accordance with Division 07 Section "Joint Sealants" to provide a weathertight installation.

C. Automatic Door Operators: Install door operator system, including control wiring, as follows:

1. Refer to Division26 Sections for connection to electrical power distribution system.

D. Activation and Safety Devices: Install devices and wiring, including connections to automatic door operators, according to BHMAA156.10 and as follows:

1. Wall Switches: Provide push plates on both sides of each opening indicated to receive automatic door operators.

E. Connect wiring according to Division26 Sections.

3-03 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing and Inspecting: After installation has been completed, testing and inspecting of each automatic door operator shall be performed to verify compliance with applicable BHMA standards.

1. Inspection Report: Submit report in writing to Architect and Contractor within 24 hours after inspection.

C. Remove and replace automatic door operators where test results indicate they do not comply with specified requirements.

D. Additional testing and inspecting, at Contractor's expense, shall be performed to determine compliance of replaced or additional work with specified requirements.

3-04 ADJUSTING

A. Adjust automatic door operators and activation and safety devices to operate smoothly, easily, and properly, and for safe operation and weathertight closure.

1. Adjust doors with low-energy door operators to close according to BHMAA156.19.B.Lubricate operators, hardware, and other moving parts.

B. Lubricate operators, hardware, and other moving parts.

C. After completing installation of exposed, factory-finished automatic door operators, inspect exposed finishes and repair damaged finishes.

D. Readjust automatic door operators and activation and safety devices after repeated operation of completed installation equivalent to three days' use by normal traffic (100 to 300 cycles). Lubricate hardware, operating equipment, and other moving parts.

E. Occupancy Adjustment: When requested within 12months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to site outside normal occupancy hours for this purpose, without additional cost.

3-05 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain automatic door operators. Refer to Division01 Section "Demonstration and Training."

****** END OF SECTION ******

SECTION 088000
GLASS AND GLAZING
(FILED SUB-BID)

PART 1 – GENERAL

1-01 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Carefully examine all the Contract Documents for requirements which affect the work of this Section. The exact scope of this Section cannot be determined without a thorough review of all specifications' sections and other Contract Documents.

C. Where referred to, Standard Specifications, Recommendations of Technical Societies, and/or Manufacturer's Associations, plus Codes of Federal, State, and Local Agencies shall include all amendments current as of date of issue of these specifications.

1-02 REQUIREMENTS FOR SUBMITTING FILED SUB-BID

A. Sub-bids shall be submitted for the Work of this Section in accordance with the provisions of M.G.L. c.149 §§44A-J The time and place for submission of sub-bids are set forth in the Advertisement. The procedures and requirements for submitting sub-bids are set forth in the Instructions to Bidders.

B. Sub-bidders must be DCAMM Certified in the listed trade and shall include a Current DCAMM sub-bidder Certificate of Eligibility and a signed DCAMM Subbidder's Update Statement with the bid.

1-03 RELATED WORK

A. Section 08 41 13, ALUMINUM STOREFRONT.

1-04 LABELS

A. Temporary labels:

1. Provide temporary label on each light of glass identifying manufacturer or brand and glass type, quality and nominal thickness.

2. Temporary labels shall remain intact until glass is approved by the Architect.

1-05 SUBMITTALS

A. Submit in accordance with Section 01 33 00, SUBMITTALS.

B. Manufacturer's Certificates:

1. Certificates stating that glass meets requirements for safety.

C. Manufacturer's Literature and Data:

1. Glass, each kind required.

2. Glazing cushion.

3. Sealing compound.

1-06 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification. The publications are referenced in the text by the basic designation only.

B. American Society for Testing and Materials (ASTM):

C236.....	Steady State Thermal Performance of Building Assemblies, by Means of A Guarded Hot Box.
C542-82(1984).....	Lock-Strip Gaskets
C669-75(1989).....	Glazing Compounds for Back Bedding and Face Glazing of Metal Sash
C716.....	Installing Lock-Strip Gaskets and Infill Glazing Materials
C864.....	Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers
C920.....	Elastomeric Joint Sealants
C1036.....	Flat Glass
C1048.....	Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass
D635.....	Rate of Burning and/or Extend and Time of Burning of Self-Supporting Plastic in a Horizontal Position
D702.....	Cast Methacrylate Plastic Sheets, Rods, Tubes, and Shapes
E84.....	Surface Burning Characteristics of Building Materials

E774..... Sealed Insulating Glass Units

C. American National Standards Institute (ANSI):

Z97.1..... Safety Glazing Material Used in Building - Safety Performance Specifications and Methods of Test

D. Flat Glass Marketing Association (FGMA):
Glazing Manual (Latest Edition)
Sealant Manual (Latest Edition)

E. Safety Glazing Certification Council (SGCC):
Certified Products Directory (Issued Semi-Annually)

PART 2 – PRODUCT

2-01 GLASS FOR DOOR VISION PANELS

A. Use thickness stated unless specified otherwise in assemblies.

B. Vision Panels - Clear Tempered Glass.

1. ASTM C1048, Kind FT, Condition A, Type I, Class 1, Quality q3.

2. Thickness, as noted in the Drawings.

2-01 MATERIALS

A. Metals: Provide metal free from pitting, seam marks, roller marks, stains, discolorations, and other imperfections where exposed to view on finished units.

1. Aluminum: Provide alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than strength and durability properties of alloy and temper designated below for each aluminum form required.

a. Extruded Bar and Tube: ASTM B221/B221M, Alloy 6063-T5/T52.

b. Extruded Structural Pipe and Tube: ASTM B429/B429M, Alloy 6063-T832.

c. Drawn Seamless Tube: ASTM B210/B210M, Alloy 6063-T832.

d. Plate and Sheet: ASTM B209/B209M, Alloy 6061-T6.

e. Die and Hand Forgings: ASTM B247/B247M, Alloy 6061-T6.

f. Castings: ASTM B26/B26M, Alloy A356-T6.

B. Metal Components:

1. Shoe Base Basis of Design: Profile: CRL Wedge-Lock™ Dry Glaze 4" high #SR4SSA3812SL. Designed to fit 1/2" monolithic tempered glass.

2. Header and Jamb Basis of Design: Profile: CRL Wedge-Lock™ Dry Glaze Clad U-Channel UC Series, 1-5/8 inches wide by 1-5/8 inches high rectangular cross section #CRL-UCSA3812SL. Designed to fit 1/2" monolithic tempered glass.

3. Finish shall be brushed aluminum.

C. Glass Products and Glazing Materials:

1. Glass: Provide fully tempered, uncoated, transparent flat glass meeting the requirements of ASTM C1048, Type FT, Condition A, Type 1, Quality q3. Products shall comply with properties indicated for class, thickness, and manufacturing process that have been tested for surface and edge compression according to ASTM C1048 and for impact strength according to 16 CFR Part 1201 for Category II materials.

a. Clear Glass: Class 1 (clear).

b. Thickness: 1/2 inch except where noted, and as required to support structural loads.

c. Manufacturing Process: By vertical (tong-held) or horizontal (roller-hearth) process, at manufacturer’s option. Horizontal process shall be performed tongless. Glass shall be free of tong marks and other visual distortions.

d. Marking: Subject to compliance with requirements, provide glass permanently marked with certification label of Safety Glazing Certification Council or other agency acceptable to authorities having jurisdiction.

2. Glazing Cement and Accessories: Provide glazing cement and related accessories recommended or supplied by railing manufacturer for bonding glass to metal subrails.

D. Fasteners:

1. Railing Anchors: Select fasteners of type, grade and class required to produce connections suitable for anchoring glass balustrade railing systems to other types of construction indicated and capable of withstanding design loads.

2. Railing Component Anchors: Use fasteners fabricated from same basic metal, unless otherwise indicated. Do not use metals that are corrosive or incompatible with materials joined.

a. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless exposed fasteners are unavoidable or are standard fastening method for handrail and railing indicated.

b. Provide Phillips flat-head machine screws for exposed fasteners, unless otherwise indicated.

E. Safety Markers - Distraction Dots:

1. Provide 2" Diameter Safety Dots adhered to all glass partitions to match existing.

a. Safety Dots to be made from 3M Dusted Crystal Film, #775-314

b. 2" diameter dots to be spaced 7" to 8" apart, to match existing.

c. 2" diameter dots to be installed at height 4' AFF, to match existing.

2-02 GLAZING ACCESSORIES

A. As required to supplement the accessories provided with the items to be glazed and to provide a complete installation. Ferrous metal accessories exposed in the finished work shall have a finish that will not corrode or stain while in service.

B. Setting Blocks: ASTM C864:

1. Channel shape; having 1/4 inch internal depth.

2. Shore a hardness of 80 to 90 Durometer.

3. Block lengths: 2-inches except 4-6 inches for insulating glass.

4. Block width: Approximately 1/16 inch less than the full width of the rabbet.

5. Block thickness: Minimum 3/16 inch. Thickness sized for rabbet depth as required.

C. Spacers: ASTM C864:

1. Channel shape having a 1/4 inch internal depth.

2. Flanges not less 23/32 inch thick and web 1/8 inch thick.

3. Lengths: One to three inches.

4. Shore a hardness of 40 to 50 Durometer.

D. Sealing Tapes:

1. Semi-solid polymeric based material exhibiting pressure-sensitive adhesion and withstanding exposure to sunlight, moisture, heat, cold, and aging.

2. Shape, size and degree of softness and strength suitable for use in glazing application to prevent water infiltration.

E. Glazing Gaskets: ASTM C864:

1. Firm dense wedge shape for locking in sash.

2. Soft, closed cell with locking key for sash key.

3. Flanges may terminate above the glazing-beads or terminate flush with top of beads.

F. Lock-Strip Glazing Gaskets: ASTM C542, shape, size, and mounting as indicated.

G. Glazing Sealants: ASTM C920, silicone neutral cure:

1. Type S.

2. Class 25

3. Grade NS.

4. Shore A hardness of 25 to 30 Durometer.

H. Color:

1. Color of glazing compounds, gaskets, and sealants used for aluminum color frames shall match color of the finished aluminum and be nonstaining.

2. Color of other glazing compounds, gaskets, and sealants which will be exposed in the finished work and unpainted shall be black, gray, or neutral color.

PART 3 – PRODUCT

3-01 EXAMINATION

A. Verification of Conditions:

1. Examine openings for glass and glazing units; determine they are proper size; plumb; square; and level before installation is started.

2. Verify that glazing openings conform with details, dimensions and tolerances indicated on manufacturer's approved shop drawings.

B. Advise Contractor of conditions which may adversely affect glass and glazing unit installation, prior to commencement of installation: Do not proceed with installation until unsatisfactory conditions have been corrected.

C. Verify that wash down of adjacent masonry is completed prior to erection of glass and glazing units to prevent damage to glass and glazing units by cleaning materials.

3-02 PREPARATION

A. For sealant glazing, prepare glazing surfaces in accordance with GANA-02 Sealant Manual.

B. Determine glazing unit size and edge clearances by measuring the actual unit to receive the glazing.

C. Shop fabricate and cut glass with smooth, straight edges of full size required by openings to provide GANA recommended edge clearances.

D. Verify that components used are compatible.

E. Clean and dry glazing surfaces.

F. Prime surfaces scheduled to receive sealants, as determined by preconstruction sealant substrate testing.

3-03 INSTALLATION - GENERAL

A. Install in accordance with GANA-01 Glazing Manual and GANA-02 Sealant Manual unless specified otherwise.

B. Glaze in accordance with recommendations of glazing and framing manufacturers, and as required to meet the Performance Test Requirements specified in other applicable sections of specifications.

C. Set glazing without bending, twisting, or forcing of units.

D. Do not allow glass to rest on or contact any framing member.

E. Glaze doors and operable sash, in a securely fixed or closed and locked position, until sealant, glazing compound, or putty has thoroughly set.

F. Tempered Glass: Install with roller distortions in horizontal position unless otherwise directed.

3-04 REPLACEMENT AND CLEANING

A. Clean new glass surfaces removing temporary labels, paint spots, and defacement after approval by the Architect.

B. Replace cracked, broken, and imperfect glass, or glass which has been installed improperly.

C. Leave glass, putty, and other setting material in clean, whole, and acceptable condition.

3-05 REPLACEMENT AND CLEANING

A. Protect finished surfaces from damage during erection, and after completion of work. Strippable plastic coatings on colored anodized finish are not acceptable.

3-06 GLAZING SCHEDULE

A. General:

1. Install clear tempered glass at wood and metal interior doors indicated and as shown on the drawings.

****** END OF SECTION ******

SECTION 092116
GYPSUM BOARD SYSTEM

PART 1 – GENERAL

1-01 GENERAL PROVISIONS

Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1-02 DESCRIPTION

A. Work of this Section consists of furnishing all labor, materials, equipment and services necessary to complete the rough carpentry work indicated, and without limiting the generality thereof includes:

1. Interior metal screw studs, furring and metal accessories.

2. 5/8" Fire code gypsum wallboard.

3. Sealants in conjunction with veneer plaster work and existing construction.

4. Sound insulation in new partitions.

5. Remove door only where indicated, fill opening with drywall construction.

B. **IN GENERAL**

1. Walls shall be single layer 5/8" gypsum blueboard on both sides of 3-5/8" 25 gauge steel studs. Studs and wallboard shall run floor to underside of deck with sound insulation installed between studs.

1-11 SUBMITTALS

Samples: Submit samples of any items requested by the Project Engineer in accordance with the provisions of Section 01300, Submittals.

1-12 MATERIAL STORAGE AND PROTECTION

Store materials in an area that is sufficiently dry and properly ventilated so that items will not be damaged by excessive changes in moisture content.

PART 2 – PRODUCTS

2-01 ACCEPTABLE MANUFACTURERS

A. Materials, unless otherwise specified, shall be the product of one of the following manufacturers.

1. U.S. Gypsum Company

2. National Gypsum Company

3. Georgia-Pacific Corporation

B. In general, all materials shall be products of one manufacturer.

2-02 METAL STUDS AND FURRING

A. Non-Load Bearing Studs and Runner Tracks:

1. **Studs**

ASTM C645, cold rolled steel, galvanized, channel shape, with punched webs for utility passage. Provide studs of sizes as indicated on the Drawings, 25-gauge typically, except provide 20-gauge studs at jambs of pressed steel door frames, walls scheduled to receive ceramic tile finish, and partitions exceeding 13-feet-6 inches in height.

2. **Runner Tracks**

Shall be of same materials and finish as studs with provisions for crimp locking to studs.

B. Suspension System Components:

1. **Tie Wire**

ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625-inch-diameter wire, or double strand of 0.0475-inch-diameter wire.

2. **Hanger Attachments to Concrete**

Anchors: Fabricated from corrosion-resistant materials with holes or loops for attaching wire hangers and capable of sustaining, without failure, a load equal to 5 times that imposed by

construction as determined by testing according to ASTM E 488 by an independent testing agency.

a. Type: Post installed, expansion anchor.

3. **Wire Hangers**

ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.162-inch diameter.

4. **Carrying Channels**

Cold-rolled, commercial-steel sheet with a base-metal thickness of 0,0538 inch and minimum ½ inch-wide flanges with depth as required for span and loading.

5. **Furring Channels**

0.0538-inch bare-steel thickness, with aluminum ½-inch-wide flanges, ¾ inch deep.

C. Wallboard

Conforming to ASTM 36 Type "X". Fire rated gypsum base: 5/8-inch thick, Type "X" blueboard with tapered edges. Veneer plaster shall be USG Diamond Interior finish plaster.

2-03 JOINT MATERIALS

Joint Reinforcement Tape: Open weave coated glass fiber tape. "Imperial" type 'S' by U.S. Gypsum Company, "Kal-Mesh" by National Gypsum Company, or equal.

2-04 FASTENERS

A. **Screws**

Power driven bugle head drywall screws. Size as recommended by plaster base manufacturer for the various installation conditions.

B. **Staples**

U.S. Standard galvanized and/or rosin coated staples for securing joint reinforcement tape and metal trim. Size as recommended by manufacturer.

2-05 METAL TRIM AND ACCESSORIES

A. **Corner Beads**

Galvanized steel with 1-1/4-inch wide fine mesh expanded flanges and 3/32-inch ground. U.S. Gypsum Company No. 900 corner bead or approval equal.

B. **Casing Beads**

Galvanized steel, channel type, with 1-1/4-inch wide fine mesh expanded flange and 3/32-inch grounds. U.S. Gypsum Company No. 701-A metal trim or approved equal.

C. **Control Joints**

Roll-formed zinc with ¼-inch wide-open slot protected by plastic tape and 3/32-inch grounds. U.S. Gypsum Company No. 093 or approved equal.

2-06 ACOUSTICAL SEALANT

Acoustical Sealant: U.S. Gypsum Acoustical Sealant; Dap Butyl-Flex; Pecora Butyl BC-158; or equal.

2-07 SOUND INSULATION

3-inch Thermofiber SAFB by USG or approved equal.

PART 3 - EXECUTION

3-01 INSTALLATION OF METAL STUDS AND SUSPENSION SYSTEM

A. Secure floor and ceiling runners at 24 inches on center. Align to configurations required.

B. Install studs vertically at 16 inches on center and not more than 2 inches from abutting construction, each side of openings and at corners. Attach studs with clincher.

C. Fit runners under and above wall openings, secure intermediate studs at spacing of wall studs.

D. Brace stud framing where required making rigid. Cross brace chase partition studs with gypsum wallboard gussets.

E. Coordinate erection of studs with installation of service utilities. Align stud web openings.

F. Coordinate installation of bucks, anchors, blocking, mechanical and electrical work to be placed in or behind stud framing.

G. Coordinate erection of stud systems with door frame anchors and attachments. Double stud each jamb full height of partition floor to beam or slab. Reinforce frame with wood stud, both sides floor to floor.

H. Stud splicing not permissible.

I. Maintain clearance under structural building members to avoid deflection transfer to non-load bearing studs. At such locations, cut studs 1/2 inch short and provide extended leg ceiling runners.

J. Coordinate installation of supplemental 2 inch by 6 inch wood blocking to studs. Blocking is to be installed for support of finish materials as needed.

K. Miscellaneous Framing: Install for closing existing door opening.

L. Tolerances: Installed framing members shall provide surface plane with maximum variation of 1/8 inch in 10 feet in any direction.

M. Install suspension system components in sizes and spacings as follows: 2-1/2" x 16 gauge Cross bracing @ 48" o.c. with 20 gauge studs @ 16" o.c. with a 16 gauge continuous runner along the walls. There should be 2 - # 8 SMS @ ea. connection.

N. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

O. Suspend hangers from building as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.

    a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

P. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.

a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.

Q. Wire hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.

R. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.

S. Seismic Bracing: Sway-brace suspension systems with hangers used for support.

T. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

3-03 INSPECTION OF FRAMING

A. Check framing for accurate spacing and alignment.

B. Verify that spacing of installed framing does not exceed maximum allowable for thickness of wallboard to be used.

3-04 WALLBOARD APPLICATION

A. General

1. Use base of maximum lengths to minimize end joints.
2. Stagger end joints when they occur.
3. Locate end joints as far as possible from center of wall or ceiling.
4. Abut ends and edges without forcing.
5. Neatly fit ends and edges of base.
6. Support ends and edges of base panels on framing or furring members.

B. Single Layer Over Framing

1. Partitions

a. Apply wallboard base with long dimension vertical.

b. Position base so abutting edges are located at center of stud flanges.

c. Attach base with screws spaced a maximum of 12 inches o.c. in field of base and along abutting edges.

3-05 ACOUSTIC BATT INSULATION

A. Install acoustic batt insulation between and tight to studs.

B. Fit around electric boxes and conduit.

3-06 ACOUSTICAL SEALANT

A. Provide acoustical sealant at perimeter of all partitions.

B. Seal all partition cutouts, such as electrical boxes, conduit, pipe, ductwork, and all intersections with adjoining structure.

3-07 VENEER PLASTER

A. Apply 1/16" – 3/32" thick veneer plaster finish to walls in accordance with manufacturer's recommendations.

3-08 INSTALLATION OF METAL ACCESSORIES

A. Joint Reinforcement

1. Apply over full length of all wallboard joints; do not overlap at intersections.

2. Apply reinforcement with spring-driven stapler using 3/8-inch staples. Use two staples at each end of the tape and stagger intermediate staples 24-inches o.c. along length of tape.

3. At wall-ceiling intersections and interior corners, staple tape 24-inches o.c. on both flanges along entire length at bead.

B. Screws

Power drive and set so screw heads are flush with surface of gypsum base without tearing through face paper.

3-09 ADJUSTMENTS

A. Upon completion, point up plaster around trim and where it meets other work.

B. Cut out and replace defective and damaged wallboard.

3-10 CLEAN-UP

A. Upon completion of the finish plasterwork, clean all plaster from adjacent surfaces, leaving work ready for finishing by others.

B. Remove any stains from plaster rubbish, excess material, scaffolding, tools, and other equipment from the building, leaving floors broom clean.

C. Remove any stains from plasterwork that would affect finishes.

****** END OF SECTION ******

SECTION 095123
ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1-01 GENERAL PROVISIONS

Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 1 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1-02 DESCRIPTION

A. Work of this Section consists of furnishing all labor, materials, equipment and services necessary to complete the acoustical ceilings indicated on the Drawings, and without limiting the generality thereof includes:

1. Lay-in 2X2 acoustical panels, complete with exposed grid system.

2. Providing, maintaining and removing when no longer needed, staging, scaffolding hoisting equipment and rigging as required performing the work of this Section.

B. Reference to Drawings: Work to be done under this Section is shown on Drawings.

C. Related Work Specified Elsewhere: The following work is not included in this Section and is to be performed under the designated Sections:

1. Section 260500, Electrical: individual hanger supports for light fixtures occurring in acoustical ceilings.

1-03 REFERENCES

A. American Society for Testing and materials (ASTM):

1. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

2. ASTM 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.

3. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.

4. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

5. ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panels.

6. ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.

7. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

8. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials

9. ASTM E 119 Standard Test Methods for Fire Tests of Building Construction and Material

    a. Armstrong Fire Guard Products

10. ASTM E 580 Installation of Metal Suspension Systems in Areas Requiring Moderate Seismic Restraint

11. ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceiling Systems

12. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation between Rooms Sharing a Common Ceiling Plenum

13. ASTM E 1264 Classification for Acoustical Ceiling Products

B. International Building Code

C. ASHRAE Standard 62.1-2004, Ventilation for Acceptable Indoor Air Quality

D. NFPA 70 National Electrical Code

E. ASCE 7 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures

1-04 SUBMITTALS

A. Product Date: Submit manufacturer's technical data for each type of acoustical ceiling unit and suspension system.

B. Samples: Minimum 6 inch X 6 inch samples of specified acoustical panel; 8 inch long samples of exposed wall molding and suspension system, including main runner and four foot cross tees.

C. Shop Drawings: Reflected ceiling plans for acoustical areas, indicating by dimension, locations of lighting fixtures and other items penetrating acoustical ceilings, and such details of materials, construction and installation as are necessary to thoroughly describe the work in a manner suitable for examination by the Project Engineer. Submittals shall be provided in accordance with Section 013300 of the Specifications.

D. Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards. For acoustical performance, each carton of material must carry an approved independent laboratory classification of NRC, CAC, and AC.

E. If the material supplied by the acoustical subcontractor does not have Underwriter's Laboratory classification of acoustical performance on every carton, subcontractor shall be required to send material from every production run appearing on the job to an independent or NVLAP approved laboratory for testing, at the architect/engineer's or owner's discretion. Al products not conforming to manufacturer's current published values must be removed, disposed of and replaced with complying product at the expense of the Contactor performing the work.

1-05 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.

B. Fire Performance Characteristics: Identify acoustical ceiling components with appropriate testing and inspecting organization.

   a. Surface Burning Characteristics: As follows, tested per ASTM E84 and complying with ASTM E 1264 Classification.
   b. Fire Resistance: As follows, tested per ASTM E119 and listed in the appropriate floor or roof design in the Underwriters Laboratories Fire Resistance Directory.

C. Coordination of Work: Coordinate acoustical ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems and electrical systems.

1-06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials in manufacturer's original unopened containers with labels intact and legible identifying manufacturer, brand name, and contents.

B. Store materials in manufacturer's original unopened containers within building and protect until ready for use.

C. Protect acoustical units from damage and exposure to high humidity or temperature above 90 degrees F or below 40 degrees F.

D. Remove damaged or deteriorated materials from site.

PART 2 - PRODUCTS

2-01 EXPOSED GRID SYSTEM

A. Manufacturer and Type: Suprafine XL 9/16” Exposed Tee suspension system by Armstrong® Corporation, "DX", or equal by National Rolling Mills, or other of equal or better quality.

1. Main beams and cross tees, base, metal and end detail, fabricated from commercial quality hot dipped galvanized steel complying with ASTM C 653.

2. Main beams and cross tees: 1-11/16 inch deep double web steel construction with exposed flange design with PeakForm® bulb and 9/16 inch wide steel cap, hot dipped galvanized steel finished with exposed surfaces chemically cleansed, capping prefinished galvanized steel in baked polyester paint finish.

3. Perimeter molding: cold rolled .015 inch thick electro-galvanized steel, 90 degree cross section with 15/16 inch exposed leg, and a standard white factory applied paint finish. Moldings shall have hemmed legs for stiffness and appearance. Provide extended vertical leg as required for proper attachment.

4. Splices, connections and other related items: as standard with the suspension system manufacturer.

2-02 ROUGH SUSPENSION

A. Hanger Attachments: Furnish applicable type hangers for attachment to the various types of overhead structures.

B. Hanger Wire: Fed. ASTM A 641, Class 1 zinc coating, soft annealed, with a yield stress load of at least three design load, but not less than 12 gauge.

2-03 ACOUSTICAL UNITS

A. Mineral Fiber Acoustical Panels: ULTIMA® Health Zone™ High NRC, Square Lay-in by Armstrong or equal by Conweb Corporation or U. S. Gypsum.

1. Pattern: Fine smooth textured.
2. Size: 24 inch by 24 inch by 7/8 inch thick.
3. Edges: Lay-In Beveled Tegular 9/16 inch.

PART 3 - EXECUTION

3-01 PREPARATION

A. Before commencing acoustical ceiling work, inspect all surfaces and structural elements to receive work of this Section to assure that conditions are suitable for installation of the work.

B. Notify Project Engineer in writing of unsatisfactory conditions and do not proceed with work until Project Engineer's instructions have been received. Commencement of work shall be construed as acceptance of conditions.

C. Coordinate acoustical ceiling work with that of related trades. Suspend acoustical ceilings from structural elements only, completely independent of all mechanical and electrical systems and their suspension.

D. Acoustical material in any one ceiling area shall be from the same material run.

E. Suspension systems shall sustain the loads of the acoustical materials with a maximum allowable deflection not to exceed 1/360th of the span.

F. Refer to work of other trades for locations of lighting fixtures and other items occurring in acoustical ceilings, and provide framed openings for same.

3-02 INSTALLATION SUSPENSION SYSTEM AND ACOUSTICAL UNITS

A. Exposed Grid System: Conform to ASTM C636.

1. Secure hanger attachments to overhead structure spaced 48 inch on centers in both directions along locations for main runners.

2. Space hanger wire 4 feet on center along length of main runner members.

3. Install additional hangers at ends of each main runner suspension member, at light fixtures and 6 inches from vertical surfaces. Do not splay wires more than 5 inches in a 48-inch vertical drop.

4. Suspend main runners at 48-inch centers, level and square to adjacent walls.

5. Connect interlocking cross tees on 24 inch centers to form 24 inch by 24-inch modules. Proper length cross tees shall also be installed adjacent to all recessed light fixtures on each side not supported by a main runner.

6. Install perimeter molding wherever suspension components meet vertical surfaces. Attach with mechanical fasteners.

3-03 CLEAN-UP

A. Clean soiled unit surfaces after installation and touch-up any scratches or abrasions on painted surfaces.

B. Remove and replace any damages or defective suspension members or acoustical units.

****** END OF SECTION ******

SECTION 096519
RESILIENT VINYL TILE FLOORING

PART 1 - GENERAL

1-01 GENERAL PROVISIONS

Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 1 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1-02 DESCRIPTION

A. Work of this Section consists of furnishing all labor, materials, equipment and services necessary to complete the tile flooring indicated on the Drawings, and without limiting the generality thereof includes:

1. Resilient Solid Vinyl Tiles.

1-03 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Initial Selection: For each type of product indicated.

C. Samples for Verification: For each type of product indicated, in manufacturer's standard-size samples of each resilient product color, texture, and pattern required.

D. Product Schedule: For resilient products. Use same designations indicated on Drawings.

1-05 QUALITY ASSURANCE

A. Installation Qualification: Contractors for floor covering installation should be experienced in managing commercial flooring projects and provide professional installers, qualified to install the various flooring materials specified. An installer is “qualified” if trained by Tarkett or a certified INSTALL (International Standards & Training Alliance) resilient floor covering installer.

B. Mockups: Provide resilient products with mockups specified in other Sections.

1-06 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by Tarkett, but not less than 55 deg F (13 deg C) or more than 85 deg F (29 deg C).

1-07 PROJECT CONDITIONS

A. Install resilient products after other finishing operations, including painting, have been completed.

B. Maintain ambient temperatures within range recommended by Tarkett, but not less than 65 deg F (18 deg C) or more than 85 deg F (29 deg C) in spaces to receive resilient products during the following time periods:

1. 48 hours before installation.

2. During installation.

3. 48 hours after installation.

C. Maintain the ambient relative humidity between 40% and 60% during installation.

D. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 85 deg F (29 deg C).

PART 2 - PRODUCTS

2-01 VINYL COMPOSITION TILE FLOORING

A. Basis-of-Design Product: Subject to compliance with requirements, provide Johnsonite, a Tarkett Company, Cortina Grande; Armstrong Flooring, Standard Excelon; or approved equal.

B. Sheet Standard: ASTM F 1700, Class 1, Type A, Smooth surface.

C. Thickness/Wearlayer: 0.125 inch (3.17 mm).

D. For size specify: 12 inches by 12 inches.

E. Colors and Patterns: As selected by Owner from full range of industry colors.

F. Test data:

1. Total thickness (ASTM F386): 0.080 inches (2 mm)

2. Flexibilty (ASTM F137): Passes

3. Chemical Resistance (ASTM F925): Passes

4. Static Load Limit (ASTM F 970): Passes 250 psi / Modified 800 psi

5. Resistance to Heat (ASTM F1514): $\Delta E \leq 8$

6. Resistance to Light (ASTM F1515): $\Delta E \leq 8$

7. Residual Indentation (ASTM F1914): Passes

8. Size, Tolerance (ASTM F2055): Passes

9. Static Coefficient of Friction (ASTM D 2047): $\geq$ 0.5 SCOF

10. Flamability (ASTM E648, Critical Radiant Flux): Class 1 ($\geq$ 0.45 W/cm2)

11. Limited Commercial Warranty: 10 years.

2-02 RUBBER WALL BASE

A. Basis-of-Design Product: Subject to compliance with requirements, provide Johnsonite, Perceptions rubber wall base; or approved equal.

B. Manufactured from a proprietary thermoplastic rubber formulation. Meets performance requirements for ASTM F 1861 Standard Specification for Resilient Wall Base, Type TP, Group 1.

C. ASTM E 648, Standard Test Method for Critical Radiant Flux of 0.45 watts/cm^2 or greater, Class I.

D. ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials, Class A, Smoke <450.

E. Flexibility: Does not crack, break, or show any signs of fatigue when bent around a 1 1/4" diameter cylinder when tested according to ASTM F 137 Standard Test Method for Flexibility of Resilient Flooring Materials protocols.

F. Color Stability: Meets or exceeds ASTM F 1861 requirements for color stability when tested to ASTM F 1515 Standard Test Method for Measuring Light Stability of Resilient Flooring protocols.

G. Contains at least 14% pre consumer recycled content.

H. Phthalate free except for recycled materials.

I. Possible LEED contributions include MR:2, MR:4, MR:5, and EQ: 4.3.

J. Johnsonite offers a RESTART reclamation program for returning jobsite scrap.

K. 100% Recyclable.

L. SCS FloorScore® Certified and meets California Specifications Section 01350.

2-03 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, Portland cement based or blended hydraulic-cement-based formulation.

B. Adhesives: As recommended by Tarkett to meet site conditions.

1. Tarkett 959 Vinyl Tile and Plank Adhesive

2. Tarkett 901 SpraySmart Adhesive

3. Johnsonite 960 Cove Base Adhesive

4. Johnsonite 946 Premium Contact Bond Adhesive

PART 3 - EXECUTION

3-01 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the work.

B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3-02 PREPARATION

A. Prepare substrates according to Tarkett written instructions to ensure proper adhesion of Resilient Flooring.

1. Prepare concrete substrates in accordance with ASTM F 710.

a. Concrete floors must be free of dust, solvent, paint, wax, oil, grease, residual adhesive, adhesive removers, film-forming curing compounds, silicate penetrating curing compounds, sealing, hardening or parting compounds, alkaline salts, excessive carbonation or laitence, mold, mildew, and other foreign materials that may affect dissipation rate of moisture from the concrete, discoloration or adhesive bonding.

b. Mechanically remove contamination on the substrate that may cause damage to the resilient flooring material. Permanent and non-permanent markers, pens, crayons, paint, etc., must not be used to write on the back of the flooring material or used to mark the substrate as they could bleed through and stain the flooring material.

c. Perform moisture testing as recommended by manufacturer. Proceed with installation only after substrates have been tested and meet the minimum requirements from the manufacturer in accordance with ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride or ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

d. A pH test for alkalinity must be conducted on the concrete floor prior to installation with results between 7 and 9. If the test results are not within the acceptable range, then installation must not proceed until the problem has been corrected.

2. Wood subfloors must have a minimum 18" (45.7 cm) of cross-ventilated space beneath the bottom of the joist.

a. The floor must be rigid, free of movement.

b. Single wood and tongue and groove subfloors should be covered with ¼" (6.4 mm) or ½" (12.7 mm) APA approved underlayment plywood.

1. Use ¼" (6.4 mm) thick underlayment panels for boards with a face width of 3" (76 mm) or less.

2. Use ½" (12.7 mm) thick underlayment panels for boards with a face width wider than 3" (76 mm).

c. Do not install over OSB (Oriented Strand Board), particle board, chipboard, lauan or composite type underlayments.

B. Fill cracks, holes, depressions and irregularities in the substrate with good quality Portland cement based underlayment leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

C. Floor covering shall not be installed over expansion joints.

D. Do not install resilient products until they are same temperature as the space where they are to be installed.

1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3-03 RESILIENT BASE INSTALLATION

A. Comply with Johnsonite's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. Preformed corners: Install preformed corners if available before installing straight pieces.

G. Job-formed corners:

1. Outside corners: Form by bending without producing discoloration (whitening) at bends.

2. Inside corners: Butt one piece to corner then scribe next piece to fit.

3-04 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protection of resilient products.

B. Perform the following operations immediately after completing resilient product installation:

1. Remove adhesive and other blemishes from exposed surfaces.

2. Sweep and vacuum surfaces thoroughly.

3. Damp-mop surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

1. No traffic for 24 hours after installation.

2. No heavy traffic, rolling loads, or furniture placement for 72 hours after installation.

D. Wait 72 hours after installation before performing initial cleaning.

E. A regular maintenance program must be started after the initial cleaning.

****** END OF SECTION ******

SECTION 099100
PAINTING

PART 1 – GENERAL

1-01 GENERAL PROVISIONS

Work of this Section consists of furnishing all labor, materials, equipment and services necessary to complete the painting work indicated, and without limiting the generality thereof.

1-02 DESCRIPTION

A. Work of this Section includes complete painting on every surface requiring paint finish, unless specifically excluded, and without limiting the generality thereof includes:

1. Paint existing ceiling, where noted.

2. Paint existing walls in bathrooms and misc. areas, where noted.

3. Paint existing door trim.

4. Refinish existing doors as noted.

1-01 SUBMITTALS

A. Manufacturer's Information: Submit manufacturer's literature, specification and full color chips for approval in accordance with the provisions of Section 01300, Submittals.

B. Samples: Submit all paint, varnish and enamel to Project Engineer for approval before proceeding with work.

C. Color: Submit accepted manufacturer's full range of color samples for Project Engineer's color selection.

A. LEED Submittals: For Credit EQ 4.2 manufacturers' product data for paints, including printed statement of VOC content and chemical components.

1-02 PRODUCT DELIVERY AND STORAGE

A. Deliver materials in manufacturer's original unopened containers with labels intact and legible identifying brand names, color designation and instructions for mixing.

1-03 PROTECTION

A. Adequately protect other surfaces from paint and damage. Repair damage caused by inadequate or unsuitable protection.

B. Furnish sufficient drop cloths, shields and protective equipment to prevent spray or droppings from fouling surfaces not being painted and in particular, surfaces within storage and preparation area.

C. Place cotton waste, cloths and materials which may constitute a fire hazard in closed metal containers and remove daily from project site.

D. Prior to painting operations, remove electrical device plates, surface hardware, fittings and fastenings. Carefully store, clean and replace items on completion of work in each area. Do not use solvent to clean hardware that has a lacquer finish.

PART 2 – PRODUCTS

2-01 WALL COATING SYSTEM

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the work include, but are not limited to, manufacturers and products listed in this Section or approved equal.

A list of approved but not complete manufacturers is listed below:

1. Benjamin Moore
2. Sherwin Williams
3. Duron Genesis
4. Pittsburgh Paints
5. or equal

2-02 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

C. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates for performance for proposed substitutions.

PART 3 – EXECUTION

3-01 INSPECTION

A. Thoroughly examine surfaces scheduled to receive finishes prior to applying specified finishes.

B. Coordinate painting schedule with other portions of the work.

3-02 PREPARATION

A. Prepare surfaces to receive finishes in accordance with the material manufacturer's recommendations.

B. Wash existing surfaces to be repainted with tri-sodium phosphate and rinse with clean water and allow surface to thoroughly dry.

C. Mask all UL Labels prior to painting.

3-03 GENERAL APPLICATION REQUIREMENTS

A. Apply paint materials in strict accordance with the manufacturer's recommendations with each coat at proper consistency.

B. Touch up of walls shall mean painting the areas of wall to be touched up between the natural breaks in the surface.

C. Keep finishing materials free from skins, lumps, or foreign matter, and well stirred while being applied.

D. Do not apply finish to surfaces that are not sufficiently dry.

E. Apply each coat of finish evenly and allow drying in accordance with the manufacturer's printed instructions.

F. Lightly sand or steel wool between coats to achieve required finish.

G. Back prime all wood finish immediately following its delivery to job. Back prime painted surfaces with appropriate paint primer. Back prime painted surfaces with appropriate paint primer. Back prime interior woodwork which is to receive stain and/or clear finish, with gloss varnish reduced 25 percent with mineral spirits.

H. Where clear finishes are required, ensure tinted fillers matchwood. Work fillers well into grain before set. Wipe excess filler from surface.

I. Prime top and bottom edges of wood doors with enamel undercoat where they are to be painted, and with gloss varnish where they are to receive a stain or clear finish.

J. Use masking tape where paint color cut lines occur.

3-04 CLEANING

A. Promptly remove spilled, splashed or splattered paint on finish as work proceeds and upon completion.

B. Keep premises free from any unnecessary accumulation of tools, equipment, surplus materials and debris during progress of work.

C. Upon completion of work, leave premises in a neat and clean condition.

D. At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials for Project site.

3-05 PAINTING AND FINISH SCHEDULE - INTERIOR

A. Schedule: Provide products and number of coats specified. Use of manufacturer's proprietary product names to designate colors, materials, generic class, standard of quality and performance criteria and is not intended to imply that products named are required to be used to the exclusion of equivalent performing products of other manufacturers.

B. Interior Paint Schedule for Standard Performance Coatings:

1. Interior Gypsum Wallboard and Plaster for Latex Eggshell Finish:

One Coat	a.	Moore Ecospec Interior Latex Primer Sealer (231)
	b.	Duron Genesis Latex Primer
	c.	S-W Health Spec Latex Wall Primer

d. PPG Pure Performance Latex Primer

Two Coats
a. Moore Pristine Ecospec Interior Latex Eggshell (223)
b. Duron Genesis Latex Eggshell
c. S-W Health Spec Latex Eggshell
d. PPG Pure Performance Latex Eggshell

2. Interior Gypsum Wallboard and Plaster Ceilings for Latex Flat Finish:

One Coat
a. Moore Ecospec Interior Latex Primer Sealer (231)
b. Duron Genesis Latex Primer
c. S-W Health Spec Latex Wall Primer
d. PPG Pure Performance Latex Primer

Two Coats
a. Moore Pristine Ecospec Interior Latex Flat (219)
b. Duron Genesis Flat
c. S-W Health Spec Latex Flat
d. PPG Pure Performance Latex Eggshell

3. Interior Gypsum Wallboard and Plaster For Latex Semi-Gloss Finish:

One Coat
a. Moore Ecospec Interior Latex Primer Sealer (231)
b. Duron Genesis Latex Primer
c. S-W Health Spec Latex Wall Primer
d. PPG Pure Performance Latex Primer

Two Coats
a. Moore Pristine Ecospec Interior Semi-Gloss (224)
b. Duron Genesis Latex Semi-Gloss
c. S-W Health Spec Latex Semi-Gloss
d. PPG Pure Performance Latex Semi-Gloss

4. Interior Architectural Woodwork, Finish Carpentry, and Wood Doors for Latex Semi-Gloss Paint Finish (softwoods, paint grade hardwoods, MDO, and hardwood veneers):

One Coat
a. Moore Ecospec Interior Latex Primer Sealer (231)
b. Duron Genesis Latex Primer
c. S-W Health Spec Latex Wall Primer
d. PPG Pure Performance Latex Primer

Two Coats
a. Moore Pristine Ecospec Interior Semi-Gloss (224)
b. Duron Genesis Latex Semi-Gloss

c. S-W Health Spec Latex Semi-Gloss
d. PPG Pure Performance Latex Semi-Gloss

****** END OF SECTION ******

SECTION 102800
TOILET AND BATH ACCESSORIES

1-01 GENERAL PROVISIONS

Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 1 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1-02 SUMMARY

A. This Section includes the following:

1. Washroom accessories.

2. Installation of salvaged accessories.

1-03 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include the following:

1. Construction details and dimensions.

2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.

3. Material and finish descriptions.

4. Features that will be included for Project.

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1. Identify locations using room designations indicated on Drawings.

2. Identify products using designations indicated on Drawings.

1-04 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

1-05 CLOSEOUT SUBMITTALS

A. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

1-06 QUALITY ASSURANCE

A. Source Limitations: For products listed together in the same articles in Part 2, provide products of same manufacturer unless otherwise approved by Architect.

B. Accessibility: Comply with applicable provisions in the 2010 ADA Standards, and the Massachusetts Architectural Access Board (AAB).

1-07 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1-08 WARRANTY

A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.
   1. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2-01 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, 0.0312-inch minimum nominal thickness, unless otherwise indicated.

B. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.0359-inch minimum nominal thickness.

C. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.

2-02 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide products indicated by **Bobrick Washroom Equipment, Inc.** or a comparable product by one of the following:

1. AJW Architectural Products.

2. American Specialties, Inc.

3. Bradley Corporation.

B. Grab Bar:

1. Basis-of-Design Product: Bobrick; B-6806.99 Series.

2. Mounting: Flanges with concealed fasteners.

3. Material: Stainless steel, 18 gauge.

a. Finish: Smooth, No. 4, satin finish on ends and slip-resistant texture in grip area.

4. Outside Diameter: 1-1/2 inches.

5. Configuration and Length: Provide in straight lengths, in sizes indicated.

C. Robe Hook:

1. Basis-of-Design Product: **Bobrick; B-6707**.

2. Mounting: Surface mounted.

3. Material and Finish: Stainless steel, No. 4 finish (satin).

a. Flange and Support Arm: 22-gauge stainless steel with concealed 16-gauge stainless steel mounting bracket, all-welded construction. Secure to wall plate with stainless steel setscrew.
b. Concealed Wall Plate: 16-gauge stainless steel.
c. Cap: 10-gauge stainless steel, welded to support arm.

2-03 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

PART 3 - EXECUTION

3-01 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
B. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to method in ASTM F 446.

3-02 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
B. Remove temporary labels and protective coatings.
C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

****** END OF SECTION ******

SECTION 224000
PLUMBING FIXTURES

PART 1 – GENERAL

1-01 GENERAL

Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1-02 DESCRIPTION

A. The scope of work under this Section, without limiting the generality thereof of performing the following miscellaneous work:

1. Furnish and install new water closets, urinals and other miscellaneous plumbing fixtures as noted and as may be supplied by owner. Refer to **MATERIALS** below and architectural drawings for additional information.

2. Furnish and install materials and labor to remove existing plumbing fixtures which will include all bathroom fixtures within the public restrooms indicated on the attached drawings coordinate with the electrical contractor for any disconnects that are tied into the plumbing work .

3. Furnish and install all necessary plumbing to connect all fixtures as shown on plans and all necessary plumbing to connect waste lines to the existing system, as per all state and local building and plumbing regulations.

PART 2 – MATERIALS

2-01 MATERIALS

A. TOILET

1. Base of design – Kohler Highcliff™ Ultra Top spud flushometer bowl K-96057; or approved equal.

2. Codes/Standards:

   a. ASME A112.19.2/CSA B45.1,
   b. California Energy Commission (CEC),
   c. ADA.

B. SINK

1. Base of design – American Standard Wheelchair Users Lavatory or approved equal.

2. Meets or exceeds ASME A112.19.2 for Vitreous China Fixtures.

3. Faucet: Base of design – Kohler Triton® Centerset commercial bathroom sink faucet with wristblade lever handles.

4. Codes/Standards:

   a. ASME A112.18.1/CSA B125.1
   b. NSF/ANSI 61
   c. NSF/ANSI 372
   d. All applicable US Federal and State material
   e. regulations
   f. DOE - Energy Policy Act 1992
   g. EPA WaterSense®
   h. ADA
   i. ICC/ANSI A117.1
   j. CSA B651
   k. OBC

C. GRAB BAR

Grab Bar, 42" ADA Compliant – Kohler, Traditional, Quan. (2), Model # K-10545-S, polished stainless steel, 42" W X 1-1/4" Dia. X 2-3/4" D.

D. ROBE HOOK

Robe Hook – Kohler, Alteo ®, Quan. (2), Model # K-37055-BN, brushed nickel, 2-1/8" W x 3-3/8" H x 3-3/8" D.

2-02 INSTALLATION

A. Install plumbing fixtures in counters as shown on plans.

B. Furnish and install all miscellaneous copper piping and fittings for installation of sinks, faucets, water closets, urinals, etc., as noted or required.

C. All plumbing and miscellaneous fixtures to be installed as per manufacturer's specifications.

****** END OF SECTION *****

SECTION 230000
HEATING, VENTILATING & AIR-CONDITIONING (HVAC)

PART 1 – GENERAL

1-01 GENERAL

A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1-02 DESCRIPTION

A. Without limiting the generality thereof, the work to be performed under this Section includes:

1. Providing necessary extensions to HVAC equipment and appurtenances to reconnect original equipment to existing HVAC systems in the building.

2. Reinstallation of original accessories in original locations upon completion of installation of new ceiling.

B. Furnish all labor and material associated with sealing and fire safety of mechanical systems.

1-03 RELATED WORK

A. Cutting beyond the requirements as stated herein, and patching of all openings regardless of size, is specified in the respective Sections of the trade responsible for furnishing and installing similar new materials.

B. For power wiring of mechanical equipment refer to Section 26 00 00 - ELECTRICAL.

1-04 CODES, ORDINANCES, AND PERMITS

A. Perform all work in accordance with the requirements of the City of Quincy Building Department, State of Massachusetts Building Code, and applicable State and Federal Laws. Give all requisite notices, file all requisite plans, and obtain all permits required to perform HVAC Work. Pay all fees and include in the Bid.

1-05 QUALITY ASSURANCE

A. Codes and Standards:

1. ANSI Standards: Comply with ANSI A13.1 for pipe, valve, and equipment identification.

2. FM Compliance: Provide control devices and control sequences in accordance with requirements of Factory Mutual System (FM).

3. IRI Compliance: Provided control devices and control sequences in accordance with requirements of Industrial Risk Insurance (IRI).

4. UL and NEMA Compliance: Provide electrical components required as part of air handling units, which have been listed and labeled by UL and comply with NEMA standards.

5. NEC Compliance: Comply with National Electrical Code (NFPA 70) as applicable to installation and electrical connections of ancillary electrical components of air handling units.

B. Automatic Temperature Control Contractor Qualifications: Firms specializing in manufacturing and installation of control system for not less than 5 years.

1-06 CONTRACT DRAWINGS

A. All work shown on the Drawings is intended to be approximately correct to scale, but shall be taken in a sense as diagrammatic. Sizes of ductwork and pipes and general method of running them are shown, but it is not intended to show every offset and fitting. To carry out the true intent and purpose of the plans, furnish all necessary parts to make complete working systems ready for use.

B. The HVAC Drawings and Specifications are intended to supplement each other so that any details shown on the Drawings and not mentioned in the Specifications, or vice-versa, shall be executed the same as if mentioned in the Specifications and shown on the Drawings.

C. Refer to the Architectural and other Mechanical and Electrical Drawings which indicate the construction in which this work shall be installed. Locations shown on the plans shall be checked against the general and detailed Drawings of the construction proper. All measurements must be taken at the building.

1-07 NOTIFICATION OF RELATED TRADES

A. Notify all other trades responsible for installing chases, inserts, sleeves, anchors, and louvers. when ready for such installation and for final checking. Cooperate with such trades to obtain proper installation.

B. Leave openings in roof for mechanical and electrical work as shown on Drawings or required by layout of mechanical or electrical systems.

1-08 MECHANICAL INSTALLATIONS

A. Coordinate mechanical equipment and materials installation with other building components.

B. Verify all dimensions by field measurements.

C. Arrange for chases, slots, and openings in other building components to allow for mechanical installations.

D. Sequence, coordinate, and integrate installations of mechanical materials and equipment for efficient flow of the work. Give particular attention to large equipment requiring positioning prior to closing-in the building.

E. Coordinate the cutting and patching of building components to accommodate the installation of mechanical equipment and materials.

F. Where mounting heights are not detailed or dimensioned, install mechanical services and overhead equipment to provide the maximum headroom possible.

G. Install mechanical equipment to facilitate maintenance and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.

H. Coordinate connection of mechanical system with utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.

1-09 CUTTING AND PATCHING

A. Drilling, coring, and cutting of new and existing structures (through walls, floors, ceiling, etc.) where the largest dimension does not exceed 12 in. shall be by this Contractor.

B. Throughout the performance of the cutting and coring work, ensure that the structural integrity of the existing walls, floors, overhead structure, and other structural components, which are to remain, is maintained until permanent work is installed. Prior to any coring or cutting verify all locations of same with the General Contractor. All cutting and coring is to be performed in accordance with approved coordination drawings.

C. No additional compensation will be authorized for cutting and patching work that is necessitated by ill-timed, defective, or non-conforming installations.

1-10 SUBMITTALS

A. Refer to Section 01 33 00 – SUBMITTAL PROCEDURES for submittal definitions, requirements, and procedures. The following paragraphs supplement the requirements of Section 01 33 00.

B. Submittal of Shop Drawings, product data, and samples will be accepted only when submitted by the General Contractor. Data submitted by Sub-contractors and material suppliers directly to the Architect/Engineer will not be processed.

C. Provide submittals for the following equipment:

1. Metal Ductwork

2. Ductwork Accessories

3. Recessed mount ceiling heater

4. Automatic Temperature Controls

D. If a Shop Drawing is not accepted after two submissions, a third submission from the same manufacturer will not be considered.

E. Check Shop Drawings and other submittals to assure compliance with contract documents before submittal to A/E.

1-11 DELIVERY, STORAGE AND HANDLING

A. Refer to Section General Conditions for delivery, storage, and handling of equipment. The following paragraphs supplement the requirements of Section General Conditions.

B. Deliver products to project properly identified with names, model numbers, types, grades, compliance labels, and similar information needed for distinct identifications; adequately packaged and protected to prevent damage during shipment, storage, and handling.

C. Store equipment and materials at the site, unless off-site storage is authorized in writing. Protect stored equipment and materials from damage.

D. Coordinate deliveries of mechanical materials and equipment to minimize construction site congestion. Limit each shipment of materials and equipment to the items and quantities needed for the smooth and efficient flow of installations.

1-12 WARRANTIES

A. Provide products which are compatible within systems and other connected items.

B. The contractor shall provide a one (1) year minimum warrantee on all product (unless otherwise stated in the product specification for a specific product) and labor for work under this section.

PART 2 – PRODUCTS

2-01 EXISTING EQUIPMENT

A. If original equipment intended for re-installation is deemed not fit for reuse, the HVAC Contractor shall notify the Architect, Owner, and/or Engineer immediately for direction to proceed.

B. Re-installed equipment shall be reconnected to existing controls and operate in the same manner it operated prior to the ceiling replacement.

2-02 ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT

A. Pursuant to Massachusetts General Laws Chapter 141, a Massachusetts Licensed electrician shall install all low and line voltage wiring required by this section.

2-01 METAL DUCTWORK

A. Ductwork Materials:

1. Exposed Ductwork Materials: Where ductwork is indicated to be exposed to view in occupied spaces, provide materials which are free from visual imperfections including piping, seam marks, roller marks, stains and discolorations, and other imperfections, including those which would impair painting.

2. Sheet Metal: Except as otherwise indicated, fabricate ductwork from galvanized sheet steel complying with ASTM A 527, lock forming quality, with G 90 zinc coating in accordance with ASTM A 525; and mill phosphatized for exposed locations.

B. Miscellaneous Ductwork Materials:

1. General: Provide miscellaneous materials and products of types and sizes indicated and, where not otherwise indicated, provide type and size required to comply with ductwork system requirements including proper connection of ductwork and equipment.

2. Fittings: Provide radius type fittings fabricated of multiple sections with maximum 15 degree change of direction per section. Unless specifically detailed otherwise, use 45 degree laterals and 45 degree elbows for branch takeoff connections. Where 90 degree branches are indicated, provide conical type tees.

3. Duct Sealant: Non-hardening, non-migrating mastic or liquid elastic sealant, type applicable for fabrication/installation details, as compounded and recommended by manufacturer specifically for sealing joints and seams in ductwork.

4. Ductwork Support Materials: Except as otherwise indicated, provide hot-dipped galvanized steel fasteners, anchors, rods, straps, trim and angles for support of ductwork.

    a. For exposed stainless steel ductwork, provide matching stainless steel support materials.

    b. For aluminum ductwork, provide aluminum support materials except where materials are electrically separated from ductwork.

5. Flexible Ducts: Corrugated aluminum complying with UL 181.

    a. Where installed in unconditioned spaces other than return air plenums, provide 1 in. thick continuous flexible fiberglass sheath with vinyl vapor barrier jacket.

C. Fabrication:

1. Shop fabricated ductwork in 4, 8, 10 or 12-ft lengths, unless otherwise indicated or required to complete runs. Preassembled work in shop to greatest extent possible, so as to minimize field assembly of systems. Disassemble systems only to extent necessary for shipping and handling. Match-mark sections for reassembly and coordinated installation.

2. Shop fabricated ductwork of gages and reinforcement complying with SMACNA "HVAC Duct Construction Standards".

3. Fabricate duct fittings to match adjoining ducts, and to comply with duct requirements as applicable to fittings. Except as otherwise indicated, fabricate elbows with center-line radius equal to 1-1/2 times associated duct width; or squared metered elbows with double thickness turning vanes. Limit angular tapers to 30 degrees for contracting tapers and 20 degrees for expanding tapers.

4. Fabricate ductwork with accessories installed during fabrication to the greatest extent possible. Refer to section "Ductwork Accessories" for accessory requirements.

5. Fabricate ductwork with duct liner in each section of duct where indicated. Laminate liner to internal surfaces of duct in accordance with instructions by manufacturers of lining and adhesive, and fasten with mechanical fasteners.

2-02 DUCTWORK ACCESSORIES

A. Low Pressure Manual Dampers: Provide dampers of single blade type or multiblade type, constructed in accordance with SMACNA "HVAC Duct Construction Standards".

B. Manufacturer: Subject to compliance with requirements, provide dampers of one of the following:

1. Air Balance, Inc.

2. Airguarde Corp.

3. American Warming & Ventilating, Inc.

4. Arrow Louver and Damper; Div. of Arrow United Industries, Inc.

5. Louvers & Dampers, Inc.

6. Penn Ventilator Co.

7. Ruskin Mfg. Co.

8. Or equal

C. Duct Hardware:

1. General: Provide duct hardware, manufactured by one manufacturer for all items on project, for the following:

a. Test Holes: Provide in ductwork at fan inlet and outlet, and elsewhere as indicated, duct test holes, consisting of slot and cover, for instrument tests.

b. Quandrant Locks: Provide for each damper, quadrant lock device on one end of shaft; and end bearing plate on other end for damper lengths over 12 in. Provide extended quadrant locks and end extended bearing plates for externally insulated ductwork.

2. Manufacturer: Subject to compliance with requirements. Provide duct hardware of one of the following:

a. Ventbabrics, Inc.

b. Young Regulator Co.

c. Or equal

PART 3 – EXECUTION

3-01 INSTALLATION OF EXISTING EQUIPMENT

A. Upon completion of installation of new roof existing equipment shall be installed in original locations.

B. HVAC Contractor shall provide required extensions of existing system including but not limited to ductwork, refrigerant piping, hydronic piping, ATC wiring, etc. Power wiring extensions shall be by the Electrical Contractor. HVAC Contractor shall coordinate.

3-02 INSTALLATION OF METAL DUCTWORK

A. Installation of Metal Ductwork:

1. General: Assemble and install ductwork in accordance with recognized industry practices which will achieve air-tight (5 percent leakage for systems rated 3 in. and under; 1 percent for systems rated over 3 in.) and noiseless (no objectionable noise) systems, capable of performing each indicated service. Install each run with minimum number of joints. Align ductwork accurately with internal surface smooth. Support ducts rigidly with suitable ties, braces, hangers and anchors of type which will hold ducts true-to-shape and to prevent buckling. Support vertical ducts at every floor.

2. Sealing: All ductwork joints and seams shall be sealed with flexible duct sealer to assure an airtight installation.

3. Penetrations: Where ducts pass through interior partitions and exterior walls, and are exposed to view, conceal space between construction opening and duct or duct insulation with sheet metal flanges of same gage as duct. Overlap opening on 4 sides by at least 1-1/2 in. Fasten to duct and substrate.

    a. Where ducts pass through fire-rated floors, walls, or partitions, provide firestopping between duct and substrate.

4. Coordination: Coordinate duct installation with installation of accessories, dampers, coil frames, equipment, controls and other associated work of ductwork system.

5. Installation: Install metal ductwork in accordance with "SMACNA HVAC Duct Construction Standards".

B. Field Quality Control:

1. Leakage Tests: After each duct system, which is constructed for duct classes over 3 in. is completed, test for duct leakage in accordance with SMACNA "HVAC Air Duct Leakage Test Manual". Repair leaks and repeat tests until total leakage is less than 1 percent of system design air flow.

C. Equipment Connections:

1. General: Connect metal ductwork to equipment as indicated, provide flexible connection for each ductwork connection to equipment mounted on vibration isolators, and/or equipment containing rotating machinery.

D. Adjusting and Cleaning:

1. Clean ductwork internally, unit by unit as it is installed, of dust and debris. Clean external surfaces of foreign substances which might cause corrosive deterioration of metal or, where ductwork is to be painted, might interfere with painting or cause paint deterioration.

2. Strip protective paper from stainless ductwork surfaces, and repair finish wherever it has been damaged.

3. Temporary Closure: At ends of ducts which are not connected to equipment or air distribution devices at time of ductwork installation, provide temporary closure of polyethylene film or other covering which will prevent entrance of dust and debris until final connections are to be completed.

3-03 INSTALLATION OF DUCTWORK ACCESSORIES

A. Install ductwork accessories in accordance with manufacturer's installation instructions, with applicable portions of details of construction as shown in SMACNA standards, and in accordance with recognized industry practices to ensure that products serve intended function.

B. Operate installed ductwork accessories to demonstrate compliance with requirements. Test for air leakage while system is operating. Repair or replace faulty accessories, as required to obtain proper operation and leakproof performance.

C. Adjusting: Adjust ductwork accessories for proper settings, install fusible links in fire dampers and adjust for proper action.

D. Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint.

3-04 INSTALLATION OF AUTOMATIC TEMPERATURE CONTROLS (ELECTRIC/ELECTRONIC)

A. Installation of Control Systems:

1. General: Install systems and materials in accordance with manufacturer's instructions, roughing-in drawings and details shown on drawings.

2. Control Wiring: Install control wiring, without splices between terminal points, color-coded. Install in neat workmanlike manner, securely fastened. Install in accordance with National Electrical Code.

a. Install circuits over 25-volt with color-coded No. 12 wire in electric metallic tubing.

b. Install circuits under 25-volt with color-code No. 18 wire with 0.031 in. high temperature 105 deg. F. (41 deg. C) plastic insulation on each conductor and plastic sheath over all.

c. Install electronic circuits with color-coded No. 22 wire with 0.023 in. polyethylene insulation on each conductor with plastic-jacketed copper shield over all.

d. Install low voltage circuits, located in concrete slabs and masonry walls, or exposed in occupied areas, in electrical conduit.

e. Power sources from lighting circuits and wall outlets shall not be used to power DDC controllers.

3. Controllers and safety devices:

a. All safety devices such as freezestats, duct mounted heat detectors, smoke detectors, etc., shall be reconnected as previously installed and tested to ensure proper operation.

B. Adjusting and Cleaning:

1. Replace damaged or malfunctioning controls and equipment.

2. Cleaning: Clean factory-finished surfaces.

3. Final Adjustment: After completion of installation, adjust thermostats, control valves, motor and similar equipment provided as work of this section.

a. Final adjustment shall be performed by specially trained personnel in direct employ of manufacturer of primary temperature control system.

****** END OF SECTION ******

SECTION 260000
ELECTRICAL WORK
(FILED SUB-BID)

PART 1 – GENERAL

1-01 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Carefully examine all the Contract Documents for requirements which affect the work of this Section. The exact scope of this Section cannot be determined without a thorough review of all specifications' sections and other Contract Documents.

C. Where referred to, Standard Specifications, Recommendations of Technical Societies, and/or Manufacturer's Associations, plus Codes of Federal, State, and Local Agencies shall include all amendments current as of date of issue of these specifications.

1-03 REQUIREMENTS FOR SUBMITTING FILED SUB-BID

A. Sub-bids shall be submitted for the Work of this Section in accordance with the provisions of M.G.L. c.149 §§44A-J The time and place for submission of sub-bids are set forth in the Advertisement. The procedures and requirements for submitting sub-bids are set forth in the Instructions to Bidders.

B. Sub-bidders must be DCAMM Certified in the listed trade and shall include a Current DCAMM sub-bidder Certificate of Eligibility and a signed DCAMM Subbidder's Update Statement with the bid.

1-04 RELATED WORK

A.	Section 02 41 19	SELECTIVE DEMOLITION
B.	Section 08 71 13	AUTOMATIC DOOR OPERATORS
C.	Section 10 28 00	TOILET AND BATH ACCESSORIES
D.	Section 23 00 00	HEATING, VENTILATING & AIR-CONDITIONING (HVAC)

1-05 GENERAL

A. The General Conditions and Supplementary General Conditions of these specifications are hereby made a part of this Section.

B. Refer to drawings for further definition of location, extent, and details of work described herein.

C. Cooperate and coordinate with other trades in executing work as described in this Section.

D. Where referred to, Standard Specifications, Recommendations of Technical Societies, and/or Manufacturer's Associations, plus Codes of Federal, State, and Local Agencies shall include all amendments current as of date of issue of these specifications.

1-06 SCOPE

A. Work described herein shall be interpreted as work to be done by the Electrical Subcontractor. Work to be performed by other trades will be referenced to a particular contractor or subcontractor.

B. Provide all labor, materials, tools, and equipment, including scaffolding, to complete the installation of the electrical system. Install, equip, adjust, and put into operation the respective portions of the installation specified, and so interconnect various items or sections of work in order to form a complete and operating whole. The work shall consist of, but shall not necessarily be limited to, the following:

1. Disconnect existing equipment for relocation, as shown in drawings

2. Disconnect and dispose existing light fixtures.

3. Connect new light fixtures to existent system.

4. Disconnect and relocate card access system.

5. Add new cameras to existing security system.

6. Install new ceiling mounted electric heater.

7. Connections for building equipment, including heating, ventilation, and air conditioning, plumbing, fire protection, elevators, and the like.

8. Drilling, coring, and cutting of holes and openings

9. Scaffolding, rigging, and staging required for all electrical work.

10. Fire stopping shall be performed by the electrical contractor.

11. Phasing and demolition.

12. All testing of equipment installed.

1-07 INSPECTION OF SITE

A. It is optional, for the Electrical bidders to inspect site. Failure to inspect existing conditions or to fully understand work which is required shall not excuse Electrical Subcontractor from his obligations to supply and install work in accordance with specifications and the drawings and under all site conditions, as they exist.

1-08 COOPERATION

A. Work shall be carried on under usual construction conditions, in conjunction with other contractors' work. Cooperate with other contractors, coordinate work, and proceed in a manner as not to delay progress.

B. Before proceeding, examine all construction drawings and consult other contractors to coordinate installation and avoid interference.

C. In case of dispute, the Engineer will render a decision in accordance with General and Supplementary General Conditions.

1-09 SUBMITTALS

A. Provide submittals w/ cut sheets for equipment as outlined in this Specification; identify project, contractor, supplier and pertinent drawing and specification numbers.

B. Provide submittals for the following electrical equipment:

1. Lighting Fixtures

2. Outlets

3. Wiring Conduit

4. Cameras

C. No equipment requiring shop drawings shall be ordered prior to Project Engineer's approval of Shop Drawings.

D. No installations of electrical systems may be started without Project Engineer's approval of shop drawings.

E. Within thirty (30 days of contract award, submit eight (2) sets and one (1) PDF file of all shop drawings to the Engineer.

1-10 REGULATORY REQUIREMENTS

A. Conform to Massachusetts State Building Code, Electrical section and requirements of all other authorities having jurisdiction over the project.

B. Conform to the latest requirements of the National Electrical Code (NEC).

C. Contractor shall pay for and obtain all necessary permits and arrange for all inspections from local authorities having jurisdiction over the project.

1-11 PROJECT/SITE CONDITIONS

H. Coordinate with the facilities management for access and coordination of all work.

PART 2 – PRODUCTS

2-01 RACEWAY

A. Electrical Metallic Tubing (EMT) and Fittings

1. Location: Used for electrical circuitry exposed in stairwells, basement areas, mechanical rooms and storage areas.

2. EMT shall meet ANSI C80.3.

3. Fittings and conduit bodies shall meet ANSI/NEMA FB 1: steel, setscrew type.

B. MC Wiring

1. Shall Conform to SNDI V80.3.

2. May be utilized for power and lighting circuits throughout building where concealed.

C. **Conduit Supports**

1. Conduit clamps, straps and supports; steel or malleable iron.

2. Hardware shall be corrosion resistant.

2-02 WIRE

A. Thermoplastic-insulated building wire, NEMA WC 5; or Rubber-insulated building wire, NEMA WC 3.

B. Feeders and branch circuits: Copper conductor, 600 volt insulation, type THW, rated 75 degree C, solid conductor.

C. No aluminum wire will be accepted.

D. Outlet Boxes, Pull and Junction Boxes:

1. Sheet Metal Outlet Boxes: ANSI/NEMA OS 1: galvanized steel, with ½-inch male fixtures studs where required. PVC boxes may be used in lieu of sheet metal where concealed.

2. Cast Boxes: Aluminum, cast ferroalloy, deep type, gasket cover, threaded hubs.

2-03 WIRING DEVICES

A. Wall switches and receptacles: Leviton Hospital Grade.

B. Cover Plates: Stainless steel, Leviton.

2-04 LIGHTING & ELECTRICAL FIXTURES

A. Provide lighting fixtures complete with lamps, ballasts, and other devices as required for a first-class installation. Furnish Ceiling Subcontractor with instructions concerning openings necessary, and provide frames for NEMA standard ceiling types or special mounting frames, as may be required. Fixtures shall be supported independently of hung ceiling construction.

B. Electronic ballasts shall be equal to Advance Centium in single, two, three and our lamp versions and input current total harmonic Distortion not exceeding 10%. Compact fluorescent electronic ballasts shall sense end of life conditions.

C. All specialized lamps to be of a type recommended by the fixture manufacturers in their photometric reports.

D. Fixture types shall be as scheduled. The note on fixture schedule "Possibly Acceptable Alternate Manufacturers" means that the manufacturers listed have products which could be equal. The determination of "equal" will be determined based upon features of the product specified by catalog number. A sample of any proposed substitution will be required. Standard cataloged products have been selected. Fixtures specially manufactured for this particular project and not part of a manufacturer's standard line will not be acceptable.

E. All light fixtures are to meet the IBC, Energy Code for that area by using COMcheck. All substituted fixtures are to be approved by the engineer and must have the wattage for each fixture in order for it to be reviewed.

F. Replace any defective lamps and ballasts after installation. All ballasts shall be warranted for labor and materials for a period of one year. Contractor shall be responsible for furnishing and installing all lamps at start-up.

2-03 TELEPHONE/DATA SYSTEMS

A. Telephone system instruments and interconnecting wiring will be provided by the electrical contractor. Data system outlets and interconnecting wiring will be provided by the electrical contractor.

B. Provide raceways for both systems as indicated on drawings, including pull wires for both site underground distribution and raceway links between low-tension closets and rooms.

C. Raceway stubups at backboards to be located as indicated on the drawings. Provide a double duplex receptacle and a #6 AWG green insulated ground connection adjacent to the conduit stub up at incoming backboard.

D. Area above hung ceiling is a return air plenum. Telephone and data systems shall either be installed in conduit or shall be UL listed plenum cable.

E. Sleeves or openings thru slabs to allow for future cable installation shall be located within 6 inches of walls and shall be in a single row.

F. For each telephone outlet or data outlet indicated on the drawings, provide an appropriate flush outlet box equal to

1. SQUARE® Oversized Outlet Box

a. Be 127mm (5") Tall x 127mm (5") Wide x 73mm (2.875") Deep (72cu.in.)

b. Have knockouts for Conduit Fitting sizes of ¾", 1" and 1 ¼".

c. Have available extension rings in both single-gang and double gang.

d. Extension Rings available in depth of ½", ⅝, ¾", 1" and 1¼".

e. Have integrated internal cable managers for maintaining proper cable bend radii.

f. Be constructed of galvanized steel.

g. Must be Communications Circuit Accessory Listed per Underwriters Laboratories Standard UL 1863.

2-04 CAMERA (INTERIOR)

A. AXIS P3227-LV Indoor Dome 5MP IR Security Camera or approved equal:

1. 5 MP resolution in full frame rate
2. Progressive scan RGB CMOS 1/2.5″
3. Varifocal, 3.5-10 mm, F1.7
4. Forensic WDR and Lightfinder
5. Widescreen 16:9 format in real time 30fps
6. OptimizedIR illumination with power-efficient, long-life 850 nm IR LEDs. Range of reach 30 m (100 ft)
7. Remote zoom and focus
8. Zipstream for reduced bandwidth and storage needs
9. H.264 (MPEG-4 Part 10/AVC) Baseline, Main and High Profiles, Motion JPEG
10. ONVIF® Profiles S and G
11. IP52-rated, IK08 impact-resistant
12. Power over Ethernet (PoE) IEEE 802.3af/802.3at Type 1 Class 3,max 11.5 W, typical 8.4 W
13. Support for microSD/microSDHC/microSDXC card

2-05 CEILING MOUNTED HEATER

A. Ceiling mounted fan-forced air heater for large area: 5,000 watts, 240 volts, 1-3 phase, and 20.8 amps.

1. The heater should be factory wired for full wattage and field convertible to 75% or 50% wattage by the removal of one or two wires.

2. The heater shall be factory wired for a single-phase operation and field convertible to three-phase operation by removing one jumping wire.

3. The heater section shall consist of a 20 gauge steel chassis.

4. The heater elements shall be guaranteed for five years.

5. The fan motor shall be impedance-protected, permanently lubricated, and with totally-enclosed rotor.

B. Manufacturer: Basis of design CDF-RE from CDF Series 500 by QMark, a Marley Engineered Product Brand; or approved equal.

PART 3 – EXECUTION

3-01 WORK COORDINATION AND JOB OPERATIONS

A. Equipment shall not be installed in congested and possible problem areas without first coordinating installation of same with other trades. Relocate electrical equipment installed in congested or problem areas should it interfere with the proper installation of equipment to be installed by other trades.

B. Particular attention shall be directed to coordination of lighting fixtures and other electrically operated equipment requiring access which is to be installed in ceiling areas. Coordinate with other trades, the elevations of equipment in hung ceiling areas to insure adequate space for installation of recessed fixtures before said equipment is installed. Conflicts in mounting heights and clearances above hung ceilings for installation of recessed lighting fixtures or other electrically operated equipment requiring access shall be brought to the attention of Engineer for a decision prior to equipment installation.

C. Furnish to General Contractor and other subcontractors information relative to portions of electrical installation that will affect other trades sufficiently in advance so that they may plan their work and installation.

D. Obtain from other trades information relative to electrical work which he, the Electrical Subcontractor, is to execute in conjunction with installation of other trades' equipment.

E. Lighting fixtures in mechanical spaces or utility/ storage rooms shall only be installed after all mechanical equipment is in place.

3-01 PROTECTION AND CLEANUP

A. Protection

1. Materials and equipment shall be suitably stored and protected from weather.

a. During progress of work, pipe and equipment openings shall be temporarily closed so as to prevent obstruction and damage.

b. Be responsible for maintenance and protection of material and equipment until final acceptance.

B. Cleanup

1. Keep job site free from accumulation of waste material and rubbish. Remove all rubbish, construction equipment, and surplus materials from site and leave premises in a clean condition.

a. At completion, equipment with factory finished surfaces shall be cleaned and damaged spots touched up with the same type paint applied at factory.

b. Particular attention is called to Section 110 12(c) of the NEC, which requires that internal parts of electrical equipment not be contaminated by construction operations.

3-02 WORKMANSHIP AND INSTALLATION METHODS

A. Work shall be installed in first class manner consistent with best current trade practices. Equipment shall be securely installed plumb and/or level. Flush mounted outlet boxes shall have front edge flush with finished wall surface. No electrical equipment shall be supported by work of other trades. Cable systems shall be supported and not draped over ducts and piping or laid on ceiling suspension members. Lighting fixtures shall be installed to agree with Architects reflected ceiling plans.

3-03 CUTTING AND PATCHING

A. All cutting of surfaces, including core drilling of walls and slabs, shall be done by Electrical Subcontractor. Openings through new wall surfaces will be provided by General Contractor if Electrical Subcontractor gives suitable notice as erection of surface proceeds. If suitable notice is not given, Electrical Subcontractor shall then be responsible for cost of corrective work required.

B. Patching will be provided by the trade responsible for the surface to be patched.

3-04 MECHANICAL SYSTEM COORDINATION

A. The Contractor will be providing various items of mechanical services equipment and control apparatus. In general, Electrical Subcontractor shall connect up power wiring to this equipment. The Contractor and Electrical Subcontractor shall closely coordinate their respective portions of work.

3-05 WORK IN EXISTING BUILDING

A. The existing building is occupied and will continue to be so during construction. The electrical work shall be done so as to not disrupt existing operation of Owner or his tenants.

B. Any shutdowns of electricity shall be coordinated with the General Contractor's and Owner's representatives at least 48 hours in advance. Shutdowns which, in the opinion of the Owner, are a minor nature not affecting the operation, may be allowed during normal working hours. Other shutdowns will only be allowed on off hours, shall be properly scheduled in advance, and shall not be greater than a 4-hour continuous duration.

C. No existing system shall be left inoperable at any time, except for short periods during normal working hours.

D. Any new work required to pass through occupied areas shall be done at other than normal working hours.

E. No energized exposed conductors will be allowed to remain unattended where accessible to the public or the Owner's staff. The Electrical Subcontractor shall be completely responsible for protection and guarding the electrical system during the work so as to not create a hazard.

F. Comply with the Owner's requirements concerning work rules in existing buildings, especially with respect to noise, drilling and cutting, etc.

3-06 DEMOLITION, REMOVAL, AND RELOCATION WORK

A. The Electrical Subcontractor shall be responsible for disconnection and making dead of existing electrical equipment and wiring systems no longer needed within the renovated areas. Removal of existing fixtures, wiring, raceways, boxes, cabinets, devices, etc. within the renovated area, and store at a single location in the building where work is being done.

B. Where devices are to be removed, existing conductors shall be removed back to the last outlet which is to remain.

C. Existing raceways, boxes, and other electrical devices which serve equipment being removed shall be removed also. Where they are installed wither surface, concealed, or flush mounted within or on walls or in ceilings which are being removed, they shall be removed completely. Where they are in or on existing walls or in ceilings which are to remain, surface raceways and boxes shall be removed, but flush mounted raceways and boxes may be abandoned in place. If such remaining walls or ceilings are being refinished with a new surface material, the flush boxes shall be made to be back far enough from the surface so the new surfacing material may be installed without interruption. Where only a new finish such as paint is to be applied and the architect agrees, the existing boxes shall be covered with blank plates.

D. Any existing equipment that is to remain, made dead by removal of other equipment, shall be refed for a complete and operating system at no additional cost to the Owner.

E. All equipment removed shall be stockpiled in a location specified by the Owner. Any equipment not wanted by the Owner shall be removed from the site and properly disposed of by this Contractor. Provide certificates attesting to legal disposal of any electrical materials classified as hazardous.

F. The Contractor should expect that the installation of new construction and/or equipment both by the Electrical Subcontractors and other Contractors or Subcontractors may necessitate minor relocations of existing electrical equipment such as pull or junction boxes. The installation of new large size equipment such as ductwork and fan boxes takes precedence over existing small electrical equipment such as raceways, pull or junction boxes. Such equipment in the way of new construction or equipment shall be relocated as necessary without additional cost to the Owner.

****** END OF SECTION ******