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**SECTION 01 00 00
GENERAL REQUIREMENTS**

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**SECTION 01 00 00
GENERAL REQUIREMENTS**

1.1 GENERAL INTENTION

- A. Contractor shall completely prepare site for building operations, including general and custom construction, and furnish labor and materials and perform work for Specialty Work as part of the Renovate 7th Floor Building 1 project, Fresno, CA as required by drawings and specifications.
- B. Visits to the site by Bidders may be made only by appointment with the Medical Center Contracting Officer. A pre-bid tour date will be established.
- C. Offices of Teter LLC., as Architect-Engineers, will render certain technical services during construction. Such services shall be considered as advisory to the Government and shall not be construed as expressing or implying a contractual act of the Government without affirmations by Contracting Officer or his duly authorized representative.
- D. Before placement and installation of work subject to tests by testing laboratory retained by Department of Veterans Affairs, the Contractor shall notify the Project Engineer in sufficient time to enable testing laboratory personnel to be present at the site in time for proper taking and testing of specimens and field inspection. Such prior notice shall be not less than three work days unless otherwise designated by the Project Engineer.
 - 1. All tests to be paid for by the Contractor at no additional cost to VA.
- E. All employees of general contractor and subcontractors shall comply with VA security management program and obtain permission of the VA police, be identified by project and employer, and restricted from unauthorized access.
- F. Prior to commencing work, general contractor shall provide proof that a OSHA certified “competent person” (CP) (29 CFR 1926.20(b)(2)) will maintain a presence at the work site whenever the general or subcontractors are present.
- G. Training:
 - 1. All employees of general contractor or subcontractors shall have the 10-hour and the Superintendent and Safety Officer shall have the 30-hour OSHA certified Construction Safety course and /or other relevant competency training, as determined by VA CP with input from the ICRA team.
 - 2. Submit training records of all such employees for approval before the start of work.

1.2 STATEMENT OF BID ITEM(S)

- A. ITEM I, GENERAL CONSTRUCTION: Work includes general and custom construction: aluminum door frames and window frames with glazing; all-glass acid-etched double door; channel-glass wall; glass shower walls; custom countertops, shelving and casework; bathroom partitions; suspended gypsum, metal plank and acoustical panel ceilings; and certain other items. The scope of this project is Specialty Work as part of the VA renovation of the 7th floor of the main hospital - Building 1 – approximately 17,900 gross square feet.

1.3 SPECIFICATIONS AND DRAWINGS FOR CONTRACTOR

- A. AFTER AWARD OF CONTRACT, 1 CD-Rom of specifications and drawings will be furnished.
- B. Sets of drawings may be made by the contractor, at contractor's expense, from CD-Rom furnished by issuing office.

1.4 CONSTRUCTION SECURITY REQUIREMENTS

- A. Security Plan:
 - 1. The security plan defines both physical and administrative security procedures that will remain effective for the entire duration of the project.
 - 2. The General Contractor is responsible for assuring that all sub-contractors working on the project and their employees also comply with these regulations.
- B. Security Procedures:
 - 1. General Contractor's employees shall not enter the project site without appropriate badge. They may also be subject to inspection of their personal effects when entering or leaving the project site.
 - 2. Upon contract award, all key personnel shall be subject to the appropriate type of background investigation or screening per VA/VHA policy as delineated below, and must receive a favorable adjudication from the local VA facility or VA Security and Investigations Center (SIC) depending on the type of investigation/screening required. This requirement is also applicable to all subcontract personnel. If the investigation or screening is not completed prior to the start date of the contract, the Contractor will be responsible for the actions of those individuals they provide to perform work for VA.
 - 3. Contract personnel who previously received a favorable adjudication as a result of a Government background investigation or screening may be exempt from this contract requirement provided that they can provide documentation to support the previous adjudication. Proof of previous adjudication must be submitted by the Contractor to the VA Contracting Officer. Proof of previous adjudication is subject to verification. Some positions maybe subject to periodic re-investigation/screening.
 - a. Position Risk/Sensitivity – For all positions required under this contract, the position risk/sensitivity has been designated as: Low Risk/Non-Sensitive
 - b. Background Investigation/Screening – Since it is anticipated that the Contractor or contract personnel will be providing non-health care related services at a VA facility(s) for NO MORE than 180 days under a single contract or series of contracts and WILL NOT have access to VA information systems, the background investigation/screening commensurate with the requirements of this contract is: Background Screening - Includes Verification of Identity and Credentials/Employment History, if Necessary
 - c. Contractor Responsibilities:

- i. The Contractor shall prescreen all personnel to ensure they are able to read, write, speak, and understand the English language.
 - ii. Within five (5) business days of contract award, the Contractor shall submit or have their contract personnel provide any information or documentation required to conduct the background screening as requested by the local VA facility or VA Contracting Officer.
 - iii. Once the items requested in paragraph 3. b. above are received, VA will pre-screen these items for completeness, and forward them to the appropriate party(s) in order to initiate the required background investigation(s) or screening(s) within fourteen (14) calendar days of appointment. Only after the VA Contracting Officer notifies the Contractor that the background investigation(s) or screening(s) was initiated shall the Contractor be authorized to provide services under the contract. As previously stated, if the investigation or screening is not completed prior to the start date of the contract, the Contractor will be responsible for the actions of those individuals they provide to perform work for VA.
 - iv. The Contractor, when notified of an unfavorable determination by the Government, shall withdraw the contract person from consideration of working under the contract.
 - v. Failure to comply with these Contractor personnel security requirements may result in termination of the contract for default.
- d. Government Responsibilities:
- i. The COTR will responsible for performing any duties assigned by the VA Contracting Officer with regard to fulfilling the Contractor personnel security requirements described herein.
 - ii. Upon receipt, the local VA facility or VA SIC, depending on the type of investigation/screening required, will review the accuracy of the items requested in paragraph 3. b. above, and forward these items to OPM to conduct their portion of the background investigation or screening, as applicable.
 - iii. The requesting VA facility will pay for any portion of the investigation or screening conducted by OPM, if any.
 - iv. Depending on the type of investigation/screening required, the local VA facility or VA SIC will notify the VA Contracting Officer after adjudicating the results of the background investigation or screening.
 - v. The VA Contracting Officer will ensure that the required investigations or screening have been completed or are in the process of being requested.

Personnel Identity Verification (PIV) of Contractor Personnel

In accordance with FAR 52.204-9 and VA Directive 0735 – *Personal Identity Verification of Federal Employees and Contractors*, any contract person who requires routine physical access to a Federally-controlled facility and/or routine access to a Federally-controlled information system will be required to verify their identity prior to providing services under the contract. Prior to providing services under the contract, each contract person will be asked to provide up to two (2) forms of identification from the Accepted Identification Documentation List to the appropriate VA representative in order to obtain a proper VA-issued identification card. See the Accepted Identification Documentation List provided below. The COTR, or designee, will be responsible for sponsoring each contract person that requires a VA-issued identification card.

PIV ID Proofing Criteria

The following criteria must be met by all VA employees, contractors, and affiliates prior to being issued a PIV card or Temporary Identity Badge.

**Table of Accepted Identification (From Form I-9)
Last Update: June 5, 2006**

Picture ID From Federal or State Government	Non-Picture ID or Acceptable Picture ID not issued by Federal or State Government
<ul style="list-style-type: none"> · State-Issued Drivers License · State DMV-Issued ID Card · U.S. Passport · Military ID Card · Military Dependent's card · US Coast Guard Merchant Mariner Card · Foreign Passport with appropriate stamps · Permanent Resident Card or Alien Registration Card with a photograph (INS Form I-151 or I-551) · ID Card issued by federal or state Government agencies provided it includes a photograph. 	<ul style="list-style-type: none"> * Social Security Card * Certified Birth Certificate * State Voter Registration Card * Native American Tribal Document * Certificate of U.S. Citizenship (INS Form N-560 or N561) * Certificate of Naturalization (INS Form N-550 or N-570) * Certification of Birth Abroad Issued by the Department of State (Form FS-545 or Form DS-1350) * Permanent or Temporary resident card * ID Card issued by local government agencies provided it includes a Photograph or includes the following information: name, date of birth, gender, height, eye color, and address * Non-photo ID Card issued by federal or state government agencies provided it includes the following information: name, date of birth, gender, height, eye color, and address * School ID with photograph * Canadian Drivers License * US Citizen ID Card (Form I-179)

- e. Two forms of identification are required from the list of acceptable documents. At least one ID must be a state or federal government issued picture ID. Either of the following is accepted:
 - i. Two forms of identification from the left column (Federal or State Government issued picture ID).
 - ii. One form of identification from the left column (Federal or State Government issued picture ID) and one form from the right column (Non-Picture ID or Acceptable Picture ID not issued by Federal or State Government).
 - f. Any form of identification used for ID proofing may not be expired.
 - g. Hand written or photocopied documents are not accepted.
 - h. An ID issued before a legal name change (e.g. birth certificate or driver's license) can be presented as one form of ID if a legal document (e.g. marriage certificate/license or a court order) is also presented linking the previous name to the current legal name. The linking document has to display both the former and current legal names. Both documents must be valid and not expired. For example, a married woman may use both a certified copy of her birth certificate and marriage license as one form of ID as long as the marriage license has to display both her maiden name and married name.
 - i. The Applicant's name listed on the VA Form 0711, Request for One-VA Identification Card, must match the name on one of the IDs presented by the Applicant.
- 4. For working outside the "regular hours" as defined in the contract, The General Contractor shall give 3 days notice to the Contracting Officer so that security arrangements can be provided for the employees. This notice is separate from any notices required for utility shutdown described later in this section.
 - 5. No photography of VA premises is allowed without written permission of the Contracting Officer.
 - 6. VA reserves the right to close down or shut down the project site and order General Contractor's employees off the premises in the event of a national emergency. The General Contractor may return to the site only with the written approval of the Contracting Officer.
- C. Key Control:
- 1. The General Contractor shall provide duplicate keys and lock combinations to the Project Engineer for the purpose of security inspections of every area of project including tool boxes and parked machines and take any emergency action.
 - 2. The General Contractor shall turn over all permanent lock cylinders to the VA locksmith for permanent installation if applicable. See Section 08 71 00, DOOR HARDWARE and coordinate.

D. Document Control:

1. Before starting any work, the General Contractor/Sub Contractors shall submit an electronic security memorandum describing the approach to following goals and maintaining confidentiality of “sensitive information”.
2. The General Contractor is responsible for safekeeping of all drawings, project manual and other project information. This information shall be shared only with those with a specific need to accomplish the project.
3. Certain documents, sketches, videos or photographs and drawings may be marked “Law Enforcement Sensitive” or “Sensitive Unclassified”. Secure such information in separate containers and limit the access to only those who will need it for the project. Return the information to the Contracting Officer upon request.
4. These security documents shall not be removed or transmitted from the project site without the written approval of Contracting Officer.
5. All paper waste or electronic media such as CD’s and diskettes shall be shredded and destroyed in a manner acceptable to the VA.
6. Notify Contracting Officer and Site Security Officer immediately when there is a loss or compromise of “sensitive information”.

E. Motor Vehicle Restrictions

1. Vehicle parking is extremely limited both on and off-site. We typically only permit a couple of personal vehicles in the contractor’s staging area to be available for errands.
2. Separate parking permits are available for the VA rented parking lot about 2 blocks away from the VA campus. These are issued by the VA Police Service.

1.5 FIRE SAFETY

A. Applicable Publications: Publications listed below form part of this Article to extent referenced. Publications are referenced in text by basic designations only.

1. American Society for Testing and Materials (ASTM):
E84-2008..... Surface Burning Characteristics of Building Materials
2. National Fire Protection Association (NFPA):
10-2006 Standard for Portable Fire Extinguishers
30-2007 Flammable and Combustible Liquids Code
51B-2003..... Standard for Fire Prevention During Welding, Cutting and Other Hot Work
70-2007 National Electrical Code
241-2004 Standard for Safeguarding Construction, Alteration, and Demolition Operations
3. Occupational Safety and Health Administration (OSHA):
29 CFR 1926 Safety and Health Regulations for Construction

B. Fire Safety Plan: Establish and maintain a fire protection program in accordance with 29 CFR 1926. Prior to start of work, prepare a plan detailing project-specific fire safety

measures, including periodic status reports, and submit to Project Engineer for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES Prior to any worker for the contractor or subcontractors beginning work, they shall undergo a safety briefing provided by the general contractor's competent person per OSHA requirements. This briefing shall include information on the construction limits, VAMC safety guidelines, means of egress, break areas, work hours, locations of restrooms, use of VAMC equipment, etc. Documentation shall be provided to the Project Engineer that individuals have undergone contractor's safety briefing.

- C. Site and Building Access: Maintain free and unobstructed access to facility emergency services and for fire, police and other emergency response forces in accordance with NFPA 241.
- D. Separate temporary facilities, such as trailers, storage sheds, and dumpsters, from existing buildings and new construction by distances in accordance with NFPA 241. For small facilities with less than 6 m (20 feet) exposing overall length, separate by 3m (10 feet).
- E. Temporary Construction Partitions:
 - 1. Close openings in smoke barriers and fire-rated construction to maintain fire ratings. Seal penetrations with listed through-penetration firestop materials in accordance with Section 07 84 00, FIRESTOPPING if applicable.
- F. Temporary Heating and Electrical: Install, use and maintain installations in accordance with 29 CFR 1926, NFPA 241 and NFPA 70.
- G. Means of Egress: Do not block exiting for occupied buildings, including paths from exits to roads. Minimize disruptions and coordinate with Project Engineer and facility Safety Officer.
- H. Egress Routes for Construction Workers: Maintain free and unobstructed egress. Inspect daily. Report findings and corrective actions weekly to Project Engineer and facility Safety Officer.
- I. Fire Extinguishers: Provide and maintain extinguishers in construction areas and temporary storage areas in accordance with 29 CFR 1926, NFPA 241 and NFPA 10.
- J. Flammable and Combustible Liquids: Store, dispense and use liquids in accordance with 29 CFR 1926, NFPA 241 and NFPA 30.
- K. Existing Fire Protection: Do not impair automatic sprinklers, smoke and heat detection, and fire alarm systems, except for portions immediately under construction, and temporarily for connections. Provide fire watch for impairments more than 4 hours in a 24-hour period. Request interruptions in accordance with Article, OPERATIONS AND STORAGE AREAS, and coordinate with Project Engineer and facility Safety Officer. All existing or temporary fire protection systems (fire alarms, sprinklers) located in construction areas shall be tested as coordinated with the medical center. Parameters for the testing and results of any tests performed shall be recorded by the medical center and copies provided to the Project Engineer.
- L. Hot Work: Perform and safeguard hot work operations in accordance with NFPA 241 and NFPA 51B. Coordinate with Project Engineer. Obtain permits from facility Safety Officer at least 24 hours in advance. Designate contractor's responsible project-site fire prevention program manager to permit hot work.

- M. Fire Hazard Prevention and Safety Inspections: Inspect entire construction areas weekly. Coordinate with, and report findings and corrective actions weekly to Project Engineer and facility Safety Officer.
- N. Smoking: The Fresno VA campus is smoke-free. Smoking is prohibited in all areas except in the designated smoking shelter on the west side of the campus.
- O. Dispose of waste and debris in accordance with NFPA 241. Remove from buildings daily.
- P. Perform other construction, alteration and demolition operations in accordance with 29 CFR 1926.
- Q. If required, submit documentation to the Project Engineer that personnel have been trained in the fire safety aspects of working in areas with impaired structural or compartmentalization features.

1.6 OPERATIONS AND STORAGE AREAS

- A. The Contractor shall confine all operations (including storage of materials) on Government premises to areas authorized or approved by the Contracting Officer. The Contractor shall hold and save the Government, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance.
- B. Temporary buildings (e.g., storage sheds, shops, offices) and utilities may be erected by the Contractor only with the approval of the Contracting Officer and shall be built with labor and materials furnished by the Contractor without expense to the Government. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the Contracting Officer, the buildings and utilities may be abandoned and need not be removed.
- C. The Contractor shall, under regulations prescribed by the Contracting Officer, use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Contracting Officer. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any Federal, State, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.
- D. Working space and space available for storing materials shall be as determined by the Project Engineer.
- E. Workmen are subject to rules of Medical Center applicable to their conduct.
- F. Execute work so as to interfere as little as possible with normal functioning of Medical Center as a whole, including operations of utility services, fire protection systems and any existing equipment, and with work being done by others. Use of equipment and tools that transmit vibrations and noises through building structures, are not permitted in buildings that are occupied, during construction, jointly by patients or medical personnel, and Contractor's personnel, except as permitted by Project Engineer. Because this work will occur in a functioning hospital, consideration must be taken for our patients and staff. The east wing of the sixth floor below this project houses our 24-hour

Psychiatric Ward, a particularly sensitive patient population. Work that makes loud noise may need to occur within restricted hours, for example, not during bedtime hours. Also, the VA campus is surrounded by residential areas; therefore, community quiet hours must be enforced.

1. Do not store materials and equipment in other than assigned areas.
 2. Schedule delivery of materials and equipment to immediate construction working areas within buildings in use by Department of Veterans Affairs in quantities sufficient for not more than two work days. Provide unobstructed access to Medical Center areas required to remain in operation.
 3. Where access by Medical Center personnel to vacated portions of buildings is not required, storage of Contractor's materials and equipment will be permitted subject to fire and safety requirements.
- G. Phasing: To insure such executions, Contractor shall furnish the Project Engineer with a schedule of approximate timeframes within which the Contractor intends to accomplish work for each specific phase and area of site, building or portion thereof. In addition, Contractor shall notify the Project Engineer two weeks in advance of the proposed date of starting work in each specific area of site, building or portion thereof. Arrange such dates to insure accomplishment of this work in successive phases mutually agreeable to Project Engineer and Contractor.
- Phase 1 – Work shall occur upon completion of non-structural metal framing by others. Contractor shall take measurements for all work to be performed in subsequent phases of work and begin material procurement process.
- Phase 2 – Work shall occur upon completion of the sheetrock finish work by others. Install all glazing including all-glass double doors, curved channel-glass wall, reception window, one-way observation window, door side-lights, and glass and wood-panel transoms, fixed-glass windows, and related work including door and window frames. In Conference Room #47 install Armstrong “Metalworks” suspended acoustical ceiling. In Lobby Room #48 install Armstrong “Ultima” suspended acoustical ceiling panels and suspended gypsum ceilings at adjacent areas. In Chief of Staff Room #39 install Armstrong “Ultima” suspended acoustical ceiling panels.
- Phase 3 – Work shall occur after completion of interior paint work by others. Install custom countertops, shelving, check-in counters and casework. For countertops with sinks, the VA will provide the template for the sink cutout.
- Phase 4 - Work shall occur after completion of ceramic tile work by others. Install glass shower door walls and bathroom partitions.
- H. Contractor shall take all measures and provide all material necessary for protecting existing VA equipment and property in affected areas of construction against dust and debris, so that equipment and affected areas to be used in the Medical Center’s operations will not be hindered. Contractor shall permit access to Department of Veterans Affairs’ personnel and patients through other construction areas which serve as routes of access to such affected areas and equipment.
- I. Utilities Services: Maintain existing utility services for Medical Center at all times. Provide temporary facilities, labor, materials, equipment, connections, and utilities to

assure uninterrupted services. Where necessary to cut existing water, steam, gases, sewer or air pipes, or conduits, wires, cables, etc. of utility services or of fire protection systems and communications systems (including telephone), they shall be cut and capped at suitable places where shown; or, in absence of such indication, where directed by Project Engineer.

1. No utility service such as water, gas, steam, sewers or electricity, or fire protection systems and communications systems may be interrupted without prior approval of Project Engineer. Electrical work shall be accomplished with all affected circuits or equipment de-energized. When an electrical outage cannot be accomplished, work on any energized circuits or equipment shall not commence without the Medical Center Director's prior knowledge and written approval. Refer to specification Sections 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS, 27 05 11 REQUIREMENTS FOR COMMUNICATIONS INSTALLATIONS and 28 05 11, REQUIREMENTS FOR ELECTRONIC SAFETY AND SECURITY INSTALLATIONS for additional requirements.
 2. Contractor shall submit a request to interrupt any such services to Project Engineer, in writing, 5 work days in advance of proposed interruption. Request shall state reason, date, exact time of, and approximate duration of such interruption.
 3. Contractor will be advised (in writing) of approval of request, or of which other date and/or time such interruption will cause least inconvenience to operations of Medical Center. Interruption time approved by Medical Center may occur at other than Contractor's normal working hours.
 4. Major interruptions of any system must be requested, in writing, at least 15 calendar days prior to the desired time and shall be performed as directed by the Project Engineer.
 5. In case of a contract construction emergency, service will be interrupted on approval of Project Engineer. Such approval will be confirmed in writing as soon as practical.
 6. Whenever it is required that a connection fee be paid to a public utility provider for new permanent service to the construction project, for such items as water, sewer, electricity, gas or steam, payment of such fee shall be the responsibility of the Government and not the Contractor.
- J. Abandoned Lines: All service lines such as wires, cables, conduits, ducts, pipes and the like, and their hangers or supports, which are to be abandoned but are not required to be entirely removed, shall be sealed, capped or plugged. The lines shall not be capped in finished areas, but shall be removed and sealed, capped or plugged in ceilings, within furred spaces, in unfinished areas, or within walls or partitions; so that they are completely behind the finished surfaces.
- K. To minimize interference of construction activities with flow of Medical Center traffic, comply with the following:
1. Keep roads, walks and entrances to grounds, to parking and to occupied areas of buildings clear of construction materials, debris and standing construction equipment and vehicles. Wherever excavation for new utility lines cross existing roads, at least one lane must be open to traffic at all times.
 2. Method and scheduling of required cutting, altering and removal of existing roads, walkways and entrances must be approved by the Project Engineer.

- L. Coordinate the work for this contract with other construction operations as directed by Project Engineer. This includes the scheduling of traffic and the use of roadways, as specified in Article, USE OF ROADWAYS.

1.7 INFECTION PREVENTION MEASURES

- A. Implement the requirements of VAMC's Infection Control Risk Assessment (ICRA) team. ICRA Group may monitor dust in the vicinity of the construction work and require the Contractor to take corrective action immediately if the safe levels are exceeded.
- B. Establish and maintain a dust control program as part of the contractor's infection preventive measures in accordance with the guidelines provided by ICRA Construction Safety Committee. Prior to start of work, prepare a plan detailing project-specific dust protection measures, including periodic status reports, and submit to Project Engineer and Facility ICRA team for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
 - 1. All personnel involved in the construction or renovation activity shall be educated and trained in infection prevention measures established by the medical center.
- C. In general, the following preventive measures shall be adopted during construction to keep down dust and prevent mold.
 - 1. Dampen debris and soil to keep down dust and provide temporary construction partitions/barriers to avoid dust migration where directed by Project Engineer. Coordinate, as required, with the local San Joaquin Valley United Air Pollution Control District.
- D. Final Cleanup:
 - 1. Upon completion of project, or as work progresses, remove all construction debris from above ceiling, vertical shafts and utility chases that have been part of the construction.
 - 2. Perform HEPA vacuum cleaning of all surfaces in the construction area. This includes walls, ceilings, cabinets, furniture (built-in or free standing), partitions, flooring, etc.
 - 3. All new air ducts shall be cleaned prior to final inspection.

1.8 ALTERATIONS

- A. Survey: Before any work is started, the Contractor shall make a thorough survey with the Project Engineer of areas of buildings in which alterations occur and areas which are anticipated routes of access, and furnish a report, signed by both, to the Contracting Officer. This report shall list by rooms and spaces:
 - 1. Existing condition and types of resilient flooring, doors, windows, walls and other surfaces not required to be altered throughout affected areas of building.
 - 2. Existence and conditions of items such as plumbing fixtures and accessories, electrical fixtures, equipment, venetian blinds, shades, etc., required by drawings to be either reused or relocated, or both.

3. Shall note any discrepancies between drawings and existing conditions at site.
 4. Shall designate areas for working space, materials storage and routes of access to areas within buildings where alterations occur and which have been agreed upon by Contractor and Project Engineer.
- B. Any items required by drawings to be either reused or relocated or both, found during this survey to be nonexistent, or in opinion of Project Engineer, to be in such condition that their use is impossible or impractical, shall be furnished and/or replaced by Contractor with new items in accordance with specifications which will be furnished by Government. Provided the contract work is changed by reason of this subparagraph B, the contract will be modified accordingly, under provisions of clause entitled "DIFFERING SITE CONDITIONS" (FAR 52.236-2) and "CHANGES" (FAR 52.243-4 and VAAR 852.236-88).
- C. Re-Survey: Thirty days before expected partial or final inspection date, the Contractor and Project Engineer together shall make a thorough re-survey of the areas of buildings involved. They shall furnish a report on conditions then existing, of resilient flooring, doors, windows, walls and other surfaces as compared with conditions of same as noted in first condition survey report:
1. Re-survey report shall also list any damage caused by Contractor to such flooring and other surfaces, despite protection measures; and, will form basis for determining extent of repair work required of Contractor to restore damage caused by Contractor's workmen in executing work of this contract.
- D. Protection: Provide the following protective measures:
1. Wherever existing roof surfaces are disturbed they shall be protected against water infiltration. In case of leaks, they shall be repaired immediately upon discovery.
 2. Temporary protection against damage for portions of existing structures and grounds where work is to be done, materials handled and equipment moved and/or relocated.
 3. Protection of interior of existing structures at all times, from damage, dust and weather inclemency. Wherever work is performed, floor surfaces that are to remain in place shall be adequately protected prior to starting work, and this protection shall be maintained intact until all work in the area is completed.

1.9 DISPOSAL AND RETENTION

- A. Materials and equipment accruing from work removed and from demolition of buildings or structures, or parts thereof, shall be disposed of as follows:
1. Reserved items which are to remain property of the Government are identified by attached tags or noted on drawings or in specifications as items to be stored. Items that remain property of the Government shall be removed or dislodged from present locations in such a manner as to prevent damage which would be detrimental to re-installation and reuse. Store such items where directed by Project Engineer.
 2. Items not reserved shall become property of the Contractor and be removed by Contractor from Medical Center.
 3. Items of portable equipment and furnishings located in spaces in which work is to be done under this contract shall remain the property of the Government. When spaces

are vacated by the Department of Veterans Affairs during the alteration period, such items which are NOT required by drawings and specifications to be either relocated or reused will be removed by the Government in advance of work to avoid interfering with Contractor's operation.

1.10 PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS

- A. The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work sites, which are not to be removed and which do not unreasonably interfere with the work required under this contract. The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during contract performance, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.
- B. The Contractor shall protect from damage all existing improvements and utilities at or near the work site and on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. The Contractor shall repair any damage to those facilities, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

(FAR 52.236-9)

- C. Refer to Section 01 57 19, TEMPORARY ENVIRONMENTAL CONTROLS, for additional requirements on protecting vegetation, soils and the environment. Refer to Articles, "Alterations", "Restoration", and "Operations and Storage Areas" for additional instructions concerning repair of damage to structures and site improvements.

1.11 RESTORATION

- A. Remove, cut, alter, replace, patch and repair existing work as necessary to install new work. Except as otherwise shown or specified, do not cut, alter or remove any structural work, and do not disturb any ducts, plumbing, steam, gas, or electric work without approval of the Project Engineer. Existing work to be altered or extended and that is found to be defective in any way, shall be reported to the Project Engineer before it is disturbed. Materials and workmanship used in restoring work shall conform in type and quality to that of original existing construction, except as otherwise shown or specified.
- B. Upon completion of contract, deliver work complete and undamaged. Existing work (walls, ceilings, partitions, floors, mechanical and electrical work, lawns, paving, roads, walks, etc.) disturbed or removed as a result of performing required new work, shall be patched, repaired, reinstalled, or replaced with new work, and refinished and left in as good condition as existed before commencing work.
- C. At Contractor's own expense, Contractor shall immediately restore to service and repair any damage caused by Contractor's workmen to existing piping and conduits, wires,

cables, etc., of utility services or of fire protection systems and communications systems (including telephone) which are indicated on drawings and which are not scheduled for discontinuance or abandonment.

- D. Expense of repairs to such utilities and systems not shown on drawings or locations of which are unknown will be covered by adjustment to contract time and price in accordance with clause entitled "CHANGES" (FAR 52.243-4 and VAAR 852.236-88) and "DIFFERING SITE CONDITIONS" (FAR 52.236-2) of Section 00 72 00, GENERAL CONDITIONS.
- E. New construction: Contractor shall protect all new construction from damage during continuance of the work. As work proceeds, contractor shall take precautions to protect all work including work done by the VA in-house construction crew. Any damaged work shall be repaired or replaced in kind and of similar quality as determined by the Contracting Officer.

1.12 AS-BUILT DRAWINGS

- A. The contractor shall maintain two full size sets of as-built drawings which will be kept current during construction of the project, to include all contract changes, modifications and clarifications.
- B. All variations shall be shown in the same general detail as used in the contract drawings. To insure compliance, as-built drawings shall be made available for the Project Engineer's review, as often as requested.
- C. Contractor shall deliver two approved completed sets of red-lined as-built drawings to the Project Engineer within 15 calendar days after each completed phase and after the acceptance of the project by the Project Engineer.
- D. Paragraphs A, B, & C shall also apply to all shop drawings.

1.13 USE OF ROADWAYS

- A. For hauling, use only established public roads and roads on Medical Center property and, when authorized by the Project Engineer, such temporary roads which are necessary in the performance of contract work. Temporary roads shall be constructed by the Contractor at Contractor's expense. When necessary to cross curbing, sidewalks, or similar construction, they must be protected by well-constructed bridges.

1.14 TEMPORARY USE OF EXISTING ELEVATORS

- A. Use of existing elevators for handling building materials and Contractor's personnel will be permitted subject to following provisions:
 - 1. Contractor makes all arrangements with the Project Engineer for use of elevators. The Project Engineer will ascertain that elevators are in proper condition. Personnel for operating elevators will not be provided by the Department of Veterans Affairs.
 - 2. Contractor covers and provides maximum protection of following elevator components:
 - a. Entrance jambs, heads soffits and threshold plates.

- b. Entrance columns, canopy, return panels and inside surfaces of car enclosure walls.
 - c. Finish flooring.
3. Government will accept hoisting ropes of elevator and rope of each speed governor if they are worn under normal operation. However, if these ropes are damaged by action of foreign matter such as sand, lime, grit, stones, etc., during temporary use, they shall be removed and replaced by new hoisting ropes at the contractor's expense.

1.15 TEMPORATY TOILETS

- A. Contractor may have for use of Contractor's workmen, such toilet accommodations as may be assigned to Contractor by Medical Center. Contractor shall keep such places clean and be responsible for any damage done thereto by Contractor's workmen. Failure to maintain satisfactory condition in toilets will deprive Contractor of the privilege to use such toilets.

1.16 AVAILABILITY AND USE OF UTILITY SERVICES

- A. The Government shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. The amount to be paid by the Contractor for chargeable electrical services shall be the prevailing rates charged to the Government. The Contractor shall carefully conserve any utilities furnished without charge.
- B. The Contractor, at Contractor's expense and in a workmanlike manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines, and all meters required to measure the amount of electricity used for the purpose of determining charges. Before final acceptance of the work by the Government, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia.
- C. Contractor shall install meters, if required, at Contractor's expense and furnish the Medical Center a monthly record of the Contractor's usage of electricity as hereinafter specified.
- D. Heat: Furnish temporary heat necessary to prevent injury to work and materials through dampness and cold. Use of open salamanders or any temporary heating devices which may be fire hazards or may smoke and damage finished work, will not be permitted. Maintain minimum temperatures as specified for various materials:
- 1. Obtain heat by connecting to Medical Center heating distribution system.
 - a. Steam is available at no cost to Contractor.
- E. Electricity (for Construction and Testing): Furnish all temporary electric services.
- 1. Obtain electricity by connecting to the Medical Center electrical distribution system. The Contractor shall meter and pay for electricity required for electric cranes and hoisting devices, electrical welding devices and any electrical heating devices providing temporary heat. Electricity for all other uses is available at no cost to the Contractor.

- F. Water (for Construction and Testing): Furnish temporary water service.
 - 1. Obtain water by connecting to the Medical Center water distribution system. Provide reduced pressure backflow preventer at each connection. Water is available at no cost to the Contractor.
 - 2. Maintain connections, pipe, fittings and fixtures and conserve water-use so none is wasted. Failure to stop leakage or other wastes will be cause for revocation (at Project Engineer's discretion) of use of water from Medical Center's system.
- G. Steam: Furnish steam system for testing required in various sections of specifications.
 - 1. Obtain steam for testing by connecting to the Medical Center steam distribution system. Steam is available at no cost to the Contractor.
 - 2. Maintain connections, pipe, fittings and fixtures and conserve steam-use so none is wasted. Failure to stop leakage or other waste will be cause for revocation (at Project Engineer's discretion), of use of steam from the Medical Center's system.
- H. Fuel: Natural and LP gas and burner fuel oil required for boiler cleaning, normal initial boiler-burner setup and adjusting, and for performing the specified boiler tests will be furnished by the Government. Fuel required for prolonged boiler-burner setup, adjustments, or modifications due to improper design or operation of boiler, burner, or control devices shall be furnished by the Contractor at Contractor's expense.

1.17 GOVERNMENT-FURNISHED PROPERTY

- A. The Government shall deliver to the Contractor, the Government-furnished property shown on the drawings and/or per the deduct alternatives.
- B. Equipment furnished by Government to be installed by Contractor will be furnished to Contractor at the Medical Center.
- C. Storage space for equipment will be provided by the Government and the Contractor shall be prepared to unload and store such equipment therein upon its receipt at the Medical Center.
- D. Notify Contracting Officer in writing, 60 days in advance, of date on which Contractor will be prepared to receive equipment furnished by Government. Arrangements will then be made by the Government for delivery of equipment.
 - 1. Immediately upon delivery of equipment, Contractor shall arrange for a joint inspection thereof with a representative of the Government. At such time the Contractor shall acknowledge receipt of equipment described, make notations, and immediately furnish the Government representative with a written statement as to its condition or shortages.
 - 2. Contractor thereafter is responsible for such equipment until such time as acceptance of contract work is made by the Government.
- E. Equipment furnished by the Government will be delivered in a partially assembled (knock down) condition in accordance with existing standard commercial practices, complete with all fittings, fastenings, and appliances necessary for connections to respective services installed under contract. All fittings and appliances (i.e., couplings, ells, tees, nipples, piping, conduits, cables, and the like) necessary to make the connection between the Government furnished equipment item and the utility stub-up

shall be furnished and installed by the contractor at no additional cost to the Government.

- F. Completely assemble and install the Government furnished equipment in place ready for proper operation in accordance with specifications and drawings.
- G. Furnish supervision of installation of equipment at construction site by qualified factory trained technicians regularly employed by the equipment manufacturer.

- - - E N D - - -

SECTION 055000
METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Steel framing and supports for countertops.
 - 2. Steel framing and supports for mechanical and electrical equipment.
 - 3. Steel framing and supports for applications where framing and supports are not specified in other Sections.
- B. Related Sections include the following:
 - ~~1. Division 05 Section "Structural Steel Framing."~~
 - 2. Division 09 Section "Gypsum Board" for metal backing anchoring railings.

1.3 SUBMITTALS

- A. Product Data: For the following:
 - 1. Paint products.
- B. Shop Drawings: Show fabrication and installation details for metal fabrications.
 - 1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
 - 2. Provide templates for anchors and bolts specified for installation under other Sections.
- C. Welding certificates.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Fabricator of products.
- B. Welding: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1, "Structural Welding Code--Steel."

1.5 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication and indicate measurements on Shop Drawings.
 - 1. Provide allowance for trimming and fitting at site.

1.6 COORDINATION

- A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- B. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.

2.2 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

2.3 FERROUS METALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Steel Tubing: ASTM A 500, cold-formed steel tubing.
- C. Steel Pipe: ASTM A 53/A 53M, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.
 - 1. Provide galvanized finish for exterior installations where indicated.

2.4 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at exterior walls. Provide stainless-steel fasteners for fastening aluminum. Select fasteners for type, grade, and class required.

2.5 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Shop Primers: Provide primers that comply with Division 09 painting Sections.
- C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.6 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form exposed work true to line and level with accurate angles and surfaces and straight edges.
- E. Weld corners and seams continuously to comply with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts, unless otherwise indicated. Locate joints where least conspicuous.
- G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

- H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- I. Provide for anchorage of type indicated in drawings.
- J. Weld connections to comply with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. Weld exposed corners and seams continuously, unless otherwise indicated.
 - 5. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

2.7 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.
 - 1. Fabricate units from slotted channel framing where indicated.
 - 2. Furnish inserts if units are installed after concrete is placed.

2.8 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish metal fabrications after assembly.

2.9 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:
 - 1. ASTM A 123/A 123M, for galvanizing steel and iron products.
 - 2. ASTM A 153/A 153M, for galvanizing steel and iron hardware.
- B. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications.

- C. Shop Priming: Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes and those to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
 - 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Field Welding: Comply with the following requirements:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag bolts, wood screws, and other connectors.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

3.3 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
 - 1. Apply by brush or spray to provide a minimum 2.0-mil (0.05-mm) dry film thickness.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION

SECTION 064116
PLASTIC LAMINATE CASEWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Plastic-laminate cabinets.
 - 2. Closet and utility shelving.
- B. Related Sections include the following:
 - 1. Division 06 Section "Solid Surface Counter Tops" for solid surface material counter tops.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated, including cabinet hardware and accessories.
 - 1. Provide documentation VOC content for adhesives.
 - 2. Provide documentation that wood panel products and bonding adhesives contain no urea formaldehyde.
- B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
 - 1. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
 - 2. Show locations and sizes of cutouts and holes for plumbing fixtures and other items installed in architectural woodwork.
 - 3. Apply WI-certified compliance label to first page of Shop Drawings.
- C. Samples for Initial Selection:
 - 1. Plastic laminates.
 - 2. PVC edge material.
- D. Samples for Verification:

1. Plastic Laminate and Edge Banding: One sample, 8 by 10 inches, for each type, color, pattern, and surface finish with sample applied to core material and specified edge material applied to 1 edge.
 2. Cabinet hardware, one unit for each type and finish of the following:
 - a. Pulls.
 - b. Hinges.
 - c. Catches.
 - d. Locks.
 - e. Shelf supports.
- E. Woodwork Quality Standard Compliance Certificates: WI-certified compliance certificates.

1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: Fabricator shall employ skilled workers who are familiar with Woodwork Institute fabrication requirements and shall be capable of custom-fabricating products similar to those required for this Project and whose products have a record of successful in-service performance.
- B. Installer Qualifications: Installer shall be familiar with Woodwork Institute installation procedures and requirements and has experience installing products similar to those required for this Project and have a record of successful in-service performance.
- C. Quality Standard: Unless otherwise indicated, comply with the Woodwork Institute (WI) "Architectural Woodwork Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.
1. Provide WI-certified compliance labels and certificates indicating that woodwork, including installation, complies with requirements of grades specified.
- D. Regulatory Requirements, Seismic Design: Comply with requirements of the California Building Code, Part 2, Volume 2, Chapter 16A (State Chapter) "Structural Design Requirements," Section 1613A.1, ASCE Section 7-05, Table 13.5-1, and WI construction methods for seismic design for schools and hospitals.
- E. Regulatory Requirements, Accessibility: Casework shall comply with accessibility requirements of the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) 2010 ADA Standards for Accessible Design and with the 2013 California Building Code, Chapter 11B, "Accessibility to Public Buildings, Public Accommodations, Commercial Buildings, and Public Housing." Accessible casework shall comply with the following:
1. Counter Top Heights: Counter top heights shall not be more than 34 inches above the floor surface; where self-rimming sinks or lavatories are installed in counter tops, counter top heights shall be such that the top rim of the sink is not more than 34 inches above the finished floor.
 2. Knee Space: Vertical clearance of not less than 27 inches above the floor with a minimum width of 30 inches.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver casework until painting and similar operations that could damage casework have been completed in installation areas. If casework must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.
 - 2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.7 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Provide materials that comply with requirements of WI's quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.
- B. Wood Panel Products: Products containing no urea formaldehyde complying with the following:
 - 1. Hardboard: AHA A135.4.
 - 2. Medium-Density Fiberboard: ANSI A208.2, Grade MD.
 - 3. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.
 - 4. Softwood Plywood: DOC PS 1, Medium Density Overlay.

- C. Thermoset Decorative Panels: Particleboard or medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.
 - 1. Provide PVC or polyester edge banding complying with LMA EDG-1 on components with exposed or semi-exposed edges.
- D. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard.
 - 1. Manufacturer: Subject to compliance with requirements, provide high-pressure decorative laminates by one of the following:
 - a. Formica Corporation.
 - b. Nevamar Company, LLC; Decorative Products Div.
 - c. Wilsonart International; Div. of Premark International, Inc.

2.2 CABINET HARDWARE AND ACCESSORIES

- A. Butt Hinges: 2-3/4-inch, 5-knuckle steel hinges made from 0.095-inch thick metal.
 - 1. Rockford Process Control (RCP) RP-851 Series.
- B. Pulls: Stainless steel bent wire pulls, 4 inches long, 5/16 inch in diameter, 1-1/2 inch projection.
 - 1. Doug Mockett and Company, Inc.; DP57B.
- C. Catches:
 - 1. Magnetic catches, Knape & Vogt, KV-916.
 - 2. Friction Catch: Bainbridge, FlexaCatch 2120.
 - 3. Slide Bolt: Quality Hardware.
- D. Drawer Suspension:
 - 1. Grass 6610, 100 lb.
 - 2. Blum, Metabox 3/4 extension, 75 lb. dynamic, 100 lb. static.
- E. Shelf Standards:
 - 1. LD 32 mm line boring system with 5 mm steel pins for shelving less than 36 inches wide.
 - 2. KV255 with KV256 supports for shelving 36 inches wide and wider.
 - 3. Provide seismic restraint pins in back row or notch shelf.
- F. Cabinet Door Locks: National C-8173-915KA-26, pin tumbler.
- G. Cabinet Drawer Locks: National C-8178-915KA-26, pin tumbler.

- H. Grommets for Cable Passage through Countertops: Molded-plastic grommet with minimum 1-1/2-inch diameter cord opening with slotted cap, black.
 - 1. Product: Subject to compliance with requirements, provide "SG series" by Doug Mockett & Company, Inc.
- I. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated. Finish of cabinet hardware shall match exposed door hardware of the room in which casework is located; door hardware is specified in Division 8 Section "Door Hardware."
 - 1. Satin Chromium Plated: BHMA 626 for brass or bronze base; BHMA 652 for steel base.
 - 2. Satin Stainless Steel: BHMA 630.
- J. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

2.3 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.
- C. Adhesives, General: Adhesives shall not contain urea formaldehyde.
- D. Adhesive for Bonding Plastic Laminate: As recommended by fabricator or manufacture. Use clear types where glue lines will be exposed.

2.4 FABRICATION, GENERAL

- A. Interior Woodwork Grade: Comply with Architectural Woodwork Standards quality standards indicated.
- B. Seismic Design: Fabrication shall comply with referenced seismic design requirements.
- C. Accessibility Requirements: Coordinate fabrication and comply with referenced accessibility requirements with particular attention to countertop heights where sinks are to be installed in counter tops, and knee clearances at work counters.
- D. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.

- E. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
- F. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
 - 1. Seal edges of openings in countertops with a coat of varnish.

2.5 PLASTIC-LAMINATE CABINETS

- A. Grade: Custom Grade except where Premium Grade requirements indicated, comply with requirements of Architectural Woodwork Standards Section 10 "Casework."
- B. Fabricate casework as multiple self-supporting units rigidly joined together.
- C. Construction Type: Type A, Frameless.
- D. Interface Style: Style 1, flush overlay.
- E. Laminate Cladding for Exterior and Interior Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
 - 1. Horizontal Surfaces Other Than Tops: Grade HGL (1.0 mm).
 - 2. Postformed Surfaces: Grade HGP (1.0 mm).
 - 3. Vertical Surfaces: Grade VGS (0.7 mm).
 - 4. Edges: PVC edge banding, 0.12 inch (3 mm) thick, matching laminate in color, pattern, and finish.
- F. Materials for Semi-exposed Surfaces:
 - 1. Surfaces Other Than Drawer Bodies: Thermoset decorative panels.
 - a. Edges of Plastic-Laminate Shelves: PVC edge banding, 0.12 inch (3 mm) thick, matching laminate in color, pattern, and finish.
 - b. For backs of doors and other semi-exposed backs of panels with exposed plastic-laminate surfaces, provide surface of high-pressure decorative laminate, Grade VGS and matching color of exposed surfaces.
 - 2. Drawer Sides and Backs: Thermoset decorative panels.
 - 3. Drawer Bottoms: Thermoset decorative panels.
- G. Concealed Backs of Panels with Exposed Plastic Laminate Surfaces: High-pressure decorative laminate, Grade BKL.
- H. Security Dust Panels: Provide 3/4-inch thick security dust panels above lockable drawers, unless located directly under tops.

- I. Shelves: Adjustable and as follows:
 - 1. Design loading: 50 psf.
 - 2. Maximum width: 4 feet.
 - 3. Thickness: 3/4 inch minimum, shelves 30 inches or more in width shall be 1-inch minimum thickness.

- J. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 - 1. As selected by Architect from laminate manufacturer's full range in the following categories:
 - a. Solid colors, matte finish.
 - b. Wood grains, matte finish.
 - c. Patterns, matte finish.

2.6 CLOSET AND UTILITY SHELVING

- A. Grade: Custom.
- B. Shelf Material: 3/4-inch thermoset decorative panel with 3 mm PVC edge banding.
- C. Cleats: 3/4-inch solid lumber.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.
- B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

- A. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.
- B. Assemble woodwork and complete fabrication at Project site to comply with requirements for fabrication in Part 2, to extent that it was not completed in the shop.
- C. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches.
- D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

- E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.
- F. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
 - 1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
 - 2. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches o.c. with No. 14 truss-head sheet metal screws through metal backing or metal framing behind wall finish.

3.3 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean woodwork on exposed and semi-exposed surfaces.

END OF SECTION

SECTION 064118
SOLID SURFACE COUNTER TOPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Solid plastic surface counter tops.
- B. Related Sections include but are not limited to the following:
 - 1. Division 05 Section "Metal Fabrications" for fabricated metal support brackets.
 - 2. Division 06 Section Plastic Laminate Casework" for plastic laminate countertops.
 - 3. ~~Division 22 Sections as applicable to plumbing fixtures and trim.~~

1.3 SUBMITTALS

- A. Product Data: For solid-surfacing material.
- B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
 - 1. Show details full size.
 - 2. Show locations and sizes of blocking including concealed blocking and reinforcement specified in other Sections.
 - 3. Show locations and sizes of cutouts and holes for plumbing fixtures and other items.
 - 4. Apply Woodwork Institute certified compliance label to first page of Shop Drawings.
- C. Samples for Initial Selection: Manufacturer's color charts or samples.
- D. Samples for Verification: Solid-surfacing materials, 6 inches square.
- E. Woodwork Quality Standard Compliance Certificates: WI-certified compliance certificates.
- F. Qualification Data: For Installer and fabricator.

1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance
- B. Installer Qualifications: Fabricator of products.
- C. Quality Standard: Unless otherwise indicated, comply with Woodwork Institute's "Architectural Woodwork Standards" for grades indicated for construction, installation, and other requirements.
 - 1. Provide WI-certified compliance labels and certificates indicating that counter tops, including installation, complies with requirements of grades specified.
 - 2. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with such selections and requirements in addition to the quality standard.
- D. Regulatory Requirements, Accessibility: Counter top heights shall comply with the 2010 ADA Standards for Accessible Design and with the 2013 California Building Code, Chapter 11B, "Accessibility to Public Buildings, Public Accommodations, Commercial Buildings, and Public Housing." Accessible counter tops shall comply with the following:
 - 1. Counter Top Heights: Not more than 34 inches above the floor surface; where self rimming sinks or lavatories are installed in counter tops, counter top height shall be such that the top rim of the sink is not more than 34 inches above the finished floor.
 - 2. Knee Space: Vertical clearance of not less than 27 inches above the floor with a minimum width of 30 inches.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver solid surface counter tops until painting and similar operations that could damage counter tops have been completed in installation areas. If counter tops must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install solid surfacing materials until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F and relative humidity between 45 and 65 percent during the remainder of the construction period.
- B. Field Measurements: Where work is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support counter tops by field measurements before being enclosed, and indicate measurements on Shop Drawings.
2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating counter tops without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.7 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, reinforcements, and other related units of Work specified in other Sections to ensure that interior solid surface counter tops can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 SOLID SURFACE MATERIAL COUNTER TOPS

- A. General: Comply with Woodwork Institute, Architectural Woodwork Standards, Section 11 "Counter Tops."
 1. Grade: Premium.
- B. Solid-Surfacing Material: Homogeneous solid sheets of filled plastic resin complying with ISSFA-2.
 1. Basis of Design: Drawings and specifications are based on the following:
 - a. E. I. du Pont de Nemours and Company; Corian.
 - 1) Subject to compliance with requirements, provide the specified product or equivalent products by one of the following:
 - a) Avonite, Inc.
 - b) Formica Corporation.
 - c) Wilsonart International; Div. of Premark International, Inc.
- C. Solid-Surfacing-Material Thickness: 1/2 inch.
- D. Colors, Patterns, and Finishes: As indicated by manufacturer's designations.
 1. Each counter top shall be of a single color/pattern selection.
 2. Color/pattern selections shall include those shown on drawings for the Project.
- E. Fabricate tops in one piece, unless otherwise indicated. Comply with solid-surfacing-material manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing.

1. Front Edge: Built-up waterfall edge, 1 inch high, shop applied.
2. Splash: Shop-applied back splash complying with the following:
 - a. Height: 4 inches.
 - b. Style: Square, butt to countertop.
 - c. Top Edge: Square.
 - d. Side Splashes: Field applied square splash.

F. Drill holes in countertops for plumbing fittings and accessories in shop.

2.2 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. Wood Products: Comply with the following:

1. Medium-Density Fiberboard: ANSI A208.2, Grade MD, made with binder containing no urea formaldehyde.
2. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.
3. Softwood Plywood: DOC PS 1, Medium Density Overlay.

B. Silicone Sealant: Single-component, nonsag, neutral-curing silicone joint sealant, ASTM C 920, Type S, Grade NS, Class 100/50, for Use NT.

1. Color: Match counter top.

C. Grommets for Cable Passage through Countertops: 2-inch outside diameter, black, molded-plastic grommets and matching plastic caps with slot for wire passage.

1. Product: Subject to compliance with requirements, provide "SG series" by Doug Mockett & Company, Inc.

D. Adhesives, General: Do not use adhesives that contain urea formaldehyde.

E. VOC Limits for Installation Adhesives and Glues: Use installation adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Wood Glues: 30 g/L.
2. Contact Adhesive: 250 g/L.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. Casework and supports shall be plumb and level.

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

3.2 PREPARATION

- A. Before installation, condition counter tops to required environmental conditions specified for installation areas.

3.3 INSTALLATION

- A. Install counter tops to comply with requirements for the same grade specified in Part 2 for fabrication of type of counter tops involved.
- B. Scribe and cut counter tops to fit adjoining work.
- C. Adhere counter tops to casework sub-tops as recommended in writing by solid surfacing manufacturer:
 - 1. Align adjacent solid-surfacing-material countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
 - 2. Install countertops with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
 - 3. Caulk space between backsplash and wall with sealant specified in Division 07 Section "Joint Sealants."

3.4 CLEANING AND REPAIR

- A. Repair damaged and defective work, where possible, to eliminate functional and visual defects; replace Work that cannot be repaired.
- B. Clean exposed and semiexposed surfaces.

END OF SECTION

SECTION 081216
INTERIOR ALUMINUM FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Knock-down, slip-on type interior aluminum frames for doors and windows.

- B. Related Sections:

- 1. Division 08 Section "Flush Wood Doors" for wood doors.
- 2. Division 08 Section "All-Glass Entrances" for all-glass lobby entry door.
- 3. Division 08 Section "Door Hardware" for hardware for doors.
- 4. Division 08 Section "Glazing" for glazing for windows.
- 5. Division 08 Section "Linear Glass Wall Assembly" for channel glass wall.

1.3 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for aluminum.

- B. Shop Drawings: Submit drawings for fabrication and installation of interior aluminum frames, including the following information:

- 1. Details of construction, joints, and connections.
- 2. Elevations of each opening type.
- 3. Conditions at openings, including coordination with glass and glazing requirements.
- 4. Location and installation requirements of door hardware and reinforcements.
- 5. Schedule of openings coordinated with numbering system used in contract documents.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain interior aluminum frames from a single source from a single manufacturer.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver products in manufacturer's original unopened packaging to provide protection during transit and Project-site storage. Store in accordance with manufacturer's written instructions and protect from damage.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Do not begin installation of aluminum frames until area of work has been completely enclosed and interior is protected from the elements.
- B. Maintain temperature and humidity in areas of installation within reasonable limits, as close as possible to final occupancy standards. If necessary, provide artificial heating, cooling, and ventilation to maintain required environmental conditions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design Product: Drawings and Specifications are based on the following:
 - 1. Western Integrated Materials, Inc.
 - a. Subject to compliance with requirements, provide products indicated or comparable products by:
 - 1) Modulex, Inc.

2.2 MATERIALS

- A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
 - 1. Aluminum Extrusions: ASTM B221, Alloy 6063 T5.

2.3 ALUMINUM FRAMING SYSTEMS

- A. Framing Members, General: Manufacturer's standard extruded-aluminum knock-down, slip-on type door and window framing system designed for installation over gypsum board sheathed walls.
 - 1. Member Thickness: 0.062 inch minimum.
 - 2. Throat Size: Manufacturer's standard sizes for wall thickness required for Project conditions. Throat sizes available in 1/8 to 1/4 inch increments from 3-1/2 to 8 inches overall width.
 - 3. Finish: Clear anodized.

- B. Door Framing: Profiles having integral stops and designed for 1-3/4 inch thick doors.
 - 1. Door Mute: Manufacturer's standard heavy duty vinyl mute at all door frames.
- C. Window Framing: Profiles designed for 1/4 inch single thickness glazing, flush glazed, with glazing located in the center of the framing member.
 - 1. Glazing Bead: Manufacturer's standard heavy duty glazing gaskets.
- D. Trim: Manufacturer's standard extruded aluminum snap-on type trim.
 - 1. Size: 1-1/4 by 5/8 inches.
- E. Brackets and Reinforcements: Manufacturer's standard with nonstaining, nonferrous shims for aligning system components.
- F. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

2.4 FABRICATION

- A. General: Factory-fabricate assemblies to greatest extent possible, assuring that installed units will be without warp, twist, bow, or other defect in appearance or function.
- B. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
 - 1. Profiles that are sharp, straight, and free of defects or deformations.
 - 2. Accurately fitted joints with ends coped or mitered.
 - 3. Provisions for field replacement of glazing.
 - 4. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- C. Hardware Preparation: Factory prepare framing to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.

2.5 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A21, 0.4 mil or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. Verify wall thickness does not exceed standard tolerance of $\pm 1/16"$.
- B. Do not proceed with installation until satisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install interior aluminum frames plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.
 1. Do not install damaged components.
 2. Fit joints to produce hairline joints free of burrs and distortion.
- B. Frame Installation:
 1. General: Adhere to manufacturer's printed installation instructions and approved shop drawings.
 2. Use concealed installation clips to assure that splices and connections are tightly butted and properly aligned.
 3. Secure clips to main structural extrusion components and not to snap-in or trim members.
 4. Place pre-finished frames after wall finishing is complete, braced securely to achieve plumb, planar installation. Remove braces after anchorages have achieved final set, leaving frames in smooth, undamaged condition.
 5. Anchors: Use screws, per manufacturer's standard installation instructions, for secure attachment to type of wall condition.
 6. Do not use screws or other fasteners that will be exposed to view when installation is complete.
- C. Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with framing manufacturer's written instructions.

3.3 CLEANING AND PROTECTION

- A. Clean-up: Clean frames using mild soap and water, do not use abrasive agents.
- B. Replace damaged frames that cannot be satisfactorily repaired.
- C. Protect installed products until completion of the Project.

END OF SECTION

SECTION 081416
FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Solid-core doors with wood veneer faces.
 - 2. Factory finishing of solid core doors.
- B. Related Sections:
 - 1. Division 08 Section "Door Hardware" for door hardware for wood doors.

1.3 SUBMITTALS

- A. Product Data: For each type of door. Include details of core and edge construction
- B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.
 - 1. Indicate dimensions and locations of cutouts.
- C. Schedule: Provide a schedule prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with door hardware schedule.
- D. Samples for Initial Selection: For factory-finished doors.
- E. Warranty: Sample of special warranty.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in plastic bags or cardboard cartons. Wrap bundles of doors in plastic sheeting for doors packaged in cardboard cartons.

- C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.5 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install doors until building is enclosed, wet work is complete, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period. Comply with manufacturer's published recommendations.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form, signed by manufacturer, Installer, and Contractor, in which manufacturer agrees to repair or replace doors that are defective in materials or workmanship within specified warranty period.

- 1. Failures include, but are not limited to the following:
 - a. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
 - b. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
- 2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
- 3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Algoma Hardwoods Inc.
 - 2. Chappell Door Co.
 - 3. Eggers Industries; Architectural Door Division.
 - 4. Marshfield Door Systems, Inc
 - 5. VT Industries Inc.
- B. Source Limitations: Obtain flush wood doors through one source from a single manufacturer.

2.2 FLUSH WOOD DOORS, GENERAL

- A. Quality Standard: In addition to requirements specified, comply with WDMA I.S.1-A, "Architectural Wood Flush Doors" for Grades indicated.

- B. Low-Emitting Materials: Provide doors made with adhesives and composite wood products that do not contain urea formaldehyde.
- C. Particle Board Core Doors: Particleboard, ANSI A208.1, Grade LD-2 made with binder containing no urea-formaldehyde resin.
 - 1. Blocking: Provide 5-inch top-rail blocking in particleboard-core doors indicated to have closers.
 - 2. Provide doors with structural-composite-lumber cores instead of particleboard cores for doors indicated to receive exit devices.
- D. Structural-Composite-Lumber-Core Doors: Structural Composite Lumber, WDMA I.S.10.
 - 1. Screw Withdrawal: Face 700 lbf, edge: 400 lbf.

2.3 VENEERED-FACED DOORS FOR TRANSPARENT FINISH

- A. Interior Solid-Core Doors:
 - 1. Grade: Custom with Grade A faces.
 - 2. Species: Red oak.
 - 3. Cut: Rotary cut.
 - 4. Match between Veneer Leaves: Book match.
 - 5. Assembly of Veneer Leaves on Door Faces: Running match.
 - 6. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
 - 7. Room Match: Match door faces within each separate room or area of building. Corridor-door faces do not need to match where they are separated by 10 feet or more.
 - 8. Exposed Vertical Edges: Applied wood edges of same species as faces and covering edges of crossbands.
 - 9. Core: Particleboard unless otherwise indicated.
 - a. Structural composite lumber core for doors with exit devices,
 - 10. Construction: Five plies. Stiles and rails are bonded to core, then entire unit abrasive planed before veneering. Faces are bonded to core using a hot press.
 - 11. WDMA I.S.1-A Performance Grade: Heavy Duty.

2.4 FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
- B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, BHMA-156.115-W, and hardware templates.

1. Coordinate with hardware mortises in metal frames to verify dimensions and alignment before factory machining.
- C. Openings: Cut and trim openings through doors in factory.
1. Openings in doors for vision panels or other glazing shall be such that the bottom edge of visible glass shall be not more than 43 inches above the finished floor surface (Ref. 2013 CBC 11B-404.2.11).

2.5 FACTORY FINISHING

- A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.
- B. Factory finish doors.
- C. Transparent Finish:
1. Grade: Custom.
 2. Finish: WDMA TR-4 conversion varnish or TR-6 catalyzed polyurethane.
 3. Staining: As selected by Architect from manufacturer's full range.
 4. Sheen: Satin.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and installed door frames before hanging doors.
1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
 2. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Hardware: For hardware and hardware installation, see Division 08 Section "Door Hardware."
- B. Installation: Install doors to comply with manufacturer's written installation instructions and referenced quality standards indicated.

- C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

- A. Operation: Re-hang or replace doors that do not swing or operate freely.
- B. Finished Doors: Replace doors that are damaged or do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION

SECTION 084226
ALL-GLASS ENTRANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Interior swinging all-glass entrance doors.
- B. Related Requirements:
 - 1. Division 08 Section "Interior Aluminum Frames"
 - 2. Division 08 Section "Door Hardware".
 - 3. Division 08 Section "Glazing"

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for all-glass system.
- B. Shop Drawings: For all-glass entrances.
 - 1. Include plans, elevations, and sections.
 - 2. Include details of fittings and glazing, including isometric drawings of patch fittings and rail fittings
 - 3. Door hardware locations, mounting heights, and installation requirements.
- C. Samples for Initial Selection: For each type of exposed finish indicated.
- D. Samples for Verification: For each type of exposed finish indicated, prepared on Samples of size indicated below.
 - 1. Metal Finishes: 6-inch- (150-mm-) long sections of patch fittings and rail fittings, accessory fittings, and other items.
 - 2. Glass: 6 inches (150 mm) square, showing exposed-edge finish.
 - 3. Door Hardware: For exposed door hardware of each type, in specified finish, full size.

- E. Entrance Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, sidelights, transoms, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For all-glass systems, for tests performed by a qualified testing agency.
- C. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For all-glass systems to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
 - 1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.7 WARRANTY

- A. Special Warranty: Manufacturer and Installer agree to repair or replace components of all-glass systems that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - b. Failure of operating components.
 - 2. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Comply with performance requirements specified, as determined by testing of all-glass entrances representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
- B. Seismic Performance: All-glass entrances shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

2.2 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Alpha Door & Rail, Inc.
 - 2. Arch Aluminum & Glass Co., Inc.
 - 3. Avanti Systems, Inc.
 - 4. Blumcraft of Pittsburgh; C.R. Laurence Co, Inc.
 - 5. Doralco Architectural Metals.
 - 6. Oldcastle BuildingEnvelope.
 - 7. Virginia Glass Products Corporation.
 - 8. Vitro America .

2.3 METAL COMPONENTS

- A. Fitting Configuration:
 - 1. Manual-Swinging, All-Glass Entrance Doors: Patch fitting at top and continuous rail fitting at bottom.
- B. Patch Fittings: Stainless-steel-clad aluminum.
- C. Rail Fittings:
 - 1. Material: Match patch-fitting metal and finish.
 - 2. Height:
 - a. Bottom Rail: 3-1/2 inches (89 mm).
 - 3. Profile: Tapered.
 - 4. End Caps: Manufacturer's standard precision-fit end caps for rail fittings.
- D. Accessory Fittings: Match patch- and rail-fitting metal and finish for the following:
 - 1. Overhead doorstep.

- E. Anchors and Fastenings: Concealed.
- F. Weather Stripping: Pile type; replaceable without removing all-glass entrance doors from pivots.
- G. Materials:
 - 1. Aluminum: ASTM B 221 (ASTM B 221M), with strength and durability characteristics of not less than Alloy 6063-T5.
 - a. Color: Clear anodized.
 - 2. Stainless-Steel Cladding: ASTM A 666, Type 304.
 - a. Finish: No. 4 directional satin finish.

2.4 GLASS

- A. Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated surfaces), Type I (transparent), tested for surface and edge compression per ASTM C 1048 and for impact strength per 16 CFR 1201 for Category II materials.
 - 1. Class 1: Clear monolithic.
 - a. Thickness: 1/2 inch (13 mm).
 - b. Locations: Where scheduled.
 - 2. Exposed Edges: Machine ground and flat polished.

2.5 ENTRANCE DOOR HARDWARE

- A. General: Heavy-duty entrance door hardware units in sizes, quantities, and types recommended by manufacturer for all-glass entrance systems indicated. For exposed parts, match metal and finish of patch fittings and rail fittings.
- B. Concealed Overhead Closers and Bottom Pivots: Center hung; BHMA A156.4, Grade 1; including cases, bottom arms, plates, and accessories required for complete installation.
 - 1. Swing: Double acting.
 - 2. Hold Open: Automatic, at 100 deg. angle.
 - 3. Opening-Force Requirements:
 - a. Accessible Interior Swinging Doors: Not more than 5 lbf (22.2 N) to fully open door.
- C. Push-Pull Set: As selected from manufacturer's full range.
- D. Active and Inactive -Leaf Locksets: Bottom-fitting or bottom-rail deadbolt.

1. Deadbolt operated by key outside and inside.
- E. Cylinders: As specified in Section 087100 "Door Hardware".

2.6 FABRICATION

- A. Provide holes and cutouts in glass to receive hardware, fittings, and accessory fittings before tempering glass. Do not cut, drill, or make other alterations to glass after tempering.
1. Fully temper glass using horizontal (roller-hearth) process, and fabricate so that when glass is installed, roll-wave distortion is parallel with bottom edge of door or lite.
- B. Factory assemble components and factory install hardware and fittings to greatest extent possible.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install all-glass systems and associated components according to manufacturer's written instructions.
- B. Set units level, plumb, and true to line, with uniform joints.
- C. Maintain uniform clearances between adjacent components.
- D. Lubricate hardware and other moving parts according to manufacturer's written instructions.
- E. Set, seal, and grout floor closer cases as required to suit hardware and substrate indicated.

3.3 ADJUSTING AND CLEANING

- A. Adjust all-glass entrance doors and hardware to produce smooth operation and tight fit at contact points and weather stripping.

1. For all-glass entrance doors accessible to people with disabilities, adjust closers to provide a three-second closer sweep period for doors to move from a 70-degree open position to 3 inches (75 mm) from the latch measured to the leading door edge.
- B. Remove excess sealant and glazing compounds and dirt from surfaces.

END OF SECTION 084226

SECTION 08 71 00
DOOR HARDWARE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Door hardware and related items necessary for complete installation and operation of doors.

1.2 RELATED WORK

- A. Caulking: Section 07 92 00 JOINT SEALANTS.
- B. Application of Hardware: Section 08 14 16, FLUSH WOOD DOORS
- C. ~~Electrical: Division 26, ELECTRICAL.~~
- D. ~~Fire Detection: Section 28 31 00, FIRE DETECTION AND ALARM.~~

1.3 GENERAL

- A. All hardware shall comply with UFAS, (Uniform Federal Accessible Standards) unless specified otherwise.
- B. Hardware for Labeled Fire Doors and Exit Doors: Conform to requirements of NFPA 80 for labeled fire doors and to NFPA 101 for exit doors, as well as to other requirements specified. Provide hardware listed by UL, except where heavier materials, large size, or better grades are specified herein under paragraph HARDWARE SETS. In lieu of UL labeling and listing, test reports from a nationally recognized testing agency may be submitted showing that hardware has been tested in accordance with UL test methods and that it conforms to NFPA requirements.
- C. Hardware for application on metal and wood doors and frames shall be made to standard templates. Furnish templates to the fabricator of these items in sufficient time so as not to delay the construction.
- D. The following items shall be of the same manufacturer, except as otherwise specified:
 - 1. Mortise locksets.
 - 2. Hinges for hollow metal and wood doors.
 - 3. Surface applied overhead door closers.
 - 4. Exit devices.
 - 5. Floor closers.

1.4 WARRANTY

- A. Warranty period shall be two years in lieu of one year for all items except as noted below:
 - 1. Locks, latchsets, and panic hardware: 5 years.
 - 2. Door closers and continuous hinges: 10 years.

1.5 MAINTENANCE MANUALS

- A. Furnish maintenance manuals and instructions on all door hardware. Provide installation instructions with the submittal documentation.

1.6 SUBMITTALS

- A. Submit 6 copies of the schedule per Section 01 33 23. Submit 2 final copies of the final approved schedules to VAMC Locksmith as record copies (VISN Locksmith if the VAMC does not have a locksmith).
- B. Hardware Schedule: Prepare and submit hardware schedule in the following form:

Hardware Item	Quantity	Size	Reference Publication Type No.	Finish	Mfr. Name and Catalog No.	Key Control Symbols	UL Mark (if fire rated and listed)	ANSI/BHMA Finish Designation

- C. Samples and Manufacturers' Literature:
 - 1. Samples: All hardware items (proposed for the project) that have not been previously approved by Builders Hardware Manufacturers Association shall be submitted for approval. Tag and mark all items with manufacturer's name, catalog number and project number.
 - 2. Samples are not required for hardware listed in the specifications by manufacturer's catalog number, if the contractor proposes to use the manufacturer's product specified.
- D. Certificate of Compliance and Test Reports: Submit certificates that hardware conforms to the requirements specified herein. Certificates shall be accompanied by copies of reports as referenced. 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.

1.7 DELIVERY AND MARKING

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

1.8 PREINSTALLATION MEETING

- A. Convene a preinstallation meeting not less than 30 days before start of installation of door hardware. Require attendance of parties directly affecting work of this section, including Contractor and Installer, Architect, Project Engineer and VA Locksmith, Hardware Consultant, and Hardware Manufacturer's Representative. Review the following:

1. Inspection of door hardware.
2. Job and surface readiness.
3. Coordination with other work.
4. Protection of hardware surfaces.
5. Substrate surface protection.
6. Installation.
7. Adjusting.
8. Repair.
9. Field quality control.
10. Cleaning.

1.9 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 (e.g., "HW") followed by a number. Each number designates a set of hardware items applicable to a door type.
- B. Keying: All cylinders shall be keyed into existing Key System. Provide removable core cylinders that are removable only with a special key or tool without disassembly of knob or lockset. Cylinders pin type shall match existing. Keying information shall be furnished at a later date by the Resident Engineer.//

1.10 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. 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 Society for Testing and Materials (ASTM):
 - F883-04 Padlocks
 - E2180-07 Standard Test Method for Determining the Activity of Incorporated Antimicrobial Agent(s) In Polymeric or Hydrophobic Materials
- C. American National Standards Institute/Builders Hardware Manufacturers Association (ANSI/BHMA):
 - A156.1-06 Butts and Hinges
 - A156.2-03 Bored and Pre-assembled Locks and Latches
 - A156.3-08 Exit Devices, Coordinators, and Auto Flush Bolts
 - A156.4-08 Door Controls (Closers)
 - A156.5-01 Auxiliary Locks and Associated Products
 - A156.6-05 Architectural Door Trim
 - A156.8-05 Door Controls-Overhead Stops and Holders

- A156.12-05Interconnected Locks and Latches
- A156.13-05.....Mortise Locks and Latches Series 1000
- A156.15-06.....Release Devices-Closer Holder, Electromagnetic and
Electromechanical
- A156.16-08.....Auxiliary Hardware
- A156.18-06.....Materials and Finishes
- A156.22-05.....Door Gasketing and Edge Seal Systems
- A156.24-03.....Delayed Egress Locking Systems
- A156.25-07Electrified Locking Devices
- A156.26-06.....Continuous Hinges
- A156.28-07Master Keying Systems
- A156.29-07Exit Locks and Alarms
- A156.30-03High Security Cylinders
- A156.31-07Electric Strikes and Frame Mounted Actuators
- A250.8-03.....Standard Steel Doors and Frames
- D. National Fire Protection Association (NFPA):
 - 80-10 Fire Doors and Fire Windows
 - 101-09Life Safety Code
- E. Underwriters Laboratories, Inc. (UL):
 - Building Materials Directory (2008)

PART 2 - PRODUCTS

2.1 BUTT HINGES

- A. ANSI A156.1. Provide only three-knuckle hinges, except five-knuckle where the required hinge type is not available in a three-knuckle version (e.g., some types of swing-clear hinges). The following types of butt hinges shall be used for the types of doors listed, except where otherwise specified:
 1. Interior Doors: Type A8112/A5112 for doors 900 mm (3 feet) wide or less and Type A8111/A5111 for doors over 900 mm (3 feet) wide. Hinges for doors exposed to high humidity areas (shower rooms, toilet rooms, kitchens, janitor rooms, etc. shall be of stainless steel material.
- B. Provide quantity and size of hinges per door leaf as follows:
 1. Doors up to 1210 mm (4 feet) high: 2 hinges.
 2. Doors 1210 mm (4 feet) to 2260 mm (7 feet 5 inches) high: 3 hinges minimum.
 3. Doors greater than 2260 mm (7 feet 5 inches) high: 4 hinges.
 4. Doors up to 900 mm (3 feet) wide, standard weight: 114 mm x 114 mm (4-1/2 inches x 4-1/2 inches) hinges.

5. Doors over 900 mm (3 feet) to 1065 mm (3 feet 6 inches) wide, standard weight: 127 mm x 114 mm (5 inches x 4-1/2 inches).
 6. Doors over 1065 mm (3 feet 6 inches) to 1210 mm (4 feet), heavy weight: 127 mm x 114 mm (5 inches x 4-1/2 inches).
 7. Provide heavy-weight hinges where specified.
 8. At doors weighing 330 kg (150 lbs.) or more, furnish 127 mm (5 inch) high hinges.
- C. See Articles "MISCELLANEOUS HARDWARE" and "HARDWARE SETS" for pivots and hinges other than butts specified above and continuous hinges specified below.

2.2 CONTINUOUS HINGES

- A. ANSI/BHMA A156.26, Grade 1-600.
1. Listed under Category N in BHMA's "Certified Product Directory."
- B. General: Minimum 0.120-inch- (3.0-mm-) thick, hinge leaves with minimum overall width of 4 inches (102 mm); fabricated to full height of door and frame and to template screw locations; with components finished after milling and drilling are complete
- C. Continuous, Barrel-Type Hinges: Hinge with knuckles formed around a Teflon-coated 6.35mm (0.25-inch) minimum diameter pin that extends entire length of hinge.
1. Base Metal for Interior Hinges: Steel.
 2. Provide with non-removable pin (hospital tip option) at lockable outswing doors.
 3. Where required to clear adjacent casing, trim, and wall conditions and allow full door swing, provide wide throw hinges of minimum width required.
 4. Provide with manufacturer's cut-outs for separate mortised power transfers and/or mortised automatic door bottoms where they occur.
 5. Where thru-wire power transfers are integral to the hinge, provide hinge with easily removable portion to allow easy access to wiring connections.
 6. Where models are specified that provide an integral wrap-around edge guard for the hinge edge of the door, provide manufacturer's adjustable threaded stud and machine screw mechanism to allow the door to be adjusted within the wrap-around edge guard.

2.3 DOOR CLOSING DEVICES

- A. Closing devices shall be products of one manufacturer for each type specified.

2.4 OVERHEAD CLOSERS

- A. Conform to ANSI A156.4, Grade 1.
- B. Closers shall conform to the following:
1. The closer shall have minimum 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: Provide multi-size closers, sizes 1 through 6, except where multi-size closer is not available for the required application.
4. Material of closer body shall be forged or cast.
5. Arm and brackets for closers shall be steel, malleable iron or high strength ductile cast iron.
6. Where closers are exposed to the exterior or are mounted in rooms that experience high humidity, provide closer body and arm assembly of stainless steel material.
7. Closers shall have full size metal cover; plastic covers will not be accepted.
8. Closers shall have adjustable hydraulic back-check, separate valves for closing and latching speed, adjustable back-check positioning valve, and adjustable delayed action valve.
9. Provide closers with any accessories required for the mounting application, including (but not limited to) drop plates, special soffit plates, spacers for heavy-duty parallel arm fifth screws, bull-nose or other regular arm brackets, longer or shorter arm assemblies, and special factory templating. Provide special arms, drop plates, and templating as needed to allow mounting at doors with overhead stops and/or holders.
10. Closer arms or backcheck valve shall not be used to stop the door from overswing, except in applications where a separate wall, floor, or overhead stop cannot be used.
11. Provide parallel arm closers with heavy duty rigid arm.
12. Where closers are to be installed on the push side of the door, provide parallel arm type except where conditions require use of top jamb arm.
13. Provide all surface closers with the same body attachment screw pattern for ease of replacement and maintenance.
14. All closers shall have a 1 ½" (38mm) minimum piston diameter.

2.5 DOOR STOPS

- A. Conform to 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 cylindrical locks with turn pieces or pushbuttons occur, equip wall bumpers Type L02251 (rubber pads having concave face) to receive turn piece or button.
- D. Provide floor stops (Type L02141 or L02161 in office areas; Type L02121 x 3 screws into floor elsewhere. Wall bumpers, where used, must be installed to impact the trim or the door within the leading half of its width. Floor stops, where used, must be installed within 4-inches of the wall face and impact the door within the leading half of its width.
- E. Where drywall partitions occur, use floor stops, Type L02141 or L02161 in office areas, Type L02121 elsewhere.

- F. Provide stop Type L02011, as applicable for exterior doors. At outswing doors where stop can be installed in concrete, provide stop mated to concrete anchor set in 76mm (3-inch) core-drilled hole and filled with quick-setting cement.
- G. Omit stops where floor mounted door holders are required and where automatic operated doors occur.
- H. Provide appropriate roller bumper for each set of doors (except where closet doors occur) where two doors would interfere with each other in swinging.
- I. Provide appropriate door mounted stop on doors in individual toilets where floor or wall mounted stops cannot be used.
- J. Provide overhead surface applied stop Type C02541, ANSI A156.8 on patient toilet doors in bedrooms where toilet door could come in contact with the bedroom door.
- K. Provide door stops on doors where combination closer magnetic holders are specified, except where wall stops cannot be used or where floor stops cannot be installed within 4-inches of the wall.
- L. Where the specified wall or floor stop cannot be used, provide concealed overhead stops (surface-mounted where concealed cannot be used).

2.6 OVERHEAD DOOR STOPS AND HOLDERS

- A. Conform to ANSI Standard A156.8. Overhead holders shall be of sizes recommended by holder manufacturer for each width of door. Set overhead holders for 110 degree opening, unless limited by building construction or equipment. Provide Grade 1 overhead concealed slide type: stop-only at rated doors and security doors, hold-open type with exposed hold-open on/off control at all other doors requiring overhead door stops.

2.7 FLOOR DOOR HOLDERS

- A. Conform to ANSI Standard A156.16. Provide extension strikes for Types L01301 and L01311 holders where necessary.

2.8 LOCKS AND LATCHES

- A. Conform to ANSI A156.2. Locks and latches for doors 45 mm (1-3/4 inch) thick or over shall have beveled fronts. Lock cylinders shall have not less than six pins (seven pins where required to match existing). Cylinders for all locksets shall be removable core type. Cylinders shall be furnished with construction removable cores and construction master keys. Cylinder shall be removable by special key or tool. Construct all cores so that they will be interchangeable into the core housings of all mortise locks, rim locks, cylindrical locks, and any other type lock included in the Great Grand Master Key System. Disassembly of lever or lockset shall not be required to remove core from lockset. All locksets or latches on double doors with fire label shall have latch bolt with 19 mm (3/4 inch) throw, unless shorter throw allowed by the door manufacturer's fire label. Provide temporary keying device or construction core of allow opening and closing during construction and prior to the installation of final cores.

B. In addition to above requirements, locks and latches shall comply with following requirements:

1. Mortise Lock and Latch Sets: Conform to ANSI/BHMA A156.13. Mortise locksets shall be series 1000, minimum Grade 2. All locksets and latchsets, except on designated doors in Psychiatric (Mental Health) areas, shall have lever handles fabricated from cast stainless steel. Provide sectional (lever x rose) lever design as selected by Owner. No substitute lever material shall be accepted. All locks and latchsets shall be furnished with 122.55 mm (4-7/8-inch) curved lip strike and wrought box. At outswing pairs with overlapping astragals, provide flat lip strip with 21mm (7/8-inch) lip-to-center dimension. Lock function F02 shall be furnished with emergency tools/keys for emergency entrance. All lock cases installed on lead lined doors shall be lead lined before applying final hardware finish. Furnish armored fronts for all mortise locks. Where mortise locks are installed in high-humidity locations or where exposed to the exterior on both sides of the opening, provide non-ferrous mortise lock case.
2. Cylindrical Lock and Latch Sets: levers shall meet ADA (Americans with Disabilities Act) requirements. Cylindrical locksets shall be series 4000 Grade I. All locks and latchsets shall be furnished with 122.55 mm (4-7/8-inch) curved lip strike and wrought box. At outswing pairs with overlapping astragals, provide flat lip strip with 21mm (7/8-inch) lip-to-center dimension. Provide lever design to match design selected by Architect or to match existing lever design. Where two turn pieces are specified for lock F76, turn piece on inside knob shall lock and unlock inside knob, and turn piece on outside knob shall unlock outside knob when inside knob is in the locked position. (This function is intended to allow emergency entry into these rooms without an emergency key or any special tool.)
3. Auxiliary locks shall be as specified under hardware sets and conform to ANSI A156.5.
4. Privacy locks in non-mental-health patient rooms shall have an inside thumbturn for privacy and an outside thumbturn for emergency entrance. Single occupancy patient privacy doors shall typically swing out; where such doors cannot swing out, provide center-pivoted doors with rescue hardware (see HW-2B).

2.9 PUSH-BUTTON COMBINATION LOCKS

- A. ANSI/BHMA A156.13, Grade 1. Battery operated pushbutton entry.
- B. Construction: Heavy duty mortise lock housing conforming to ANSI/BHMA A156.13, Grade 1. Lever handles and operating components in compliance with the UFAS and the ADA Accessibility Guidelines. Match lever handles of locks and latchsets on adjacent doors.
- C. Special Features: Key override to permit a master keyed security system and a pushbutton security code activated passage feature to allow access without using the entry code.

2.10 KEYS

- A. Stamp all keys with change number and key set symbol. Furnish keys in quantities as follows:

Locks/Keys	Quantity
------------	----------

Cylinder locks	2 keys each
Cylinder lock change key blanks	100 each different key way
Master-keyed sets	6 keys each
Grand Master sets	6 keys each
Great Grand Master set	5 keys
Control key	2 keys

2.11 ARMOR PLATES, KICK PLATES, MOP PLATES AND DOOR EDGING

- A. Conform to ANSI Standard A156.6.
- B. Provide protective plates and door edging as specified below:
 1. Kick plates, mop plates and armor plates of metal, Type J100 series.
 2. Provide kick plates and mop plates where specified. Kick plates shall be 254 mm (10 inches) or 305 mm (12 inches) high. Mop plates shall be 152 mm (6 inches) high. Both kick and mop plates shall be minimum 1.27 mm (0.050 inches) thick. Provide kick and mop plates beveled on all 4 edges (B4E). On push side of doors where jamb stop extends to floor, make kick plates 38 mm (1-1/2 inches) less than width of door, except pairs of metal doors which shall have plates 25 mm (1 inch) less than width of each door. Extend all other kick and mop plates to within 6 mm (1/4 inch) of each edge of doors. Kick and mop plates shall butt astragals. For jamb stop requirements, see specification sections pertaining to door frames.
 3. Kick plates and/or mop plates are not required on following door sides:
 - a. Armor plate side of doors;
 - b. Exterior side of exterior doors;
 - c. Closet side of closet doors;
 - d. Both sides of aluminum entrance doors.
 4. Armor plates for doors are listed under Article "Hardware Sets". Armor plates shall be thickness as noted in the hardware set, 875 mm (35 inches) high and 38 mm (1-1/2 inches) less than width of doors, except on pairs of metal doors. Provide armor plates beveled on all 4 edges (B4E). Plates on pairs of metal doors shall be 25 mm (1 inch) less than width of each door. Where top of intermediate rail of door is less than 875 mm (35 inches) from door bottom, extend armor plates to within 13 mm (1/2 inch) of top of intermediate rail. On doors equipped with panic devices, extend armor plates to within 13 mm (1/2 inch) of panic bolt push bar.
 5. Where louver or grille occurs in lower portion of doors, substitute stretcher plate and kick plate in place of armor plate. Size of stretcher plate and kick plate shall be 254 mm (10 inches) high.
 6. Provide stainless steel edge guards where so specified at wood doors. Provide mortised type instead of surface type except where door construction and/or ratings will not allow. Provide edge guards of bevel and thickness to match wood door. Provide edge guards with factory

cut-outs for door hardware that must be installed through or extend through the edge guard. Provide full-height edge guards except where door rating does not allow; in such cases, provide edge guards to height of bottom of typical lockset armor front. Forward edge guards to wood door manufacturer for factory installation on doors.

2.12 EXIT DEVICES

- A. Conform to ANSI Standard A156.3. Exit devices shall be Grade 1; type and function are specified in hardware sets. Provide flush with finished floor strikes for vertical rod exit devices in interior of building. Trim shall have cast satin stainless steel lever handles of design similar to locksets, unless otherwise specified. Provide key cylinders for keyed operating trim and, where specified, cylinder dogging.
- B. Surface vertical rod panics shall only be provided less bottom rod; provide fire pins as required by exit device and door fire labels. Do not provide surface vertical rod panics at exterior doors.
- C. Concealed vertical rod panics shall be provided less bottom rod at interior doors, unless lockable or otherwise specified; provide fire pins as required by exit device and door fire labels. Where concealed vertical rod panics are specified at exterior doors, provide with both top and bottom rods.
- D. Where removable mullions are specified at pairs with rim panic devices, provide mullion with key-removable feature.
- E. At non-rated openings with panic hardware, provide panic hardware with key cylinder dogging feature.
- F. Exit devices for fire doors shall comply with Underwriters Laboratories, Inc., requirements for Fire Exit Hardware. Submit proof of compliance.

2.13 FLUSH BOLTS (LEVER EXTENSION)

- A. Conform to ANSI A156.16. Flush bolts shall be Type L24081 unless otherwise specified. Furnish proper dustproof strikes conforming to ANSI A156.16, for flush bolts required on lower part of doors.
- B. Lever extension manual flush bolts shall only be used at non-fire-rated pairs for rooms only accessed by maintenance personnel.
- C. Face plates for cylindrical strikes shall be rectangular and not less than 25 mm by 63 mm (1 inch by 2-1/2 inches).
- D. Friction-fit cylindrical dustproof strikes with circular face plate may be used only where metal thresholds occur.
- E. Provide extension rods for top bolt where door height exceeds 2184 mm (7 feet 2 inches).

2.14 DOOR PULLS WITH PLATES

- A. Conform to ANSI A156.6. Pull Type J401, 152 mm (6 inches) high by 19 mm (3/4 inches) diameter with plate Type J302, 90 mm by 350 mm (3-1/2 inches by 14 inches), unless otherwise

specified. Provide pull with projection of 70 mm (2 3/4 inches) and a clearance of 51 mm (2 inches). Cut plates of door pull plate for cylinders, or turn pieces where required.

2.15 PUSH PLATES

- A. Conform to ANSI A156.6. Metal, Type J302, 200 mm (8 inches) wide by 350 mm (14 inches) high. Provide metal Type J302 plates 100 mm (4 inches wide by 350 mm (14 inches) high) where push plates are specified for doors with stiles less than 200 mm (8 inches) wide. Cut plates for cylinders, and turn pieces where required.

2.16 COMBINATION PUSH AND PULL PLATES

- A. Conform to ANSI 156.6. Type J303, stainless steel 3 mm (1/8 inch) thick, 80 mm (3-1/3 inches) wide by 800 mm (16 inches) high), top and bottom edges shall be rounded. Secure plates to wood doors with 38 mm (1-1/2 inch) long No. 12 wood screws. Cut plates for turn pieces, and cylinders where required. Pull shall be mounted down.

2.17 MISCELLANEOUS HARDWARE

- A. Access Doors (including Sheet Metal, Screen and Woven Wire Mesh Types): Except for fire-rated doors and doors to Temperature Control Cabinets, equip each single or double metal access door with Lock Type E76213, conforming to ANSI A156.5. Key locks as directed. Ship lock prepaid to the door manufacturer. Hinges shall be provided by door manufacturer.
- B. Cylinders for Various Partitions and Doors: Key cylinders same as entrance doors of area in which partitions and door occur, // except as otherwise specified //. Provide cylinders to operate locking devices where specified for following partitions and doors:
 - 1. All-glass entrances.
- C. Mutes: Conform to ANSI A156.16. Provide door mutes or door silencers Type L03011 or L03021, depending on frame material, of white or light gray color, on each steel or wood door frame, except at fire-rated frames, lead-lined frames and frames for sound-resistant, lightproof and electromagnetically shielded doors. Furnish 3 mutes for single doors and 2 mutes for each pair of doors, except double-acting doors. Provide 4 mutes or silencers for frames for each Dutch type door. Provide 2 mutes for each edge of sliding door which would contact door frame.

2.18 HINGED WIRE GUARDS (FOR WINDOWS, DOORS AND TRANSOMS) AND WIRE PARTITION DOORS

- A. Conform to ANSI A156.5. Lock Type E06081 for guards and Type E06061 for partitions.
 - 1. Keying: Except as noted otherwise, key locks like entrance door or space wherein guards and partitions are located except as otherwise specified.
 - 2. Key locks for partitions enclosing mechanical and electrical equipment in Engineer's Set. (See detailed drawings for number of locks and butt hinges required for each guard).

2.19 FINISHES

- A. Exposed surfaces of hardware shall have ANSI A156.18, finishes as specified below. Finishes on all hinges, pivots, closers, thresholds, etc., shall be as specified below under "Miscellaneous Finishes." For field painting (final coat) of ferrous hardware, see Section 09 91 00, PAINTING.

B. 626 or 630: All surfaces on exterior and interior of buildings, except where other finishes are specified.

C. Miscellaneous Finishes:

1. Hinges --interior doors: 652 or 630.
2. Door Closers: Factory applied paint finish. Dull or Satin Aluminum color.
3. Thresholds: Mill finish aluminum.
4. Cover plates for floor hinges and pivots: 630.
5. Other primed steel hardware: 600.

SPEC WRITER NOTE: When hardware is also required for existing buildings, include subparagraph "D".

D. Anti-microbial Coating: All hand-operated hardware (levers, pulls, push bars, push plates, paddles, and panic bars) shall be provided with an anti-microbial/anti-fungal coating that has passed ASTM E2180 tests. Coating to consist of ionic silver (Ag+). Silver ions surround bacterial cells, inhibiting growth of bacteria, mold, and mildew by blocking food and respiration supplies.

2.20 BASE METALS

A. Apply specified U.S. Standard finishes on different base metals as following:

Finish	Base Metal
652	Steel
626	Brass or bronze
630	Stainless steel

PART 3 - EXECUTION

3.1 HARDWARE HEIGHTS

- A. Locate hardware on doors at heights specified below, with all hand-operated hardware centered within 864 mm (34 inches) to 1200 mm (48 inches), unless otherwise noted:
- B. Hardware Heights from Finished Floor:
 1. Exit devices centerline of strike (where applicable) 1024 mm (40-5/16 inches).
 2. Locksets and latch sets centerline of strike 1024 mm (40-5/16 inches).
 3. Deadlocks centerline of strike 1219 mm (48 inches).
 4. Hospital arm pull 1168 mm (46 inches) to centerline of bottom supporting bracket.
 5. Centerline of door pulls to be 1016 mm (40 inches).
 6. Push plates and push-pull shall be 1270 mm (50 inches) to top of plate.
 7. Push-pull latch to be 1024 mm (40-5/16 inches) to centerline of strike.
 8. Locate other hardware at standard commercial heights. Locate push and pull plates to prevent conflict with other hardware.

3.2 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 on side of door inside rooms, inside stairs, and away from corridors except security bedroom, bathroom and anteroom doors which shall have closer installed parallel arm on exterior side of doors. Where closers are mounted on doors they shall be mounted with sex nuts and bolts; foot shall be fastened to frame with machine screws.

B. Hinge Size Requirements:

Door Thickness	Door Width	Hinge Height
45 mm (1-3/4 inch)	900 mm (3 feet) and less	113 mm (4-1/2 inches)
45 mm (1-3/4 inch)	Over 900 mm (3 feet) but not more than 1200 mm (4 feet)	125 mm (5 inches)
35 mm (1-3/8 inch) (hollow core wood doors)	Not over 1200 mm (4 feet)	113 mm (4-1/2 inches)

- C. Hinge leaves shall be sufficiently wide to allow doors to swing clear of door frame trim and surrounding conditions.

D. Hinges Required Per Door:

Doors 1500 mm (5 ft) or less in height	2 butts
Doors over 1500 mm (5 ft) high and not over 2280 mm (7 ft 6 in) high	3 butts
Doors over 2280 mm (7 feet 6 inches) high	4 butts
Dutch type doors	4 butts
Doors with spring hinges 1370 mm (4 feet 6 inches) high or less	2 butts
Doors with spring hinges over 1370 mm (4 feet 6 inches)	3 butts

- E. 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 Resident Engineer that keys operate their respective locks in accordance with keying requirements. (All keys, Master Key level and above shall be sent Registered Mail to the Medical Center Director along with the bitting list. Also a copy of the invoice shall be sent to the Resident Engineer for his records.) 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.

3.3 FINAL INSPECTION

- A. Installer to provide letter to VA Resident/Project Engineer that upon completion, installer has visited the Project and has accomplished the following:
 - 1. Re-adjust hardware.
 - 2. Evaluate maintenance procedures and recommend changes or additions, and instruct VA personnel.
 - 3. Identify items that have deteriorated or failed.
 - 4. Submit written report identifying problems.

3.4 DEMONSTRATION

- A. Demonstrate efficacy of mechanical hardware and electrical, and electronic hardware systems, including adjustment and maintenance procedures, to satisfaction of Resident/Project Engineer and VA Locksmith.

3.5 HARDWARE SETS

- A. Following sets of hardware correspond to hardware symbols shown on drawings. Only those hardware sets that are shown on drawings will be required. Disregard hardware sets listed in specifications but not shown on drawings.
- B. Hardware Consultant working on a project will be responsible for providing additional information regarding these hardware sets. The numbers shown in the following sets come from BHMA standards.

HW-1

Each Door to Have:

NON-RATED

1	Continuous Hinge	
1	Door Pull w/ Plate	J401 x J302
1	Push Plate	J302
1	Kick Plate	J102
1	Mop Plate (@ Inswing Doors)	J103
1	Closer	C02011/C02021
1	Floor Stop	L02121 x 3 FASTENERS
3	Silencers	L03011

HW-1F

Each Door to Have:

NON-RATED

1	Continuous Hinge	
1	Latchset	F01
1	Kick Plate	J102
1	Wall Stop	L02101 CONVEX
3	Silencers	L03011

HW-2C

Each Door to Have:

NON-RATED

	Hinges	QUANTITY & TYPE AS REQUIRED
1	Privacy Lock	F02-MOD X OCCUPANCY INDICATOR
1	Kick Plate	J102
1	Mop Plate (@ Inswing Doors)	J103
1	Wall Stop	L02101 CONVEX
3	Silencers	L03011

HW-2D

Each Door to Have:

RATED

	Hinges	QUANTITY & TYPE AS REQUIRED
1	Privacy Lock	F02-MOD X OCCUPANCY INDICATOR
1	Closer	C02011/C02021
1	Kick Plate	J102
1	Mop Plate (@ Inswing Doors)	J103
1	Wall Stop	L02101 CONVEX
1	Set Self-Adhesive Seals	R0Y154

HW-3

Each Door to Have:

RATED

	Hinges	QUANTITY & TYPE AS REQUIRED
1	Office Lock	F04
1	Closer	C02011/C02021
1	Kick Plate	J102
1	Floor Stop	L02121 x 3 FASTENERS
1	Set Self-Adhesive Seals	R0Y154

HW-3E

Each Door to Have:

NON-RATED

	Hinges	QUANTITY & TYPE AS REQUIRED
1	Office Lock	F04
1	Floor Stop	L02121 x 3 FASTENERS
1	Set Self-Adhesive Seals	R0Y154
1	Coat Hook	L03121

OMIT COAT HOOK WHERE GLASS LITE PREVENTS INSTALLATION.

HW-5

Each Door to Have:

RATED

	Hinges	QUANTITY & TYPE AS REQUIRED
1	Storeroom Lock	F07
1	Closer	C02011/C02021
1	Kick Plate	J102 (@ STORAGE, EVM, & HAC ROOMS ONLY)
1	Floor Stop	L02121 x 3 FASTENERS
1	Set Self-Adhesive Seals	R0Y154

HW-5D

Each Door to Have:

NON-RATED

	Hinges	QUANTITY & TYPE AS REQUIRED
1	Storeroom Lock	F07
1	Kick Plate	J102 (@ STORAGE, EVM, & HAC ROOMS ONLY)
1	Floor Stop (@ Inswing Doors)	L02121 x 3 FASTENERS
1	Wall Stop (@ Outswing Doors)	L02101 CONVEX
3	Silencers	L03011

HW-6F

Each Door to Have:

NON-RATED

1	Continuous Hinge	x INTEGRAL HINGE GUARD CHANNEL X ADJUSTA-SCREWS x 8-THRUWIRE TRANSFER X IN-HINGE ACCESS PANELS
1	Elec. Exit Device	TYPE 1 F08 LEVER (E04)
1	Key Cylinder	TYPE AS REQUIRED
1	Power Supply	BY EXIT DEVICE MFR. FOR E04 FUNCTION
1	Armor Plate	J101 x 1.275 MM (0.050 INCH) THICKNESS
1	Edge Guard (@ Wood Doors)	J208M / J211 (VERIFY), CUT: HARDWARE
1	Floor Stop	L02121 x 3 FASTENERS
1	Set Self-Adhesive Seals	R0Y154

POWER TRANSFER SHARED BY ELECTRIC PANIC AND RE-ACTIVATION SENSOR WIRING

HW-8G

Each Door to Have:

NON-RATED

2 Key Cylinders

Type as required for lock

BALANCE OF HARDWARE TO BE PROVIDED BY GLASS ENTRANCE MANUFACTURER.

END OF SECTION

SECTION 088000
GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:
 - 1. Glazing for Interior Fixed Frames and Pass-through Windows, with float glass, decorative glass and one-way observation glass.
 - 2. Glass for Interior Doors.
- B. Related Sections include the following:
 - 1. Division 07 Section "Joint Sealants" for joint sealants other than those specified in this section.
 - 2. ~~Division 08 Section "Door Louver and Lite Frames" for frames for windows in doors.~~
 - 3. Division 08 Section "All-Glass Entrances".
 - 4. Division 08 Section "Interior Aluminum Frames".
 - 5. Division 08 Section "Linear Glass Wall Assembly" for extruded channel glazing.
 - 6. ~~Division 10 Section "Toilet & Bath Accessories" for framed mirror units.~~
 - 7. Division 10 Section "Glass Shower Doors" for glass shower enclosures.

1.3 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.

1.4 SUBMITTALS

- A. Product Data: For each glass product and associated glazing material indicated.
 - 1. Include statement of VOC content for any adhesives or sealants.

- B. Glass Samples: For each type of glass product, other than clear monolithic glass, in 12-inch square samples.
- C. Glazing Accessory Samples: For gaskets, sealants, and colored spacers, in 12-inch lengths. Install sealant Samples between two strips of material representative in color of the adjoining framing system.
- D. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.
- E. Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
 - 1. Do not install liquid glazing sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturer or below 40 deg F.

1.8 WARRANTY

- A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer's standard form in which coated-glass manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
 - 1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Products: In other Part 2 articles where manufacturers and products are named, the Project Design, Drawings, and Specifications are based on the product indicated. Subject to compliance with requirements, provide the named product or a comparable product by one of the following:
 - 1. Guardian Industries.
 - 2. Pilkington Building Products North America.
 - 3. PPG Industries, Inc.
 - 4. Viracon.
- B. Source Limitations for Glass: Obtain glass from a single source from a single manufacturer for each glass type.
- C. Source Limitations for Glazing Accessories: Obtain accessories from a single source from a single manufacturer for each product and installation method.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.
- C. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
 - 1. For monolithic-glass lites, properties are based on units with lites 6 mm thick.
 - 2. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.3 GLASS PRODUCTS, GENERAL

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 - 1. GANA Publications: "Glazing Manual" and "Sealant Manual".

- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the thickness indicated.
- D. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 GLASS PRODUCTS

- A. Clear Annealed Float Glass: ASTM C 1036, Type I, Class I (clear), Quality-Q3.
- B. Heat-Strengthened Float Glass: ASTM C 1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
 - 1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
- C. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
 - 1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
- D. Tempered, Patterned Glass: ASTM C1048, Kind FT, Type II, Class 1, Form 3, Quality q8, Finish f1,.
 - 1. Manufacturer: Guardian Industries/Berman Glass.
 - 2. Pattern: Aqui.
 - 3. Thickness: 6mm.
- E. Transparent Mirror (One-Way Vision Glass):
 - 1. ASTM C1036, Type I, Class 1, Quality q2 or Class 3, Quality q3.
 - 2. Thickness, 6 mm (1/4 inch).
 - 3. Coated one face with a hard adherent reflective film of chromium or other coating of proven equivalent durability.
 - 4. Visible light transmittance; eight percent, plus or minus two percent.
 - 5. Visible reflectance; sixty percent, plus or minus five percent.
 - 6. Light ratio; mirror side 10 or more; observer side one or less.

2.5 GLAZING GASKETS

- A. Dense Compression Gaskets: Molded or extruded gaskets of profile and hardness required to maintain watertight seal, made from one of the following:
1. EPDM, ASTM C 864.
 2. Silicone, ASTM C 1115.
 3. Thermoplastic polyolefin rubber, ASTM C 1115.
- B. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned EPDM or silicone gaskets complying with ASTM C 509, Type II, black; and of profile and hardness required to maintain watertight seal:

2.6 GLAZING SEALANTS

- A. General: Provide products of type indicated, complying with the following requirements:
1. Compatibility: Select glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
 3. VOC Content: Field applied sealants shall have a VOC content of not more than 250 g/L.
 4. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.
- B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 790.
 - b. GE Advanced Materials - Silicones; SilPruf LM SCS2700.
 - c. Tremco Incorporated; Spectrem 1.

2.7 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
1. AAMA 804.3 tape, where indicated.

2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
 3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; packaged on rolls with release liner protecting adhesive; and complying with AAMA 800 for the following types:
1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.8 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions with a Shore, Type A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

2.9 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
- B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.
- C. Grind smooth and polish exposed glass edges and corners.

2.10 MONOLITHIC GLASS TYPES

- A. Glass Type CG: Clear float glass.
 - 1. Thickness: 6.0 mm.
- B. Glass Type TG: Clear fully tempered float glass.
 - 1. Thickness: 6.0 mm.
 - 2. Provide safety glazing labeling.
- C. Glass Type TM: Transparent mirror (one-way vision glass).
 - 1. Coating Color: Grey.
 - 2. Coating Location: Second surface.
 - 3. Assemble with coating covered and protected with a layer of clear glass not less than 3 mm (1/8 inch) thick.
 - 4. Clean interface glass prior to assembly.
 - 5. Tape edge to seal interface and hold panes together.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
 - 2. Presence and functioning of weep system.
 - 3. Minimum required face or edge clearances.
 - 4. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that will leave visible marks in the completed work.

3.3 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, window framing, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
- C. Adjust glazing channel dimensions as required by Project conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.
- D. Apply primers to joint surfaces where required for adhesion of sealants.
- E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lights.
- G. Provide spacers for glass lights where length plus width is larger than 50 inches.
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 - 2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
- I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- J. Set glass lites with proper orientation so that coatings face exterior or interior as specified.
- K. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

- L. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until just before each glazing unit is installed.
- F. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- G. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

- E. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lights and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 CLEANING AND PROTECTION

- A. Immediately after installation remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
 - 1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.
- C. Remove and replace glass that is damaged during construction period.

END OF SECTION

SECTION 08 88 00
TRANSLUCENT INTERIOR LINEAR GLASS WALL ASSEMBLIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Translucent interior linear glass units.
 2. Framing.
 3. Glazing accessories.

1.2 REFERENCES

- A. Comply with applicable provisions of the following criteria for design, materials, fabrication, and installation of component parts:
1. ANSI Z97.1-84, 16 CFR 1201 category II, ASTM E 90, ASTM E 413, DIN EN 572.1, DIN EN 572.7. (Visual characteristics for all U-profile glass in accordance with glass manufacturer's product definition. Dimensional standards for tempered glass per manufacturer's product definition.)

1.3 DEFINITIONS

- A. Translucent Linear Glass: Translucent, channel shaped linear glass unit. Size and pattern as selected by architect.
- B. Basic System: Non-thermally broken aluminum frame with single or double glazed, translucent, vertical linear glass with 2-3/8 inch (60 mm) deep channel flange.

1.4 SYSTEM DESCRIPTION

- A. Design Requirements:
1. Glazing Contractor: Responsible for conforming the system to the architectural plans, including anchorage to structural system and necessary modifications to meet specified requirements and maintain visual design concepts.
 2. Drawings: Shop drawings will show the complete assembly installed as described under this section, fully identify all fasteners, shims, gaskets, sealants and hardware required for the complete system installation and be stamped by an engineer licensed in the state where the project is located. Dimensions of all components, alloys, tempers, and finishes will be clearly identified. Provide engineering calculations for all conditions required by the project.
 3. Provide concealed fastening wherever possible.
 4. Attachment Considerations: Accommodate project design concepts and provide for building movement anticipated from all possible causes. Provide for

expansion and contraction in all components to eliminate the possibility of loosening, warping, buckling or bulging of all components.

B. Performance Requirements:

1. Test Data Requirements:

- a) Test data submitted must be from a certified, independent AAMA, ANSI, ASTM, or NFRC recognized test laboratory certifying compliance to the applicable tests. No substitutes accepted.
- b) Test results submitted must conform to the design intent of the project.

2. Acoustical Requirements: – In accordance with ASTM E 90, ASTM E 413, ASTM E 1332:

- a) Basic Vertical Double Glazed System – STC 34

C. Glass requirements:

1. Glass: ASTM C 1036, Type 2, Class 1, Quality q3 finish F1, cast or rolled glass, channel shape, surface texture as selected by architect.

a) Tempered Glass

- (1) Where safety considerations require, glass to be SGCC certified to ANSI Z 97.1-84 and CPSC Title 16 Part 1201 (16 CFR 1201, category II) for unlimited size. Safety film shall not be used to satisfy safety glazing requirements, except in longitudinally cut pieces which cannot be tempered.

b) Annealed Glass: In accordance with ANSI Z97.1-84 and 16 CFR 1201 category II.

- (1) Basic system with safety film: No free passage at 18-inch impact drop (in accordance with ANSI Z97.1-84 single glazed procedures).
- (2) Basic system with safety film: No free passage at 48-inch impact drop (in accordance with 16 CFR 1201 category II single glazed procedures).

c) Wire Glass: Shall not be considered a safety glass.

D. Interface with Adjacent Systems:

- 1. Integrate design and connections with adjacent construction.

1.5 SUBMITTALS

A. Product Data: Submit following:

- 1. Product data for translucent linear glass units, framing system, and glazing accessories.

B. Shop Drawings:

- 1. Submit plan view, elevation details, connection details, and installation details including interface with adjacent construction.
- 2. Drawings will identify all gaskets, tapes, sealants, fasteners, shims, hardware and accessories used to install the system. They will clearly identify adjacent

materials completely and label these materials as “by others”. The drawings will show all dimensions for sealant joints, maximum allowable offset for adjacent components, overall facade alignment tolerance, and maximum allowable deviation of supporting construction from the dimensions shown on the architectural drawings, maximum shim space at anchors etc., stamped with seal and signature by registered professional engineer licensed in the jurisdiction where the project is located with a minimum of five (5) years experience in the design of curtain wall systems.

C. Samples:

1. Glass: Submit three 8 inch (200mm) lengths by full panel width of standard production material. Note: Cast glass can vary slightly in color,
2. Frame: one 8 inch (200mm) section of each frame element.
3. Components: submit samples of all glazing accessories (tapes, shims, gaskets, sealants, screws, etc.).

D. Informational Submittals: Submit following packaged separately from other submittals:

1. Test reports: Submit following:
 - a) Certified test reports showing compliance with specified design requirements.
2. Manufacturer’s fabrication and installation instructions.

1.6 QUALITY ASSURANCE

A. Single Source Responsibility: Manufacturer shall be responsible for all components it supplies for the basic system.

B. Manufacturer’s authorized representative shall make visits as required to validate warranty.

C. Welder Qualifications: AWS certified within past 12 months for each type of weld required.

D. Certifications:

1. Certificates verifying AWS qualifications for each welder employed on Project.

1.7 MOCK – UPS

A. Visual mock-Up/Field Sample:

1. Construct typical, full size mock-up panel.
2. Locate as directed by Architect.
3. Accepted Mock-Up/Field Sample: May remain part of completed work.

1.8 PRE-INSTALLATION CONFERENCE

A. Conduct pre-installation conference in accordance with project requirements.

- B. Identify access to site, storage, sequencing, and scheduling.
- C. Establish requirements for visits by manufacturer's representative.

1.9 DELIVERY, STORAGE, AND HANDLING

A. General: Store on a level surface, above ground, in a watertight enclosed space fully ventilated and protected from damage and in accordance with manufacturer's recommendations.

1.10 WARRANTY

A. Special Warranty:

1. Warrant installed units to be free from defects in material and workmanship for a period of 10 years.
2. Include coverage against cracks, warps, pits, corrosion, peels, or blisters under normal use and service.
3. Installation warranty of **2** years shall be supplied by selected glazing contractor.

PART 2 - PRODUCTS

2.1 MANUFACTURERS AND PRODUCTS

A. Acceptable Products and Manufacturers:

1. Bendheim LINIT Frame System by Bendheim Wall Systems Inc.
2. Citiglass Group Ltd., U Profile Glass System
3. Pilkington Profilit Channel Glass System ◀

B. Glass products of other manufacturers matching the aesthetics, performance, and certifications of the above listed specified products will be considered for approval if submitted as part of the bid proposal and accompanied by samples, performance data, certifications and written statement that the manufacturer will conform to all requirements of these Specifications.

2.2 MATERIALS

A. Glass: ASTM C 1036, Type 2, Class 1, Quality q3 finish F1, cast or rolled glass, channel shape, surface texture as selected by architect.

1. Color: Low iron clear with very pale green cast.
2. ~~Coatings: sandblast and sealed.~~

B. Aluminum: ASTM B 221, alloy 6063-T5 for extrusions; ASTM B 209, alloy 5005-H14 for sheets; or other alloys and temper recommended by manufacturer appropriate for specified fabrication and/or finish.

C. ~~Vinyl: In accordance with AAMA 303-01 external grade unplasticized PVC, thermally stable to at least 150 degrees.~~

2.3 COMPONENTS

A. Basis of Design: Translucent Linear Glass Units:

1. Bendheim LINIT channel glass ~~P50/41/6~~ **P26/60/7; 10-5/16 inches x 2-3/8 inches with I-60 framing.**
2. Surface Texture of glass to be ~~504 Rough Cast~~ **Bendheim "Solar" or approved equal.**
3. ~~Coating applied to glass surface 2: sandblast and sealed.~~
4. Tempered glass (where shown) to be SGCC certified to ANSI Z 97.1, 16 CFR 1201 category II.
5. Tempered glass shall be diamond saw cut to provide precise dimensions and clean edges in accordance with EN 572.7.
6. Annealed glass shall be provided cut to size in accordance with EN 572.7.

B. Framing:

1. Aluminum: Extruded units per the profiles shown or as required to suit conditions indicated.
 - a) Minimum wall thickness of 0.125 inch (3.18mm) for framing members and rails, 0.090inch (2.3 mm) for sheets.
 - b) **Overall size: 2 inches x 4.5 inches.**
2. ~~Vinyl Frame Liner, Glass Support and Spacer: Extruded vinyl spacer engineered for snap-in application in standard thermally broken aluminum frame to support and space glass units.~~

2.4 ACCESSORIES

A. Anchorage Devices: Standard fabricated steel or aluminum assemblies of shapes, plates, bars or tubes.

1. Hot-dip galvanized steel assemblies after fabrication, ASTM A123, 2.0 ounce (0.05kg) minimum coating.

B. Fasteners: Non-magnetic stainless steel or other Engineer approved non-corrosive materials compatible with items being fastened.

1. Provide concealed fasteners wherever possible.
2. Exposed locations: Stainless steel screws with approved finish.
3. Concealed locations: Stainless steel or approved fasteners in accordance with approved engineering calculations.

C. Expansion/Chemical Anchor Devices: Lead-shield or toothed-steel, drilled-in, expansion bolt, or chemical/epoxy set anchors.

D. Protective Coatings: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 30 mil (0.76 mm) thickness for each coat; or alkyd type zinc chromate primer, FS TT-P-645.

E. Perimeter Joint Sealant, Joint Gaskets and/or Backer Rod: Silicone-Glazing.

1. Color: or manufacturer's color selected by Architect

2. Primer: As required by sealant manufacturer for applications shown.
3. Sealant Backing, Bond Breaker Rod and Tape: Closed cell unless otherwise required by sealant manufacturer. Translucent silicone joint backer rod to be used if requested by the architect.
4. Acceptable Manufacturers:
 - a) Silicones: Dow Corning, General Electric, Tremco.
 - b) Acrylic seam sealant: Schnee Morehead.
 - c) Translucent backer rod – supplied by Bendheim.

2.5 FABRICATION

A. Coordination of Fabrication: Check all field conditions for acceptable conformance to architect's drawings.

B. General:

1. Install framing in lengths as long as possible. Allow for thermal movement as required by project engineer.
2. Conceal fasteners wherever possible.
3. Isolate dissimilar metals and aluminum in contact with concrete utilizing protective coating or pre-formed separators which will prevent contact and corrosion.

C. Aluminum Framing: Provide members of size, shape and profile indicated, designed to provide for glazing from exterior or interior, fabricated and assembled in accordance with manufacturer's fabrication and installation manual.

1. Fabricate frame assemblies with mitered or coped joints.
2. Maintain accurate relation of planes and angles.
3. Make provisions in framing for minimum edge clearance, nominal edge cover and nominal pocket width for thickness and type of glazing or in-fill used in accordance with requirements of manufacturer's fabrication and installation manual and GANA Glazing Manual.

D. Welding: Comply with recommendations of American Welding Society (AWS).

1. Use recommended electrodes and methods to avoid distortion and discoloration.
2. Grind exposed welds smooth and flush with adjacent surfaces; restore material finish.

2.6 FINISHES

~~A. Fluorocarbon Coating: AAMA 2604 [2605].~~

- ~~1. Resin: 70 percent polyvinylidene fluoride (PVF₂).~~
- ~~2. Substrate: Cleaned and pre-treated.~~
- ~~3. Primer: Manufacturer's standard epoxy or acrylic coating, dry film thickness:~~

- ~~a) Extrusion: Minimum 0.20 mil (0.005 mm).~~
- ~~4. Color coat: PVDF, Dry film thickness:
 - ~~a) Extrusion: Minimum 0.80 mil (0.020 mm).~~~~
- ~~5. Clear top coat (three coat finish only): Dry film thickness
 - ~~a) Extrusion: Minimum 0.40 mil (0.010 mm)~~~~
- ~~6. Color: Duranar by PPG, from Manufacturer's standard colors as selected by architect.~~
- ~~7. Acceptable Coatings Manufacturers:
 - ~~a) Akzo Coatings, Inc., Columbus, OH.~~
 - ~~b) Lilly Industries Inc., Indianapolis, IN.~~
 - ~~c) Morton International, Inc., Chicago, IL.~~
 - ~~d) PPG Industries Inc., Delaware, OH and Springdale, PA.~~
 - ~~e) Valspar Corporation, Garland, TX.~~~~
- ~~8. Application: Specified coatings applied to visible surfaces.~~

B. Clear Anodized: AA-M12C22A41, Architectural Class 1, etched, medium matte, clear anodic coating, 0.7 mill (0.018mm) minimum thickness.

PART 3 - EXECUTIONS

3.1 INSTALLERS

A. Architect approved with a minimum of five (5) years experience in the installation of curtain wall systems.

3.2 EXAMINATION

A. Site Verification of Conditions: Do not commence work until field conditions conform adequately to architectural drawings.

3.3 INSTALLATION

A. Install units in accordance with approved Shop Drawings, plumb, level, square, and free from warp or twist while maintaining dimensional tolerances and alignment with surrounding construction adjacent surfaces.

B. Erect framing, vinyl spacer, and glass in accordance with manufacturer's printed installation instructions. Clean glass immediately before installing. Protect or seal all installed glass units daily on both sides of glass, between frame and glass, and between linear glass units to prevent infiltration of airborne debris.

C. Perimeter Joint Sealant: Insure compatibility of joint components and adhesion of perimeter joint sealant to surfaces that receive sealant.

D. Erection Tolerances – Framing Members:

1. Limit variations of jambs from plumb and horizontal frame members from level:
 - a) 1/8 inch in 12 feet (3 mm in 3000 mm) vertically.
 - b) 1/8 inch in 20 feet (3 mm in 6000 mm) horizontally.
2. Limit variations from Theoretical Locations: 1/4 inch (6 mm) for any member at any location.
3. Limit Offsets in End-To-End and Edge-To-Edge Alignment: 1/32 inch (0.8 mm) maximum out of plane offset for horizontal and vertical glazing legs of framing members designed to be in the same plane.

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Services:

1. Employ manufacturer's representative as necessary to insure proper installation and to verify work is done in accordance with manufacturer's requirements.

3.5 CLEANING

A. Cleaning:

1. Clean as recommended by manufacturer. Do not use materials or methods which may damage system components or surrounding construction.

3.6 PROTECTION

A. Protection:

1. Protect finished surfaces from damage.

END OF SECTION

SECTION 092216
NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Non-load-bearing steel framing systems for gypsum board assemblies.
- B. Related Sections:
 - 1. Division 09 Section "Gypsum Board" for gypsum board attached to steel framing systems.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated, include manufacturer's written installation procedures and details.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer shall be a current member of the Steel Stud Manufacturers Association (SSMA).
- B. Source Limitations: Obtain metal framing systems for a single source from a single manufacturer.
- C. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
- D. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide cold-formed metal framing by one of the following:
1. California Expanded Metal Products Company.
 2. Clark Steel Framing.
 3. Dietrich Metal Framing; a Worthington Industries Company.
 4. MarinoWare; a division of Ware Industries.

2.2 NON-LOAD-BEARING STEEL FRAMING SYSTEMS

- A. Framing Members, General: Comply with ASTM C 754 and Steel Stud Manufacturers Association, Product Technical Information, ICBO ER-4943P, for conditions indicated.
1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal, unless otherwise indicated.
 2. Protective Coating: ASTM A653/A 653M, G40, hot-dip galvanized, unless otherwise indicated.
- B. Steel Studs, Joists, and Runners: ASTM C 645, of minimum base metal thickness and size as indicated on the Drawings.
1. Joists shall be un-punched.
- C. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dietrich Metal Framing; SLP-TRK.
 - b. Steel Network Inc. (The); VertiClip SLD or VertiTrack VTD Series.
 - c. Superior Metal Trim; Superior Flex Track System (SFT).
- D. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of the structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dietrich Metal Framing; SLP-TRK.
 - b. Fire Trak Corp.; Fire Trak
 - c. Metal-Lite, Inc.; The System.

- E. Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
- F. Flat Strapping: 1-1/2 inch wide by 0.0312 inch thick (20 gage) flat steel strapping unless otherwise indicated on Drawings.
- G. Cold-Rolled Channel Bridging: 0.0538-inch bare-steel thickness, with minimum 1/2-inch wide flanges.
 - 1. Depth: 3/4 inch unless otherwise indicated on Drawings.
 - 2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch thick, galvanized steel.
- H. Hat-Shaped, Rigid Furring Channels: ASTM C 645, of minimum base metal thickness and depth as indicated on the Drawings.
- I. Resilient Furring Channels: 1/2-inch deep, asymmetrical shaped, steel sheet members designed to reduce sound transmission.

2.3 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
- B. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power and other properties required to fasten steel members to substrates.
- C. Isolation Strip at Exterior Walls: Provide adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF FRAMING

- A. Install framing components in sizes and spacings indicated on Drawings, but not less than those required by referenced installation standards for assembly types and other assembly components indicated. Comply with the following installation standards:
 - 1. ASTM C754.
 - 2. ASTM C 840 as applicable to metal framing systems for gypsum board.
 - 3. SSMA, ICC ER-4943P.

- B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- C. Install studs and joists so flanges within framing system point in same direction.
- D. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.
- E. Install bracing at terminations in assemblies.
- F. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- G. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to slip-type head joints at tops of framing systems to prevent axial loading of finished assemblies. Provide slip-type head joints as indicated on the Drawings, or if not indicated, by one of the following methods:
 - 1. Single Long-Leg Runner System: ASTM C 645 top runner with 2-inch deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top runner and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
 - 2. Double-Runner System: ASTM C 645 top runners, inside runner with 2-inch deep flanges in thickness not less than indicated for studs and fastened to studs, outside runner fastened to overhead structure and sized to friction fit inside runner with not less than 1 inch overlap of flanges and providing not less than 1 inch vertical deflection.
 - 3. Deflection type top track.
- H. Install tracks (runners) at floors and overhead supports and fasten to structure as indicated on Drawings.
- I. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
- J. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
 - 1. Install not less than two studs at each jamb, unless otherwise indicated.
 - 2. Extend jamb studs to the structure above, or where jamb studs do not extend to the structure above, provide diagonal bracing perpendicular to the wall and located directly above jamb studs and fasten bracing to the structure above.
- K. Other Framed Openings: Frame openings other than door openings the same as required for door openings, unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
- L. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor

to underside of solid structure. Frame top of wall condition as indicated on Drawings to maintain continuity of fire-resistance-rated assembly indicated.

M. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.

N. Curved Partitions:

1. Bend track to uniform curve and locate straight lengths so they are tangent to arcs.
2. Begin and end each arc with a stud, and space intermediate studs equally along arcs. On straight lengths of not less than 2 studs at ends of arcs, place studs 6 inches on center

END OF SECTION

SECTION 092900
GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Interior gypsum board.
- 2. Tile backing panels.
- 3. Acoustical board panels.

- B. Related Sections include, but are not limited to the following:

- 1. Division 07 Section "Insulation" for batt and blanket insulation and vapor retarders installed in assemblies that incorporate gypsum board.
- 2. Division 09 Section "Non-Structural Metal Framing" for non-structural framing that supports gypsum board.
- 3. Division 09 Section "Tiling" for cementitious backer units installed as substrates for ceramic tile.
- 4. Division 09 Section "Painting" for primers applied to gypsum board surfaces.

1.3 ACTION SUBMITTALS

- A. Product Data: Manufacturer's product data for each type of product indicated or incorporated into the Work.

- 1. Include statement of VOC content for any adhesives or sealants.

- B. Samples: For the following products:

- 1. Textured Finishes: Three (3) 48 inch square samples for each textured finish indicated and on same backing indicated for Work.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.5 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
- B. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 INTERIOR GYPSUM BOARD

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. American Gypsum Co.
 - 2. Georgia-Pacific Gypsum, LLC.
 - 3. Lafarge North America Inc.
 - 4. National Gypsum Company.
 - 5. PABCO Gypsum.
 - 6. USG Corporation.
- B. Gypsum Wallboard: Provide gypsum wallboard complying with ASTM C 1396/C 1396M, as applicable to type of gypsum board indicated.
 - 1. Regular Type:
 - a. Thickness: 5/8 inch.
 - b. Long Edges: Tapered.
 - 2. Moisture and Mold-Resistant Type: With moisture and mold-resistant core and surfaces.
 - a. Core: 5/8 inch, Type X.
 - b. Long Edges: Tapered.
 - c. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.
 - 3. Flexible Type: Manufactured to bend to fit radii and to be more flexible than standard regular-type gypsum board of same thickness.
 - a. Thickness: 1/4 inch.
 - b. Long Edges: Tapered.

2.2 TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A118.9 and ASTM C 1288 or 1325, with manufacturer's standard edges.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. CertainTeed Corp.; FiberCement BackerBoard.
 - b. Custom Building Products; Wonderboard.
 - c. FinPan, Inc.; Util-A-Crete Concrete Backer Board.
 - d. James Hardie Building Products, Inc.; Hardiebacker.
 - e. National Gypsum Company, Permabase Cement Board.
 - f. USG Corporation; DUROCK Cement Board.
 - 2. Thickness: 5/8 inch.
 - 3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.3 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
 - 1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
 - 2. Shapes:
 - a. Cornerbead.
 - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
 - c. L-Bead: L-shaped; exposed long flange receives joint compound.
 - d. U-Bead: J-shaped; exposed short flange does not receive joint compound.

2.4 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
 - 1. Interior Gypsum Board: Paper.
 - 2. Tile Backing Panels: As recommended by panel manufacturer.
- C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
 - 1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
 - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.
 - 3. Fill Coat: For second coat, use drying-type, all-purpose compound.
 - 4. Finish Coat: For third coat, use drying-type, all-purpose compound.

- D. Joint Compound for Tile Backing Panels:
 - 1. Cementitious Backer Units: As recommended by backer unit manufacturer.

2.5 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
 - 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick (20 gage structural and heavier).
 - 2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.
- C. Acoustical Sealant: As specified in Division 07 Section "Joint Sealants."
 - 1. Sealants shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- D. Insulation: As specified in Division 07 Section "Insulation."

2.6 TEXTURE FINISHES

- A. Primer: As recommended by textured finish manufacturer.
 - 1. Coordinate primers with Division 09 Section "Painting."
- B. Non-Aggregate Finish: Pre-mixed, vinyl texture finish for spray application.
 - 1. Texture: Orange Peel
- C. Where Work is adjacent to existing gypsum board surfaces, match existing texture.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING GYPSUM PANELS, GENERAL

- A. Comply with ASTM C 840 and manufacturer's written installation instructions.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
 - 2. Fit gypsum panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4 to 3/8-inch wide joints to install sealant.
- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4 to 1/2-inch wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- I. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.
- J. Coordinate gypsum panel installation with insulation work specified in Division 07 Section "Insulation."

1. Thermal and sound attenuation batt/blanket insulation shall be installed before installing gypsum panels, unless blankets are readily installed after panels have been installed on one side of framing members.

3.3 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:

1. Regular Type: At vertical and horizontal surfaces, unless otherwise indicated.
2. Flexible Type: Apply in double layer at curved assemblies.
3. Moisture and Mold-Resistant Type: At walls of toilet and janitor rooms, walls within 2 feet (horizontally) of plumbing fixtures, and other locations as indicated on Drawings.

B. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing, unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing) using continuous panels without abutting end joints unless otherwise indicated.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
 - b. At stairwells and other high walls where the vertical dimension of the wall without horizontal offsets exceeds the maximum available panel length, install panels horizontally, unless otherwise indicated.

C. Multilayer Application:

1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints 1 framing member, 16 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
2. On partitions/walls, apply gypsum board indicated for base layers and face layers parallel to framing members, as required for single layer application, with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
3. Fastening Methods: Fasten base layers and face layers separately to supports with screws or as required for fire resistance rated design.

D. Curved Surfaces:

1. Install panels horizontally (perpendicular to supports) and unbroken, to extent possible, across curved surface plus not less than 12-inch long straight sections at ends of curves and tangent to them.

2. For double-layer construction, fasten base layer to studs with screws 16 inches on center. Center gypsum board face layer over joints in base layer, and fasten to studs with screws spaced 12 inches on center at framing members.

3.4 APPLYING TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A108.11, at locations indicated to receive thinset tile.
- B. Where tile backing panels abut other types of panels in same plane, provide panels of matching thickness or shim surfaces to produce a uniform plane across panel surfaces.

3.5 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints at locations indicated on Drawings and according to ASTM C 840 and in specific locations approved by Architect for visual effect.
- C. Interior Trim: Install in the following locations:
 1. Cornerbead: Use at outside corners, unless otherwise indicated.
 2. LC-Bead: Use at exposed panel edges.
 3. L-Bead: Use at exposed panel edges where LC-Bead cannot be used.
 4. U-Bead: Use where indicated.

3.6 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
 1. Level 1: All joints and interior angles shall have tape embedded in joint compound; surface shall be free of excess joint compound; tool marks and ridges are acceptable.
 - a. Locations: Concealed areas and areas above ceilings.

2. Level 2: All joints and interior angles shall have tape embedded in joint compound and one separate coat of joint compound applied over all joints, angles, fastener heads, and accessories; surface shall be free of excess joint compound; tool marks and ridges are acceptable.
 - a. Locations: Panels that are substrate for applied rigid panels having a thickness not less than 3/8 inches.
3. Level 3: All joints and interior angles shall have tape embedded in joint compound and two (2) separate coats of joint compound applied over all joints, angles, fastener heads, and accessories; all joint compound shall be smooth and free of tool marks and ridges.
 - a. Locations: Not used unless otherwise indicated on Drawings.
4. Level 4: All joints and interior angles shall have tape embedded in joint compound and Three (3) separate coats of joint compound applied over all joints, angles, fastener heads, and accessories; all joint compound shall be smooth and free of tool marks and ridges.
 - a. Locations: At panel surfaces that will be exposed to view and painted or will be substrates for wall coverings.
 - b. Primer and its application to surfaces are specified in Division 09 Section "Painting."
 - c. Where suspended ceilings are to be installed, wall finish shall extend not less than 6 inches above the ceiling height.
5. Level 5: All joints and interior angles shall have tape embedded in joint compound and Three (3) separate coats of joint compound applied over all joints, angles, fastener heads, and accessories; a thin skim coat of joint compound or similar material specific for this purpose shall be applied to the entire surface; the surface shall be smooth and free of tool marks and ridges.
 - a. Locations: Not used unless otherwise indicated on Drawings
 - b. Primer and its application to surfaces are specified in Division 09 Section "Painting."

E. Cementitious Backer Units: Finish according to manufacturer's written instructions.

3.7 APPLYING TEXTURE FINISHES

- A. Surface Preparation and Primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes prior to application of finishes. Apply primer to surfaces that are clean, dry, and smooth.
- B. Texture Finish Application: Mix and apply finish using powered spray equipment, to produce a uniform texture free of starved spots or other evidence of thin application or of application patterns.

- C. Prevent texture finishes from coming into contact with surfaces not indicated to receive texture finish by covering them with masking agents, polyethylene film, or other means. If, despite these precautions, texture finishes contact these surfaces, immediately remove droppings and overspray to prevent damage according to texture-finish manufacturer's written recommendations.

3.8 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION

SECTION 095113
ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes acoustical panels and exposed suspension systems for ceilings.
- B. Related Requirements:
 - 1. Division 09 Section "Acoustical Tile Ceilings" for ceilings consisting of acoustical tiles used with adhesive bonding.

1.3 SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
 - 1. Acoustical Panels: 6-inch square samples of each type, color, pattern, and texture.
 - 2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch long Samples of each type, finish, and color.
- C. Evaluation Reports: For each acoustical panel ceiling suspension system and anchor and fastener type, from ICC-ES.
- D. Maintenance Data: For finishes to include in maintenance manuals.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension-system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and stabilized moisture content.

- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.5 FIELD CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
 - 1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

1.6 COORDINATION

- A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Acoustical ceiling shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- B. Surface-Burning Characteristics: Acoustical panels shall have surface-burning characteristics complying with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84 and having a Smoke-Developed Index of 50 or less.

2.2 ACOUSTICAL PANELS, GENERAL

- A. Source Limitations:
 - 1. Acoustical Ceiling Panels: Obtain each type from a single source from a single manufacturer.
 - 2. Suspension Systems: Obtain each type from a single source from a single manufacturer.
- B. Glass-Fiber-Based Panels: Made with binder containing no urea formaldehyde.
- C. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances unless otherwise indicated.

1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface according to ASTM E 795.
- D. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical panels treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.
- E. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.

2.3 ACOUSTICAL PANEL TYPES

- A. Basis-of-Design Products: Where named manufacturer's products are indicated, Drawings and Specifications are based on products manufactured by:
1. Armstrong World Industries, Inc.
 - a. Subject to compliance with requirements, provide products indicated or comparable products by one of the following:
 - 1) BPB USA.
 - 2) CertainTeed Corp.
 - 3) USG Interiors, Inc.; Subsidiary of USG Corporation.
- B. Acoustical Panel Types:
1. Type ACP-1: Armstrong World Industries; Ultima No. 1894. Install in Room 39 "Chief of Staff".
 - a. Type and Form: Type IV, mineral base with painted finish; Form 2, water felted.
 - b. Pattern: No Pattern.
 - c. Size: 24 x 24 x 3/4 inches.
 - d. Edge: Beveled tegular for 15/16 inch grid.
 - e. Color: White.
 - f. LR: Not less than 0.90
 - g. NRC: Not less than 0.60.
 2. Type ACP-2: Armstrong World Industries; Ultima, No. 1995. Install in Room 48 "Lobby".
 - a. Type and Form: Type IV, mineral base with painted finish; Form 2, water felted.
 - b. Pattern: No Pattern.
 - c. Size: 12 x 72 x 3/4 inches.
 - d. Edge: Beveled tegular for 9/16 inch grid.
 - e. Color: White.

- f. LR: Not less than 0.90
 - g. NRC: Not less than 0.60.
3. Type ACP-3: Armstrong World Industries; Metalworks 4" Plank. Install in Room 47 "Conference Room".
- a. Form: Metal.
 - b. Pattern: No Pattern.
 - c. Size: 4 x 96 x 1 inches.
 - d. Color: To Be Selected by Architect.
 - e. LR: Not less than 0.77

2.4 METAL SUSPENSION SYSTEMS, GENERAL

- A. Metal Suspension-System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635/C 635M.
- B. Attachment Devices: Size for five times the design load indicated in ASTM C 635/C 635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
- C. Wire Hangers, Braces, and Ties: Zinc-coated, carbon-steel wire, ASTM A 641/A 641M, Class 1 zinc coating, soft temper. Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 12 gage (0.106 inch diameter) wire.
- D. Seismic Struts: As indicated on Drawings.
- E. Perimeter Seismic Clips: Manufacturer's proprietary perimeter seismic clips as necessary to comply with standards indicated.
- F. Seismic Expansion Joints: Manufacturer's standard seismic expansion joints as necessary to comply with standards indicated.

2.5 METAL SUSPENSION SYSTEM TYPES

- A. For Type ACP-1 and ACP-3: Wide-Face, Capped, Double-Web Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, not less than G30 coating designation; with prefinished 15/16-inch wide metal caps on flanges.
 - 1. Structural Classification: Heavy-duty system.
 - 2. End Condition of Cross Runners: Override (stepped) type.
 - 3. Face Design: Flat, flush.
 - 4. Cap Material: Steel cold-rolled sheet.
 - 5. Cap Finish: Painted white.
 - 6. Products: Subject to compliance with requirements, provide one of the following:

- a. Armstrong World Industries, Prelude XL (ESR-1308).
 - 1) Main Runners: No. 7301.
 - 2) Cross Runners: No. XL7341 (4'), XL7328 (2').
 - 3) Perimeter Seismic Clips: No. BERC2.
 - b. Chicago Metallic Corp., 1200 (ER-1905).
 - 1) Main Runners: No. 200.01H.
 - 2) Cross Runners: No. 1214.01H (4'), 1202.01H (2').
 - 3) Perimeter Seismic Clips: No. 1496.
- B. For Type ACP-2: Narrow-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, not less than G30 coating designation; with prefinished, cold-rolled, 9/16-inch wide metal caps on flanges.
- 1. Structural Classification: Heavy-duty system.
 - 2. End Condition of Cross Runners: Override (stepped) type.
 - 3. Face Design: Flat, flush.
 - 4. Cap Material: Steel cold-rolled sheet.
 - 5. Cap Finish: Painted white.
 - 6. Products: Subject to compliance with requirements, provide one of the following:
 - a. Armstrong World Industries, Suprafine XL (ESR-1308).
 - 1) Main Runners: No. 7501.
 - 2) Cross Runners: No. XL7541 (4'), XL7520 (2').
 - 3) Perimeter Seismic Clips: No. BERC2.
 - b. Chicago Metallic Corp., 4000 Tempra (ER-1905).
 - 1) Main Runners: No. 4040.01CH.
 - 2) Cross Runners: No. 4014.01CH (4'), 4022.01 (2').
 - 3) Perimeter Seismic Clips: No. 1496.
- C. Edge Moldings and Trim: Manufacturer's standard roll formed sheet metal edge moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.
- 1. Provide manufacturer's standard angle edge molding with hemmed edges having nominal 7/8 inch legs that fit acoustical panel edge details and suspension systems indicated.
 - 2. Provide manufacturer's proprietary perimeter seismic clips at ends of main and cross runners at wall angles to comply with seismic standards indicated.
 - 3. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.

4. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

2.6 ACOUSTICAL SEALANT

- A. Acoustical Sealant: Manufacturer's standard sealant complying with ASTM C 834 and effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 1. Exposed and Concealed Joints: Nonsag, paintable, nonstaining latex sealant.
 2. Concealed Joints: Nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant.
 3. Acoustical sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
- B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

- A. General: Install acoustical panel ceilings to comply with ASTM C 636/C 636M and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. Hanger Wires: Suspend ceiling hanger wires from building's structural members and attach to grid members as indicated on Drawings and as follows:

1. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns in 1-1/2 inches. Connect hangers directly either to structure or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 2. Space hangers not more than 48 inches on center along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
 3. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 4. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, counter splaying, or other equally effective means.
 5. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 6. Do not support ceilings directly from permanent metal forms, floor or roof deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
 7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 8. Do not attach hangers to steel deck tabs.
- C. Seismic Bracing: Seismic bracing assemblies shall consist of a compression strut and sets of 4 splayed brace wires oriented 90 degrees from each other attached to suspension grid main runners and the structure above as indicated on Drawings and as follows:
1. Space bracing assemblies not more than 12 feet on center each way and not more than 6 feet from walls.
 2. Secure brace wires to ceiling suspension main runners and to building structural members above with a minimum of four tight turns in 1-1/2 inches. Brace wires shall attach to main runners within 2 inches of the intersection of main and cross runners. The slope of brace wires shall not exceed 45 degrees from the plane of the ceiling.
 3. Compression struts shall attach to ceiling grid main runners at the intersection of the brace wires and shall be installed not more than 1 horizontal to 6 vertical out of plumb.
 4. Ceiling areas of 144 square feet or less surrounded by walls attached or braced to the structure above shall be exempt from bracing requirements.
- D. Edge Molding and Trim: Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
 2. Screw-attach moldings to substrate at intervals not more than 16 inches on center and not more than 3 inches from ends, leveling with ceiling suspension

system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.

- E. Suspension System Runners: Install suspension-system runners so they are level, square, and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. Expansion Joints: Provide expansion joints as indicated on Drawings and as follows:
 - 1. Ceiling areas exceeding 2,500 square feet shall be separated by seismic joints so that no area exceeds 2,500 square feet.
 - 2. Expansion joints shall be provided at the intersections of corridors and at junctions of corridors with lobbies or similar areas.
- G. Acoustic Panels: Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
 - 1. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension system runners and moldings.
 - 2. For reveal-edged panels on suspension system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
 - 3. Penetrations: Penetrations through ceiling panels for sprinkler heads and similar rigid penetrating items that are not connected to the ceiling system shall have 2 inch oversized openings to allow for horizontal movement of 1 inch in all directions. Penetrations shall be finished with escutcheons to seal off oversized openings.
 - a. Flexible pipe penetrations shall not require oversize openings.

3.4 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 102113
TOILET COMPARTMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes solid-polymer plastic toilet compartments configured as toilet enclosures and urinal screens; floor anchored and overhead braced.
- B. Related Sections:
 - 1. ~~Division 06 Section "Rough Carpentry" for backing and blocking for supports for toilet compartments.~~
 - 2. Division 09 Section "Non-Structural Metal Framing" for backing and blocking for supports for toilet compartments.
 - 3. ~~Division 10 Section "Toilet Room Accessories" for toilet tissue dispensers, seat cover dispensers, grab bars, and similar accessories.~~

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Samples for Initial Selection: For each type of unit indicated.
- D. Samples for Verification: Of each type of color and finish required for units, prepared on not less than 4-inch square Samples of same thickness and material indicated for Work.
- E. Maintenance Data: For toilet compartments to include in maintenance manuals.

1.4 COORDINATION

- A. Coordinate blocking and backing for wall anchorage of toilet compartments with wall framing.

1.5 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication and indicate measurements on Shop Drawings.
 - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating toilet compartments without field measurements. Coordinate wall, floor, ceilings, and other contiguous construction to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 REGULATORY REQUIREMENTS

- A. Accessible Compartments: Toilet compartments and urinal screens designated as accessible shall comply with applicable provisions in the 2010 ADA Standards for Accessible Design, ICC/ANSI A117.1, and the 2013 California Building Code.
 - 1. Wheelchair accessible toilet compartments shall comply with the following and have minimum clear dimensions as follows:
 - a. Width: 60 inches.
 - b. Depth for clear space measured from the rear wall (Clear space shall include the water closet, no doors may swing into this clear space):
 - 1) Wall Mounted Toilets: 56 inches.
 - 2) Floor Mounted Toilets: 59 inches.
 - c. Distance in front of water closets:
 - 1) End opening stalls: 48 inches.
 - 2) Side opening stalls: 60 inches.
 - d. Doors:
 - 1) Width (Clear width):
 - a) End opening stalls: 32 inches.
 - b) Side opening stall: 34 inches.
 - 2) Pull side strike edge clearance: 18 inches measured from the strike edge of the door in a closed position.
 - 3) Maximum distance from edge of door opening to adjacent intersecting wall or partition panel: 4 inches.
 - 4) Doors located at end opening stalls shall be located in front of the open space adjacent to the side of the water closet.
 - 5) Hardware:

- a) Doors shall be self-closing (gravity hinge).
 - b) An accessible pull shall be located on each side of the door near the latch.
 - c) Operating hardware and pulls shall be located between 34 and 44 inches above the floor.
 - d) Operable hardware shall be operable with one hand and not require tight grasping, pinching, or twisting of the wrist. The force to operate hardware shall not exceed a 5 pound force.
- e. Toe Clearance: Partitions shall have toe clearance of 9 inches minimum measured from the floor to the bottom of partition panels, exclusive of support members.
2. Screens at Wheelchair Accessible Urinals: 30 inches minimum clear width, 36 inches minimum clear width where adjacent walls or screens are more than 24 inches deep.

2.2 SOLID POLYMER TOILET COMPARTMENTS AND SCREENS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- 1. Accurate Partitions Corporation.
 - 2. General Partitions Mfg. Corp.
 - 3. Scranton Products (Capitol/Comtec/Santana).
- B. Toilet Enclosure Style: Ceiling Hung.
- C. Urinal Screen Style: Wall hung.
- D. Doors, Panels, and Pilasters: Solid, high-density polyethylene (HDPE) or polypropylene (PP) panel material, not less than 1 inch thick, seamless, and with homogenous color and pattern throughout thickness of material.
- 1. Color and Pattern: One color and pattern in each room as selected by Architect from manufacturer's full range of colors and patterns.
 - 2. Heat-Sink Strip: Manufacturer's standard continuous, extruded-aluminum strip fastened to exposed bottom edges of solid-polymer doors and panels to prevent burning.
- E. Wall Brackets for Compartments: Manufacturer's continuous full height aluminum with bright dipped anodized finish wall brackets.
- 1. Profile: Double-ear profile unless single-ear, U-shaped or H-shaped profile is required for project conditions.
- F. Wall Brackets for Compartments: Manufacturer's continuous full height polymer wall brackets.
- 1. Polymer Color and Pattern: Matching pilaster.

2. Profile: Double-ear profile unless single-ear, U-shaped or H-shaped profile is required for project conditions.
- G. Wall Brackets for Urinal Screens: Heavy duty brackets fabricated from 0.075-inch thick (14 gage) stainless steel, double ear configuration, with 4-inch legs for 1-inch thick panels, "Jacknob" .No. 4339 or equivalent.
- H. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in bright dipped anodized finish.
1. Wall Brackets for Headrails: 16 gage stainless steel.
 2. End caps for Headrails: Manufacturer's standard aluminum caps.
- I. Fasteners: All fasteners shall be stainless steel. Exposed fasteners shall have theft-resistant-type heads. Provide sex-type bolts for through-bolt applications.
1. Fasteners for Floor and Wall Connections:
 - a. Metal Stud Framed Walls: No. 14 self-tapping sheet metal screw by length required to penetrate 1-inch beyond metal framing.

2.3 HARDWARE AND ACCESSORIES

- A. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories as follows:
1. Hinges: Heavy duty extruded aluminum hinges, 8-inches in length, with wrap-around flanges, through bolted to pilasters and door panels with sex bolts. Hinges shall be self-closing type (gravity hinge) that can be adjusted to hold doors open at any angle up to 90 degrees.
 2. Latch and Keeper: Surface-mounted heavy duty extruded aluminum latch and keeper unit designed for emergency access and with combination rubber-faced door strike and keeper secured to doors and panels with sex bolts. Strikes shall be a minimum of 6-inches long. Slide bolts shall have a black anodized finish.
 - a. Accessible Stalls: Provide units that comply with accessibility requirements of authorities having jurisdiction at compartments indicated to be accessible to people with disabilities. Latches shall be flip-over style, sliding, or other hardware not requiring the user to grasp or twist.
 3. Door Bumper: Manufacturer's standard chrome plated Zamac rubber-tipped bumper, sized to prevent door from hitting compartment-mounted accessories, wall, or partition; 4 inch maximum projection; provide one at each inswinging door (Do not provide at outswinging doors unless specifically indicated).
 4. Door Pulls: Manufacturer's standard chrome plated Zamac door pulls.
 - a. Out-swinging Doors: Provide door pulls on the pull side of out-swinging compartment doors.
 - b. Accessible Stalls: Provide an accessible door pull on each side of doors near the latch at compartments indicated to be accessible to persons with

disabilities. Door pulls shall be loop or U-shape complying with accessibility requirements of authorities having jurisdiction.

- B. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel or chrome-plated steel or brass, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless steel, hot-dip galvanized steel, or other rust-resistant, protective-coated steel.
- C. Material Finishes, General: Provide hardware and accessories having the finishes indicated for the following materials:
 - 1. Aluminum: Bright dipped anodized aluminum.
 - 2. Stainless Steel: Satin finish.
 - 3. Zamac: Chrome-plated, nonferrous, cast zinc alloy (zamac).
 - a. Zamac shall only be allowed for pulls, door bumpers, and combination coat hook/door bumpers.

2.4 FABRICATION

- A. General: Provide panels of sizes indicated and as required for project conditions. Machine edges to have radius of 1/4-inch. Exposed panel surfaces shall be free of saw marks, cuts, nicks or other damage.
- B. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.
- C. Door and Panel Heights: Doors and panels shall be fabricated in 55-inch heights.
- D. Urinal Screens: Urinal screens shall be fabricated in 42-inch panel heights by 18-inches in depth.
- E. Continuous Wall Brackets: Continuous wall brackets shall be cut to lengths one-inch less than panel heights.
- F. Door Size and Swing: Unless otherwise indicated, provide doors as follows:
 - 1. Standard, Non-Accessible Stalls: 24-inch wide in-swinging doors.
 - 2. Wheelchair Accessible Stalls: 36-inch wide doors with a minimum 34-inch wide clear opening; doors shall be in-swinging or out-swinging as indicated on Drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices in compliance with the specifications.
1. Maximum Clearances:
 - a. Pilasters to Panels: 1/2 inch.
 - b. Panels to Walls: 1 inch.
 2. Comply with referenced regulatory requirements for compartments and screens to be installed at water closets and urinals indicated to be accessible.
- B. Overhead-Braced Units: Secure pilasters to floor and level, plumb, and tighten. Secure continuous head rail to each pilaster with not less than two fasteners. Head rails shall be cross braced with intersecting head rails spaced not more than 6 feet on center and aligned with the panels below. Install doors and panels with top edges level and aligned, adjust doors so tops of doors are parallel with overhead bracing when doors are in a closed position. Doors, panels and screens shall be installed with the bottom edge approximately 14-inches above the floor (approximate dimension for accommodation of floor slope).
- C. Wall-Hung Urinal Screens: Attach screens to wall with 3 wall heavy duty urinal screen wall brackets located at top, bottom, and mid-panel. Set units level and plumb and to resist lateral impact.

3.2 ADJUSTING

- A. Hardware Adjustment: Adjust and lubricate hardware according to manufacturer's written instructions for proper operation. Set hinges to return doors to a fully closed position unless otherwise noted.

END OF SECTION

SECTION 102819
GLASS SHOWER DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes frameless shower doors and enclosures.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for shower doors and enclosures.
- B. Shop Drawings: For shower doors and enclosures. Include plans, elevations, sections, and attachment details.
- C. Samples for Initial Selection: For each type of exposed finish.
- D. Samples for Verification: For tub and shower doors and enclosures.
 - 1. Each type of mounting and operating hardware; full size.
 - 2. Glass and glazing; 12 inches (305 mm) square.
 - 3. Trim; 12-inch (305-mm) lengths.
- E. Product Schedule: For shower doors and enclosures.

1.4 INFORMATIONAL SUBMITTALS

- A. Sample Warranty: For manufacturer's special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For shower doors and enclosures to include in maintenance manuals.

1.6 FIELD CONDITIONS

- A. Verify dimensions by field measurements before fabrication and indicate on Shop Drawings.

1.7 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of tub and shower doors and enclosures that fail in materials or workmanship within specified warranty period without monetary limitation.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including excessive deflection.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal use.
 - 2. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 FRAMED ENCLOSURES

- A. Glass panels with full perimeter frames of extruded aluminum with screw-fastened corners. Minimum 3/8-inch (10-mm) penetration of glass into frame. Framing members of thickness required to support imposed loads.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Agalite; Hartung Glass Industries.
 - b. Alumax; Sapa Extrusions, Inc.
 - c. American Shower Door.
 - d. Artistcraft Shower Doors.
 - e. Basco Corporation.
 - f. Cardinal Shower Enclosures; Hoskin & Muir, Inc.
 - g. Century Bathworks.
 - h. Fleurco Shower Doors.
 - i. Southeastern Aluminum Products, Inc.
- B. Frames, Hardware, and Trim: Manufacturer's standard units as indicated and as required for a complete installation.
 - 1. Materials: Aluminum; ASTM B 221 (ASTM B 221M).
 - 2. Finish: Clear anodic.
 - 3. Color: **Cardinal "Brushed Nickel" or equal.**

- C. Swinging Doors: Full-height piano hinge. Manufacturer's standard pulls and latch.
- D. Glazing: Comply with requirements in Section 088000 "Glazing."
- E. Glazing: Safety glazing materials complying with 16 CFR 1201, Category II, with permanently etched identification acceptable to authorities having jurisdiction.
 - 1. Glass Nominal Thickness: 6 mm.
 - 2. Patterned Glass: ASTM C 1048, Kind FT (fully tempered), Type II, Class 1 (clear), Form 3; Quality-Q6, Finish F1 (patterned, one side).
 - a. **Pattern: Cardinal "Rain" or equal.**
- F. Fasteners: Manufacturer's standard stainless-steel or other noncorrosive fasteners.
- G. Sealant: Mildew-resistant, single-component, nonsag, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
 - 1. Sealant shall have a VOC content of 250 g/L or less.

2.2 FRAMELESS ENCLOSURES

- A. Frameless glass panels with mounting and operating hardware of types and sizes required to support imposed loads.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Agalite; Hartung Glass Industries.
 - b. Alumax; Sapa Extrusions, Inc.
 - c. American Shower Door.
 - d. Artistcraft Shower Doors.
 - e. Basco Corporation.
 - f. Cardinal Shower Enclosures; Hoskin & Muir, Inc.
 - g. Century Bathworks.
 - h. Fleurco Shower Doors.
 - i. Kohler Co.
 - j. Southeastern Aluminum Products, Inc.
- B. Hardware and Trim: Manufacturer's standard units as indicated and as required for complete installation.
 - 1. Materials:
 - a. Aluminum:
 - 1) Finish: Clear anodic.
 - 2) Color: **Cardinal "Brushed Nickel" or equal.**
 - b. Brass:

- 1) Finish: Satin nickel.
- c. Stainless Steel:
 - 1) Finish: No. 4 directional satin finish.
- C. Swinging Doors: Hinged for 135 degrees swing. Self-centering when doors are within 15 degrees of closed position. Soft bulb seal or wipes; affixed to door to direct water back into enclosure and provide a tight water seal.
 - 1. Hinges: Top-and-bottom pivots.
 - 2. Door Pulls: Single-sided towel bar.
 - a. Towel Bar Length: 24 inches (610 mm).
- D. Fixed Panels: Side mounts; match hinges in material and finish.
- E. Glazing: Safety glazing materials complying with 16 CFR 1201, Category II, with permanently etched identification acceptable to authorities having jurisdiction.
 - 1. Glass Nominal Thickness: 10 mm.
 - 2. Clear Glass: ASTM C 1048, Type I, Quality-Q3, Class I (clear), Kind FT.
 - 3. Protective, Self-Cleaning, Glass Coating: Clear float glass with a coating on first surface having both photocatalytic and hydrophilic properties that act to loosen dirt and to cause water to sheet evenly over the glass instead of beading.
- F. Fasteners: Manufacturer's standard stainless-steel or other noncorrosive fasteners.
- G. Sealant: Mildew-resistant, single-component, nonsag, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
 - 1. Sealant shall have a VOC content of 250 g/L or less.
- H. Materials:
 - 1. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
 - a. Sheet and Plate: ASTM B 209 (ASTM B 209M).
 - b. Extrusions: ASTM B 221 (ASTM B 221M).
 - 2. Stainless-Steel Sheet: ASTM A 666, Type 302 or 304.
 - 3. Stainless-Steel Bars and Shapes: ASTM A 276, Type 302 or 304.
 - 4. Copper-Alloy Sheet and Shapes: ASTM B 36/B 36M.
 - 5. Copper-Alloy Extrusions: ASTM B 455, alloy UNS No. C38500 (architectural brass).

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Prepare and install as recommended in manufacturer's written instructions unless more stringent requirements are contained in GANA's "Glazing Manual."
- B. Clean substrates, removing projections, filling voids, and sealing joints.
- C. Set units level, plumb, and true to line, without warp or rack of frames and panels, and anchor securely in place.
- D. Fasten components securely in place, with provisions for thermal movement. Install with concealed fasteners unless otherwise indicated.
- E. Install components to drain and return water to tub or shower.
- F. Install doors to produce smooth operation and tight fit at contact points.
- G. Repair, refinish, or replace components damaged during installation.

3.2 ADJUSTING AND CLEANING

- A. Adjust operating parts and hardware for smooth, quiet operation and watertight closure. Lubricate hardware and moving parts.
- B. Remove nonpermanent labels, and clean surfaces immediately after installation.

END OF SECTION