

**MCDOWELL COUNTY BOARD OF EDUCATION  
MCDOWELL COUNTY, WEST VIRGINIA  
FOR THE  
COALFIELD ELEMENTARY SCHOOL**

**Thrasher Project # 060-10301  
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**CADD WAIVER**

The undersigned hereby agrees that the McDowell County Board of Education and The Thrasher Group, Inc., will not be held liable or responsible for the accuracy of any information contained in the digital **CADD files**, or any conclusion, inferences, interpretations, etc, made by the contractor, which may be used in the preparation of the Contractor's bid. Hard copies of the plans will be the governing document for this project. The digital CADD file is being distributed for information only.

**By:** \_\_\_\_\_

**Company:** \_\_\_\_\_

**Email:** \_\_\_\_\_

**Phone:** \_\_\_\_\_

**Date:** \_\_\_\_\_

Please email this completed form to Brenda Ashley @ [bashley@thethrashergroup.com](mailto:bashley@thethrashergroup.com)

## SECTION 014000 - QUALITY REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.

#### 1.2 DEFINITIONS

- A. Experienced: When used with an entity or individual, "experienced" unless otherwise further described means having successfully completed a minimum of three previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.
  - 1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).
- D. Mockups: Physical assemblies of portions of the Work constructed to establish the standard by which the Work will be judged. Mockups are not Samples.
  - 1. Mockups are used for one or more of the following:
    - a. Verify selections made under Sample submittals.
    - b. Demonstrate aesthetic effects.
    - c. Demonstrate the qualities of products and workmanship.
    - d. Demonstrate successful installation of interfaces between components and systems.
    - e. Perform preconstruction testing to determine system performance.
  - 2. Product Mockups: Mockups that may include multiple products, materials, or systems specified in a single Section.
  - 3. In-Place Mockups: Mockups constructed on-site in their actual final location as part of permanent construction.
- E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.

- F. **Product Tests:** Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- G. **Source Quality-Control Tests and Inspections:** Tests and inspections that are performed at the source; for example, plant, mill, factory, or shop.
- H. **Testing Agency:** An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" has the same meaning as the term "testing agency."
- I. **Quality-Assurance Services:** Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- J. **Quality-Control Services:** Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.

### 1.3 DELEGATED DESIGN SERVICES

- A. **Performance and Design Criteria:** Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. **Delegated Design Services Statement:** Submit a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

### 1.4 CONFLICTING REQUIREMENTS

- A. **Conflicting Standards and Other Requirements:** If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.
- B. **Minimum Quantity or Quality Levels:** The quantity or quality level shown or specified is the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To

comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

#### 1.5 ACTION SUBMITTALS

##### A. Mockup Shop Drawings:

1. Include plans, sections, elevations, and details, indicating materials and size of mockup construction.
2. Indicate manufacturer and model number of individual components.
3. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

#### 1.6 INFORMATIONAL SUBMITTALS

##### A. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:

1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
2. Main wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.

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

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

#### 1.7 REPORTS AND DOCUMENTS

##### A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, telephone number, and email address of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.

10. Record of temperature and weather conditions at time of sample taking and testing and inspection.
  11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  12. Name and signature of laboratory inspector.
  13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Statement on condition of substrates and their acceptability for installation of product.
  2. Statement that products at Project site comply with requirements.
  3. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  4. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  5. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Statement that equipment complies with requirements.
  2. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  3. Other required items indicated in individual Specification Sections.
- 1.8 QUALITY ASSURANCE
- A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual trained and approved by manufacturer, or where indicates as acceptable, experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.



- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities be performed by entities who are recognized experts in those operations. Specialists will satisfy qualification requirements indicated and engage in the activities indicated.
  - 1. Requirements of authorities having jurisdiction supersede requirements for specialists.
- G. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented according to ASTM E329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect, demonstrate, repair, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
  - 1. Contractor responsibilities include the following:
    - a. Provide test specimens representative of proposed products and construction.
    - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
    - c. When testing is complete, remove test specimens and test assemblies, and mockups; do not reuse products on Project.
  - 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
  - 1. Build mockups of size indicated.

2. Build mockups in location indicated or, if not indicated, as directed by Architect.
  3. Notify Architect seven days in advance of dates and times when mockups will be constructed.
  4. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed to perform same tasks during the construction at Project.
  5. Demonstrate the proposed range of aesthetic effects and workmanship.
  6. Obtain Architect's approval of mockups before starting corresponding work, fabrication, or construction.
    - a. Allow seven days for initial review and each re-review of each mockup.
  7. Promptly correct unsatisfactory conditions noted by Architect's preliminary review, to the satisfaction of the Architect, before completion of final mockup.
  8. Approval of mockups by the Architect does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
  9. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
  10. Demolish and remove mockups when directed unless otherwise indicated.
- L. Specialty Mockups: See Section 014339 "Mockups" for additional construction requirements for integrated exterior mockups and room mockups.

#### 1.9 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
  2. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.
1. Engage a qualified testing agency to perform quality-control services.
    - a. Contractor will not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  2. Notify testing agencies at least 48 hours in advance of time when Work that requires testing or inspection will be performed.
  3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.

4. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- D. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
  3. Conduct and interpret tests and inspections and state in each report whether tested and inspected Work complies with or deviates from requirements.
  4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
  6. Do not perform duties of Contractor.
- E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."
- F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- G. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
  2. Incidental labor and facilities necessary to facilitate tests and inspections.
  3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
  4. Facilities for storage and field curing of test samples.
  5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  6. Security and protection for samples and for testing and inspection equipment at Project site.

- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

- 1. Schedule times for tests, inspections, obtaining samples, and similar activities.

#### 1.10 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner will engage a qualified testing agency or special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:

- 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
  - 2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
  - 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
  - 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
  - 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
  - 6. Retesting and reinspecting corrected Work.

#### PART 2 - PRODUCTS (Not Used)

#### PART 3 - EXECUTION

##### 3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

- 1. Date test or inspection was conducted.
  - 2. Description of the Work tested or inspected.
  - 3. Date test or inspection results were transmitted to Architect.
  - 4. Identification of testing agency or special inspector conducting test or inspection.

- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's and authorities' having jurisdiction reference during normal working hours.

- 1. Submit log at Project closeout as part of Project Record Documents.

### 3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspection, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
  - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

### 3.3 TEST AND INSPECTION SCHEDULE

- A. The following Sections have requirements for testing and inspections services. Verify the type and extent of services required in each Specification Section.
  - 1. Cast In Place Concrete 033000
  - 2. Unit Masonry 042000
  - 3. Structural Steel Framing 051200
  - 4. Formed Metal Panels 074213
  - 5. EPDM Roofing 075323
  - 6. Fire Suppression (Div 21)
  - 7. Plumbing (Div 22)
  - 8. HVAC (Div 23)
  - 9. Electrical (Div 26)
  - 10. Communications (Div 27)
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  - 12. Earthworks (Div 31)
  - 13. Site (Div 32)

END OF SECTION 014000

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## SECTION 072726 - FLUID-APPLIED MEMBRANE AIR BARRIERS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Vapor-permeable, fluid-applied air barriers.

#### 1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For air-barrier assemblies.
  - 1. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Product certificates.
- B. Product test reports.
- C. Field quality-control reports.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. Mockups: Build mockups to set quality standards for materials and execution.
  - 1. Build integrated mockups of exterior wall assembly, 150 sq. ft., incorporating backup wall construction, external cladding, window, storefront, door frame and sill, insulation, ties and other penetrations, and flashing to demonstrate surface preparation, crack and joint treatment, application of air barriers, and sealing of gaps, terminations, and penetrations of air-barrier assembly.
    - a. Coordinate construction of mockups to permit inspection and testing of air barrier before external insulation and cladding are installed.

- b. Include junction with roofing membrane, building corner condition, and foundation wall intersection.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Air-Barrier Performance: Air-barrier assembly and seals with adjacent construction shall be capable of performing as a continuous air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air-barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.
- B. Air-Barrier Assembly Air Leakage: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft., when tested according to ASTM E2357.

### 2.2 HIGH-BUILD AIR BARRIERS, VAPOR PERMEABLE

- A. High-Build, Vapor-Permeable Air Barrier: synthetic polymer membrane with an installed dry film thickness, according to manufacturer's written instructions, of 35 mils or thicker over smooth, void-free substrates.

1. Synthetic Polymer Type:

- a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- 1) DuPont de Nemours, Inc.
- 2) GCP Applied Technologies Inc.
- 3) Henry Company; a Carlisle company.
- 4) Sto Corp.
- 5) Tremco Incorporated.
- 6) Carlisle Barritech VP TDS

2. Physical and Performance Properties:

- a. Air Permeance: Maximum 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. pressure difference; ASTM E2178.
- b. Vapor Permeance: Minimum 10 perms; ASTM E96/E96M, Desiccant Method, Procedure A.
- c. Ultimate Elongation: Minimum 200 percent; ASTM D412, Die C.
- d. Adhesion to Substrate: Minimum 16 lbf/sq. in. when tested according to ASTM D4541.
- e. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
- f. UV Resistance: Can be exposed to sunlight for 180 days according to manufacturer's written instructions.



## 2.3 ACCESSORY MATERIALS

- A. Requirement: Provide primers, transition strips, termination strips, joint reinforcing fabric and strips, joint sealants, counterflashing strips, flashing sheets and metal termination bars, termination mastic, substrate patching materials, adhesives, tapes, foam sealants, lap sealants, and other accessory materials that are recommended in writing by air-barrier manufacturer to produce a complete air-barrier assembly and that are compatible with primary air-barrier material and adjacent construction to which they may seal.

## PART 3 - EXECUTION

### 3.1 SURFACE PREPARATION

- A. Clean, prepare, treat, fill, and seal substrate and joints and cracks in substrate according to manufacturer's written instructions and details. Provide clean, dust-free, and dry substrate for air-barrier application.
- B. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.
- C. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate-patching material.
- D. Remove excess mortar from masonry ties, shelf angles, and other obstructions.
- E. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.
- F. Bridge expansion joints and discontinuous wall-to-wall, deck-to-wall, and deck-to-deck joints with air-barrier accessory material that accommodates joint movement according to manufacturer's written instructions and details.

### 3.2 INSTALLATION

- A. Install materials according to air-barrier manufacturer's written instructions and details to form a seal with adjacent construction and ensure continuity of air and water barrier.
  - 1. Coordinate the installation of air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
  - 2. Install transition strip on roofing membrane or base flashing so that a minimum of 3 inches of coverage is achieved over each substrate.
  - 3. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.
  - 4. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by air-barrier material on same day. Reprime areas exposed for more than 24 hours.

- B. Connect and seal exterior wall air-barrier material continuously to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.
- C. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply transition strip so that a minimum of 3 inches of coverage is achieved over each substrate. Maintain 3 inches of full contact over firm bearing to perimeter frames, with not less than 1 inch of full contact.
- D. Repair punctures, voids, and deficient lapped seams in strips and transition strips. Slit and flatten fishmouths and blisters. Patch with transition strips extending 6 inches beyond repaired areas in strip direction.
- E. High-Build Air Barriers: Apply continuous unbroken air-barrier material to substrates according to the following thickness. Apply air-barrier material in full contact around protrusions such as masonry ties.
  - 1. Vapor-Permeable, High-Build Air Barrier: Total dry film thickness as recommended in writing by manufacturer to comply with performance requirements, but not less than 35 mils, applied in one or more equal coats.
- F. Do not cover air barrier until it has been tested and inspected by testing agency.
- G. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air-barrier components.

### 3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Tests: As determined by testing agency from among the following tests:
  - 1. Air-barrier dry film thickness.
  - 2. Air-Leakage-Location Testing: Air-barrier assemblies will be tested for evidence of air leakage according to ASTM E1186, chamber depressurization using detection liquids.
  - 3. Air-Leakage-Volume Testing: Air-barrier assemblies will be tested for air-leakage rate according to ASTM E783 or ASTM E2357.
  - 4. Adhesion Testing: Air-barrier assemblies will be tested for required adhesion to substrate according to ASTM D4541 for each 600 sq. ft. of installed air barrier or part thereof.
- C. Air barriers will be considered defective if they do not pass tests and inspections.
  - 1. Apply additional air-barrier material, according to manufacturer's written instructions, where inspection results indicate insufficient thickness.
  - 2. Remove and replace deficient air-barrier components for retesting as specified above.
- D. Repair damage to air barriers caused by testing; follow manufacturer's written instructions.
- E. Prepare test and inspection reports.

3.4 CLEANING AND PROTECTION

- A. Protect air-barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.
- B. Remove masking materials after installation.

END OF SECTION 072726

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## SECTION 083313 - COILING COUNTER DOORS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
1. Fire-rated counter door assemblies.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type and size of coiling counter door and accessory.
- B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.
1. Include points of attachment and their corresponding static and dynamic loads imposed on structure.
  2. Show locations of controls, locking devices, detectors or replaceable fusible links, and other accessories.
  3. Include diagrams for power, signal, and control wiring.
- C. Samples: For each exposed product and for each color and texture specified.

#### 1.3 CLOSEOUT SUBMITTALS

- A. Maintenance data.
- B. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for both installation and maintenance of units required for this Project.
- B. Fire-Rated Door Inspector Qualifications: Inspector for field quality control inspections of fire-rated door assemblies shall meet the qualifications set forth in NFPA 80, section 5.2.3.1 and the following:
1. Door and Hardware Institute Fire and Egress Door Assembly Inspector (FDAI) certification.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Door Assemblies: Complying with NFPA 80; listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at as close to neutral pressure as possible according to NFPA 252 or UL 10B.
  - 1. Smoke Control: Provide doors that are listed and labeled with the letter "S" on the fire-rating label by a qualified testing agency for smoke- and draft-control based on testing according to UL 1784; with maximum air-leakage rate of 3.0 cfm/sq. ft. of door opening at 0.10 inch wgfor both ambient and elevated temperature tests.

### 2.2 FIRE-RATED COUNTER DOOR ASSEMBLY

- A. Fire-Rated Counter Door: Overhead fire-rated coiling door formed with curtain of interlocking metal slats.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. ACME Rolling Doors.
    - b. Alpine Overhead Doors, Inc.
    - c. ASTA Door Corporation.
    - d. C.H.I. Overhead Doors, Inc.
    - e. City-Gates.
    - f. Clopay Building Products.
    - g. Cookson; a CornellCookson company.
    - h. Cornell; a CornellCookson company.
    - i. ENTREMATIIC.
    - j. Lawrence Roll-Up Doors, Inc.
    - k. McKeon Rolling Steel Door Company, Inc.
    - l. Overhead Door Corporation.
    - m. Raynor.
    - n. Wayne-Dalton Corp.
- B. Operation Cycles: Door components and operators capable of operating for not less than 20,000.
- C. Fire Rating: 1 hour with temperature-rise limit and with smoke control.
- D. STC Rating: 27.
- E. Door Curtain Material: Stainless steel.
- F. Door Curtain Slats: Flat profile slats of 1-1/4-inchcenter-to-center height.
  - 1. Insulated-Slat Interior Facing: Metal.
- G. Curtain Jamb Guides: Stainless steel with exposed finish matching curtain slats.

- H. Hood: Match curtain material and finish.
  - 1. Mounting: As required for conditions in field.
- I. Integral Frame, Hood, and Fascia: Stainless steel.
  - 1. Mounting: As required for conditions in field.
- J. Sill Configuration: Integral stainless steel sill, full width of wall, with 2 inch turndown at each side with welded seems and crimped edges to eliminate sharp edges where exposed.
- K. Locking Devices: Equip door with locking device assembly.
  - 1. Locking Device Assembly: Single-jamb side locking bars, operable from inside and outside with cylinders.
- L. Manual Door Operator: Awning-crank operator.
- M. Curtain Accessories: Equip door with smoke seals, automatic closing device, push/pull handles and poll hook.
- N. Door Finish:
  - 1. Stainless Steel Finish: ASTM A480 No. 2B (bright, cold rolled).
  - 2. Interior Curtain-Slat Facing: Match finish of exterior curtain-slat face.

## 2.3 MATERIALS, GENERAL

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

## 2.4 DOOR CURTAIN MATERIALS AND FABRICATION

- A. Door Curtains: Fabricate coiling counter door curtain of interlocking metal slats in a continuous length for width of door without splices. Unless otherwise indicated, provide slats of thickness and mechanical properties recommended by door manufacturer for performance, size, and type of door indicated, and as follows:
  - 1. Metal Interior Curtain-Slat Facing: Match metal of exterior curtain-slat face.
- B. Curtain Jamb Guides: Manufacturer's standard angles or channels and angles of same material and finish as curtain slats unless otherwise indicated, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading. Slot bolt holes for guide adjustment. Provide removable stops on guides to prevent overtravel of curtain.
  - 1. Removable Posts and Jamb Guides: Manufacturer's standard.

## 2.5 HOODS

- A. General: Form sheet metal hood to entirely enclose coiled curtain and operating mechanism at opening head. Contour to fit end brackets to which hood is attached. Roll and reinforce top and

bottom edges for stiffness. Form closed ends for surface-mounted hoods and fascia for any portion of between-jamb mounting that projects beyond wall face. Equip hood with intermediate support brackets as required to prevent sagging.

1. Include automatic drop baffle on fire-rated doors to guard against passage of smoke or flame.

- B. Integral Frame, Hood, and Fascia: Welded sheet metal assembly of the following sheet metal(s):

## 2.6 LOCKING DEVICES

- A. Slide Bolt: Fabricate with side-locking bolts to engage through slots in tracks for locking by padlock, located on both left and right jamb sides, operable from coil side.

- B. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded dead bolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.

1. Lock Cylinders: As standard with manufacturer and keyed to building keying system.
2. Keys: Two for each cylinder.

## 2.7 CURTAIN ACCESSORIES

- A. Smoke Seals: Equip each fire-rated door with replaceable smoke-seal perimeter gaskets or brushes for smoke and draft control as required for door listing and labeling by a qualified testing agency.

- B. Astragal: Equip each door bottom bar with a replaceable, adjustable, continuous, compressible gasket of flexible vinyl, rubber, or neoprene as a cushion bumper.

- C. Push/Pull Handles: Equip each push-up-operated or emergency-operated door with lifting handles on each side of door, finished to match door.

- D. Pole Hooks: Provide pole hooks and poles for doors.

- E. Automatic-Closing Device: Equip each fire-rated door with an automatic-closing device or holder-release mechanism and governor unit complying with NFPA 80 and an easily tested and reset release mechanism. Automatic-closing device shall be designed for activation by the following:

1. Replaceable fusible links with temperature rise and melting point of 165 deg F interconnected and mounted on both sides of door opening.
2. Manufacturer's standard UL-labeled smoke detector and door-holder-release devices.
3. Manufacturer's standard UL-labeled heat detector and door-holder-release devices.
4. Building fire-detection, smoke-detection, and -alarm systems.



## 2.8 COUNTER DOOR ACCESSORIES

- A. Integral Metal Sill: Fabricate sills as integral part of frame assembly of Type 304 stainless steel in manufacturer's standard thickness with ASTM A480 No. 4 finish.

## 2.9 COUNTERBALANCE MECHANISM

- A. General: Counterbalance doors by means of manufacturer's standard mechanism with an adjustable-tension, steel helical torsion spring mounted around a steel shaft and contained in a spring barrel connected to top of curtain with barrel rings. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.
- B. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

## 2.10 MANUAL DOOR OPERATORS

- A. General: Equip door with manual door operator by door manufacturer.
- B. Push-up Door Operation: Design counterbalance mechanism so that required lift or pull for door operation does not exceed 25 lbf.
- C. Crank Operator: Consisting of crank and crank gearbox, steel crank drive shaft, and gear-reduction unit, of type indicated. Size gears to require not more than 25-lbforce to turn crank. Fabricate gearbox to be oiltight and to completely enclose operating mechanism. Provide manufacturer's standard crank-locking device.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Install coiling counter doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.
- B. Fire-Rated Doors: Install according to NFPA 80.
- C. Smoke-Control Doors: Install according to NFPA 80 and NFPA 105.

### 3.2 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
  - 1. Perform acceptance testing according to NFPA 80.
    - a. Fire-Rated Door Inspections: Inspect each fire-rated door in accordance with NFPA 80, section 5.2.

2. Test door release, closing, and alarm operations when activated by smoke detector or building's fire-alarm system. Test manual operation of closed door. Reset door-closing mechanism after successful test.
  3. Operational Test: After electrical circuitry has been energized, operate doors to confirm proper motor rotation and door performance.
- B. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.
  - C. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.
  - D. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80 and NFPA 101.

### 3.3 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain coiling counter doors.

END OF SECTION 083313

## SECTION 083613 - SECTIONAL DOORS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes electrically operated sectional doors.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type and size of sectional door and accessory.
- B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.
- C. Samples: For each exposed product and for each color and texture specified.

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Sample warranty.

#### 1.4 CLOSEOUT SUBMITTALS

- A. Maintenance data.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for both installation and maintenance of units required for this Project.

#### 1.6 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of sectional doors that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Finish Warranty: Manufacturer agrees to repair or replace components that show evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Warranty Period: 10 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Sectional doors shall comply with performance requirements specified without failure due to defective manufacture, fabrication, installation, or other defects in construction and without requiring temporary installation of reinforcing components.
- B. Structural Performance, Exterior Doors: Capable of withstanding the design wind loads.
  - 1. Design Wind Load: As indicated on Drawings.
  - 2. Testing: According to ASTM E 330 or DASMA 108 for garage doors and complying with the acceptance criteria of DASMA 108.

### 2.2 DOOR ASSEMBLY

- A. Full-Vision Aluminum Sectional Door: Sectional door formed with hinged sections and fabricated according to DASMA 102 unless otherwise indicated.
  - 1. Basis of Design Product:
    - a. Overhead Door Corporation
      - 1) Model 521
  - 2. 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. Arm-R-Lite.
    - b. Clopay Building Products.
    - c. Overhead Door Corporation.
    - d. Raynor.
- B. Operation Cycles: Door components and operators capable of operating for not less than 50,000.
- C. Air Infiltration: Maximum rate of 0.4 cfm/sq. ft. at 15 and 25 mph when tested according to ASTM E 283 or DASMA 105.
- D. Full-Vision Aluminum Door - Aluminum Sections: Full vision with manufacturer's standard, nonglazed panels across bottom section of door.
- E. Track Configuration: Standard-lift track.
- F. Weatherseals: Fitted to bottom and top and around entire perimeter of door. Provide combination bottom weatherseal and sensor edge.
- G. Locking Devices: Equip door with locking device assembly.

H. Electric Door Operator:

1. Usage Classification: Heavy duty, 25 or more cycles per hour and more than 90 cycles per day.
2. Operator Type: Manufacturer's standard for door requirements.
3. Safety: Listed according to UL 325 by a qualified testing agency for commercial or industrial use; moving parts of operator enclosed or guarded if exposed and mounted at 8 feet or lower.
4. Motor Exposure: Interior, clean, and dry.
5. Emergency Manual Operation: Push-up type.
6. Obstruction-Detection Device: Automatic photoelectric sensor self-monitoring type.
7. Control Station: Interior-side mounted.

I. Door Finish:

1. Aluminum Finish: Anodized color as selected by Architect from manufacturer's full range.
2. Finish of Interior Facing Material: Finish as selected by Architect from manufacturer's full range.

J. Reinforce bottom section with a continuous channel or angle conforming to bottom-section profile and allowing installation of astragal.

K. Reinforce sections with continuous horizontal and diagonal reinforcement, as required to stiffen door and for wind loading. Provide galvanized-steel bars, struts, trusses, or strip steel, formed to depth and bolted or welded in place. Ensure that reinforcement does not obstruct vision lites.

L. Provide reinforcement for hardware attachment.

M. Thermal Insulation: Insulate interior of steel sections with door manufacturer's standard CFC-free insulation, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, according to ASTM E 84. Enclose insulation completely within steel sections and the interior facing material, with no exposed insulation.

## 2.3 ALUMINUM DOOR SECTIONS

A. Sections: Extruded-aluminum stile and rail members with dimensions and profiles as indicated on Drawings; members joined by welding or with concealed, aluminum or nonmagnetic stainless-steel through bolts, full height of door section; and with meeting rails shaped to provide a weather-resistant seal.

1. Reinforce sections with continuous horizontal and diagonal reinforcement, as required to stiffen door and for wind loading. Ensure that reinforcement does not obstruct vision lites.
2. Provide reinforcement for hardware attachment.

B. Solid Panels: Aluminum sheet, set in continuous vinyl channel retained with rigid, snap-in, extruded-vinyl moldings or with rubber or neoprene glazing gasket with aluminum stop.

- C. Full-Vision Sections: Manufacturer's standard, tubular, aluminum-framed section fully glazed with insulated glazing set in vinyl, rubber, or neoprene glazing channel and with removable extruded-vinyl or aluminum stops.

#### 2.4 TRACKS, SUPPORTS, AND ACCESSORIES

- A. Tracks: Manufacturer's standard, galvanized-steel track system of configuration indicated, sized for door size and weight, designed for lift type indicated and clearances indicated on Drawings, Provide complete system including brackets, bracing, and reinforcement to ensure rigid support of ball-bearing roller guides for required door type, size, weight, and loading.
  - 1. Track Reinforcement and Supports: Galvanized-steel members to support track without sag, sway, and vibration during opening and closing of doors. Slot vertical sections of track spaced 2 inches apart for door-drop safety device.
- B. Weatherseals: Replaceable, adjustable, continuous, compressible weather-stripping gaskets of flexible vinyl, rubber, or neoprene fitted to bottom and top of sectional door unless otherwise indicated.
- C. Windows: Manufacturer's standard window units of type, size, and in arrangement indicated. Provide removable stops of same material as door-section frames.

#### 2.5 HARDWARE

- A. General: Heavy-duty, corrosion-resistant hardware, with hot-dip galvanized, stainless-steel, or other corrosion-resistant fasteners, to suit door type.
- B. Hinges: Heavy-duty, galvanized-steel hinges at each end stile and at each intermediate stile, according to manufacturer's written recommendations for door size. Attach hinges to door sections through stiles and rails.
- C. Rollers: Heavy-duty rollers with steel ball-bearings in case-hardened steel races, mounted with varying projections to suit slope of track. Provide 3-inch- diameter roller tires for 3-inch- wide track and 2-inch- diameter roller tires for 2-inch- wide track.
- D. Push/Pull Handles: Equip each push-up operated or emergency-operated door with galvanized-steel lifting handles on each side of door, finished to match door.

#### 2.6 LOCKING DEVICES

- A. Slide Bolt: Fabricate with side-locking bolts to engage through slots in tracks for locking by padlock, located on single-jamb side, operable from inside only.
- B. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded deadbolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.
  - 1. Lock Cylinders: Cylinders standard with manufacturer.

2. Keys: Three for each cylinder.

C. Safety Interlock Switch: Equip power-operated doors with safety interlock switch to disengage power supply when door is locked.

## 2.7 COUNTERBALANCE MECHANISM

A. Torsion Spring: Counterbalance mechanism consisting of adjustable-tension torsion springs fabricated from steel-spring wire complying with ASTM A 229/A 229M, mounted on torsion shaft made of steel tube or solid steel. Provide springs designed for number of operation cycles indicated.

B. Cable Drums and Shaft for Doors: Cast-aluminum or gray-iron casting cable drums mounted on torsion shaft and grooved to receive door-lifting cables as door is raised. Mount counterbalance mechanism with manufacturer's standard ball-bearing brackets at each end of torsion shaft.

C. Cables: Galvanized-steel, multistrand, lifting cables.

D. Cable Safety Device: Include a spring-loaded steel or spring-loaded bronze cam mounted to bottom door roller assembly on each side and designed to automatically stop door if either lifting cable breaks.

E. Bracket: Provide anchor support bracket as required to connect stationary end of spring to the wall and to level the shaft and prevent sag.

F. Bumper: Provide spring bumper at each horizontal track to cushion door at end of opening operation.

## 2.8 ELECTRIC DOOR OPERATORS

A. General: Electric door operator assembly of size and capacity recommended and provided by door manufacturer for door and "operation cycles" requirement specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, control stations, control devices, integral gearing for locking door, and accessories required for proper operation.

1. Comply with NFPA 70.

2. Control equipment complying with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6; with NFPA 70, Class 2 control circuit, maximum 24-V ac or dc.

B. Usage Classification: Electric operator and components capable of operating for not less than number of cycles per hour indicated for each door.

C. Door-Operator Type: Unit consisting of electric motor, gears, pulleys, belts, sprockets, chains, and controls needed to operate door and meet required usage classification.

D. Motors: Reversible-type motor with controller (disconnect switch) for motor exposure indicated.

1. Motor Size: Minimum size as indicated. If not indicated, large enough to start, accelerate, and operate door in either direction from any position, at a speed not less than 8 in./sec. and not more than 12 in./sec., without exceeding nameplate ratings or service factor.
- E. Obstruction Detection Device: External entrapment protection consisting of indicated automatic safety sensor capable of protecting full width of door opening. Activation of device immediately stops and reverses downward door travel.
1. Photoelectric Sensor: Manufacturer's standard system designed to detect an obstruction in door opening without contact between door and obstruction.
    - a. Self-Monitoring Type: Designed to interface with door operator control circuit to detect damage to or disconnection of sensing device. When self-monitoring feature is activated, door closes only with sustained pressure on close button.
  2. Electric Sensor Edge: Automatic safety sensor edge, located within astragal or weather stripping mounted to bottom section. Contact with sensor activates device. Connect to control circuit using manufacturer's standard take-up reel or self-coiling cable.
    - a. Self-Monitoring Type: Four-wire configured device designed to interface with door-operator control circuit to detect damage to or disconnection of sensor edge.
- F. Control Station: Three-button control station in fixed location with momentary-contact push-button controls labeled "Open" and "Stop" and sustained- or constant-pressure, push-button control labeled "Close."
1. Interior-Mounted Units: Full-guarded, surface-mounted, heavy-duty type, with general-purpose NEMA ICS 6, Type 1 enclosure.
  2. Exterior-Mounted Units: Full-guarded, standard-duty, surface-mounted, weatherproof type, NEMA ICS 6, Type 4 enclosure, key operated.
- G. Emergency Manual Operation: Equip electrically powered door with capability for emergency manual operation. Design manual mechanism so required force for door operation does not exceed 35 lbf.
- H. Emergency Operation Disconnect Device: Equip operator with hand-operated disconnect mechanism for automatically engaging manual operator and releasing brake for emergency manual operation while disconnecting motor without affecting timing of limit switch. Mount mechanism so it is accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.
- I. Motor Removal: Design operator so motor may be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.



### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Install sectional doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.
- B. Tracks: Provide sway bracing, diagonal bracing, and reinforcement as required for rigid installation of track and door-operating equipment.
- C. Accessibility: Install sectional doors, switches, and controls along accessible routes in compliance with regulatory requirements for accessibility.
- D. Power-Operated Doors: Install automatic garage doors openers according to UL 325.
- E. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion.
- F. Touch-up Painting: Immediately after welding galvanized materials, clean welds and abraded galvanized surfaces and repair galvanizing to comply with ASTM A 780/A 780M.

#### 3.2 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain sectional doors.

#### 3.3 ADJUSTMENT

- A. Prior to Substantial Completion of the Work, inspect and adjust doors for alignment, uniform clearance and proper movement.

END OF SECTION 083613

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## SECTION 096466 – WOOD ATHLETIC FLOORING

### PART 1 – GENERAL

#### 1.01 DESCRIPTION

##### A. Related work specified under other sections.

1. Cast In-Place Concrete - Section 033000.
  - a. Concrete Slab Depression: 2 1/2” (76mm) using 25/32” (20mm) flooring and subfloor.
  - b. Surface Finish: steel troweled and finished smooth.
  - c. Concrete Tolerance: +/- 1/8” (3mm) in radius of 10’ (3m).
  - d. Floor Flatness and Floor Levelness (FF and FL) numbers are not recognized.
  - e. Compressive Strength: Concrete shall be a minimum of 3,000 psi (21 MPa) and a maximum of 4000 psi (28MPa) compressive strength after 28 days. Concrete shall be free of washed river gravel, pea gravel, flint or hardener additives. No lightweight concrete.
  - f. High spots shall be ground level and low spots shall be filled in with approved leveling compound by the general contractor to meet the tolerance above.
2. Bituminous Damp proofing - Section 071113.
  - a. Concrete subfloors on or below grade shall be adequately waterproofed beneath the slab and at the perimeter walls and on the earth side of below grade walls by general contractor using suitable type membrane.

#### 1.02 REFERENCES

- A. MFMA - Maple Flooring Manufacturers Association
- B. DIN 108032 (part 2) - Performance Test
- C. FSC – Forest Stewardship Council

#### 1.03 QUALITY ASSURANCE

- A. Floor System Manufacturer Qualifications
  - 1. Manufacturer shall be an established firm experienced in field and have been in business or a minimum of ten (10) years.
  - 2. Manufacturer will be a member in good standing of the Maple Flooring Manufacturers Association (MFMA).
- B. Floor Contractor/Installer Qualifications and Certifications
  - 1. MFMA Accredited Installer(s) on-site for the duration of the wood floor installation.
  - 2. Flooring contractor shall submit a list of at least three completed projects of similar magnitude and complexity completed under current corporate identity.
- C. Floor System Performance
  - 1. Meet or exceeds all 6 criteria of DIN 18032 Part II
  - 2. Independent testing report showing the system passing all 6 criteria shall be provided as part of the bid qualification process and submittal process.

#### 1.04 SUBMITTALS

- 1. Product Data: For each type of product specified. Include manufacturer's technical data, installation instructions, and recommendations for each resinous flooring component required.

#### 1.05 DELIVERY, STORAGE AND HANDLING

##### A. Delivery of Materials

- 1. Materials shall not be delivered, stored or installed until all masonry, painting, plastering tilework, marble and terrazzo work is complete, and all overhead mechanical work, lighting, backstops, scoreboards are installed. **Room temperature of 55-80 degrees Fahrenheit (13 to 27 degrees Celsius) and relative humidity of 35-50 % are to be maintained.** In- Slab Relative Humidity shall be 85% or less using ASTM F 2170 In-Slab Relative Humidity test. Ideal installation/storage conditions are the same as those that will prevail when building is occupied
- 2. Materials shall not be stored at the installation location if the In-Slab relative humidity level for the concrete slab is above 85% using ASTM F 2170 In-Slab Relative Humidity test.

#### 1.06 JOB CONDITIONS-SEQUENCY

- A. Do not install floor system until concrete has been cured 60 days and the requirements in paragraph 1.05 A are obtained.
- B. General Contractor is responsible to ensure slab is clean and free of all dirt and debris prior to floor installation beginning.
- C. Permanent heat, light and ventilation shall be installed and operating during and after installation. Maintain a temperature range of 55 to 80 degrees Fahrenheit (13 to 27 degrees Celsius) and a relative humidity range of 35 to 50%. Consult MFMA guidelines for further information.
- D. After floors are finished, area to be kept locked by general contractor to allow curing time for the finish. If after required curing time general contractor or owner requires use of gym, he shall protect the floor by covering with non-fibered kraft paper or red rosin paper with taped joints, until acceptance by Architect of complete gymnasium floor.

#### 1.07 WARRANTY

- A. Free from manufacturing defects for a period of 1 year.

### PART 2 – PRODUCTS

#### 2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Basis of design: Robbins Sports Surfaces.
  - b. Horner Sports Flooring.
  - c. Action Floor Systems, LLC.

#### 2.02 FLOORING AND SUBFLOOR MATERIALS

- A. Vapor Barrier
  - 1. 6-mil polyethylene.
- B. Subfloor
  - 1. Basis-of-Design: Air Channel Star Sleeper that have been factory drilled and assembled with 7/16” Bio-Pads
  - 2. 15/32” (12mm) thick, 4’ x 8’ (1.22m x 2.44m) Exposure 1, APA Rated Sheathing.
- C. Maple Flooring Manufacturers Association (MFMA) Wood Flooring
  - 1. Species: Northern Hard Maple

2. Seasoning: Kiln Dried
  3. Matching: Tongue and groove on side-match and end-match.
  4. Type: Finger-Jointed (FJ)
  5. Pattern: Straight lay (One directional)
  6. Thickness: 25/32"
  7. Width: 2 1/4"
  8. Grade: 2<sup>nd</sup> and Better
  9. Expansion Option: Standard
  10. Factory Finish: Unfinished
  11. Certified Wood: FSC
- D. Fasteners
1. Flooring - 2" (51mm) barbed cleats or staples.
  2. Subfloor - 1-1/4" (32mm) subflooring nails or staples.
  3. Sleeper anchors – 2 1/4" anchors and sleeves
- E. Finishing materials
1. MFMA approved oil-modified Sealer
  2. MFMA approved oil-modified Finish
- F. Game lines
1. Game line paint(s) shall be recommended by the finishing materials manufacturer and must be compatible with the finish.
- G. Perimeter
1. 3" x 4" ventilating type.
  2. Color: black.

## PART 3-EXECUTION

### 3.01 Inspection

- A. Inspect concrete slab for proper tolerance and dryness, and report any discrepancies to the general contractor and architect in writing. Slab will be level to within 1/8" (3mm) in a 10' (3m). Moisture content of the concrete slab shall not exceed 85% using ASTM F 2170 In-Slab Relative Humidity test.
- B. All work required to put the concrete subfloors in acceptable condition shall be the responsibility of the general contractor.
- C. Subfloor shall be broom cleaned by general contractor.
- D. Installer shall document all working conditions provided in General Specifications prior to commencement of installation.

### 3.02 INSTALLATION

#### A. Vapor Barrier

- 1. Install polyethylene with joints lapped a minimum of 6" (150mm) and turned up 4" (100mm) at the walls.

#### B. SUBFLOOR

- 1. Install sleepers end to end at right angles to finished flooring. Sleepers shall be staggered with rows spaced 16-1/16" (408mm) on center or sleeper/ subfloor system. Allow for a 1/4" (6mm) gap between sleepers. Provide 1-1/2" to 2" (40 to 50mm) expansion void at the perimeter and all vertical obstructions.
- 2. Properly anchor sleepers using Posi-Anchors 3 per sleeper. Maintain a 2" (50mm) minimum expansion void at all walls and other permanent vertical obstructions.
- 3. Install solid blocking at doorways, under bleachers in the stacked position, and below portable goals.
- 4. Install Bleacher Blocking per manufacturer's recommendations.
- 5. Install 15/32" (12mm) sub-flooring with the 8' (2.44m) dimension parallel to the sleepers staggering panels in adjacent rows. Fasten plywood subfloor to sleepers using 1-1/4" (35mm) staples placed 6" (150mm) on center along each sleeper. Allow for a 1/4" (6mm) gap between sheets.

#### C. FLOORING

- 1. Machine nail maple finish flooring 10" to 12" (150mm to 200mm) O.C. with end joints properly driven up and proper spacing provided for humidity conditions in specific regions. Consult your local "Certified"

contractor. Provide 2" (50mm) expansion voids at the perimeter and at all vertical obstructions.

### 3.03 FINISHING

#### A. Sanding

1. Sand per manufacturer's recommendations.
2. After sanding, buff entire floor using 100 grit screen or equal grit sandpaper, with a heavy-duty buffing machine.
3. Inspect entire area of floor to insure the floor presents a smooth surface without drum stop marks, gouges, streaks or shiners.
4. Vacuum and/or tack floor before first coat of seal.
5. Floor should be clean and completely free of dirt and sanding dust.

#### B. FINISHING

1. Gymnasiums
  - a. Apply specified combination of seal, gameline paint, and finish in accordance with manufacturer's instructions.
  - b. Buff and vacuum and/or tack between each coat after it dries.
  - c. Apply game lines accurately after the buffing and vacuuming the coated surfaces. Game lines shall be painted between seal coats and finish coats. Layout in accordance with drawings. For game lines, use current rules of association having jurisdiction. Lines shall be straight with sharp edges in colors selected by architect.

### 3.04 Wall Base Installation

- A. Install vent cove base anchored to walls with base cement or screws. Use pre-molded outside corners and neatly mitered inside corner.

### 3.05 Cleaning

- A. Clean up all unused materials and debris and remove it from the premises.

**END OF SECTION 096466**



## SECTION 096519 - RESILIENT TILE FLOORING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Vinyl composition floor tile.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and pattern specified.

#### 1.3 CLOSEOUT SUBMITTALS

- A. Maintenance data.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for floor tile installation.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For resilient floor tile, as determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.
  - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

#### 2.2 VINYL ENHANCED FLOOR TILE

- 1. Basis of Design: Johnsonite; a Tarkett company.
  - 1) VCT II

2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. American Biltrite.
  - b. Armstrong World Industries, Inc.
  - c. Congoleum Corporation.
  - d. Johnsonite; a Tarkett company.
  - e. Mannington Mills, Inc.
2. Tile Standard: ASTM F1066, Class 3, surface pattern.
4. Wearing Surface: Smooth.
5. Thickness: 0.125 inch.
6. Size: 12 x 12 inches.
7. Colors and Patterns: As indicated on the drawings.

### 2.3 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.
- C. Floor Polish: Provide protective, liquid floor-polish products recommended by floor tile manufacturer.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates: Prepare according to ASTM F710.
  1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
  2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.
  3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.
  4. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

- a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
  - b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
- C. Access Flooring Panels: Remove protective film of oil or other coating using method recommended by access flooring manufacturer.
- D. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- E. Do not install floor tiles until materials are the same temperature as space where they are to be installed.
1. At least 48 hours in advance of installation, move resilient floor tile and installation materials into spaces where they will be installed.
- F. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

### 3.2 FLOOR TILE INSTALLATION

- A. Comply with manufacturer's written instructions for installing floor tile.
- B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
1. Lay tiles in pattern indicated.
- C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
1. Lay tiles in pattern of colors and sizes indicated.
- D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.

- G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.
- H. Adhere floor tiles to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

END OF SECTION 096519

## SECTION 101200 - DISPLAY CASE SLIDING DOOR

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Aluminum Framed Sliding Glass Doors for display cases

#### 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for display cases.
- B. Shop Drawings: For sliding doors, include plans, elevations, sections, details, and attachments to other work.
  - 1. Show location of seams and joints in visual display surfaces.
  - 2. Include sections of typical trim members
  - 3. Wiring Diagrams: For power, signal, and control wiring.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for surface-burning characteristics of fabrics.

#### 1.3 QUALITY ASSURANCE

- A. Source Limitations: Obtain display case doors from single source from single manufacturer.

#### 1.4 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install display case doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Verify actual dimensions of openings for display cases by field measurements before fabrication.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Sliding glass door assembly shall include tempered safety glass door leaves of sufficient thickness for unframed edging to withstand and support any structural loads encountered and remain intact.

## 2.2 MATERIALS

- A. Extruded-Aluminum Bars and Shapes: ASTM B 221, Alloy 6063.
- B. Aluminum Tubing: ASTM B 429, Alloy 6063.
- C. Clear Tempered Glass: ASTM C 1048, Kind FT, Condition A, Type I, Class 1, Quality Q3, with exposed edges seamed before tempering, and 6 mm thick unless otherwise indicated.
- D. Fasteners: Provide screws, bolts, and other fastening devices made from same material as items being fastened, except provide hot-dip galvanized, stainless-steel, or aluminum fasteners for exterior applications. Provide types, sizes, and lengths to suit installation conditions. Use security fasteners where exposed to view.

## 2.3 SLIDING DOORS

- A. Manufacturers:
  - 1. Platinum Visual Systems
  - 2. Tablet and Ticket Company
  - 3. Claridge
  - 4. March Industries
- B. Sliding Door Units are to be "Fronts Only" as manufactured by those companies listed above.
  - 1. Sliding Door Units are to include top and bottom tracks, jamb frame sections, sliding glass door leaves, door pulls, and locks.
  - 2. Size of two-door unit: 4 ft. high x 5 ft. wide.
  - 3. Number of two-door units as per Drawings.

## 2.4 FABRICATION

- A. Use metals and shapes of thickness and reinforcing to produce flat surfaces, free of oil-canning, and to impart strength for size, design, and application indicated.
- B. Fabricate door frames with reinforced corners, mitered to a hairline fit, with no exposed fasteners.

## 2.5 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.6 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prepare rough opening for Sliding Door Units as required by type and size of unit?

3.2 ADJUSTING AND CLEANING

- A. Adjust doors to operate smoothly without warp or bind and so contact points meet accurately. Lubricate operating hardware as recommended by manufacturer.
- B. Touch up factory-applied finishes to restore damaged or soiled areas.

END OF SECTION 101200

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## SECTION 101419 - DIMENSIONAL LETTER SIGNAGE

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Illuminated, fabricated channel dimensional characters.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For signs.
  - 1. Include fabrication and installation details and attachments to other work.
  - 2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
  - 3. Show message list, typestyles, graphic elements, and layout for each sign.
  - 4. Show locations of electrical service connections.
  - 5. Include diagrams for power, signal, and control wiring.
- C. Samples: For each exposed product and for each color and texture specified.
- D. Delegated-Design Submittal: For signs indicated in "Performance Requirements" Article.
  - 1. Include structural analysis calculations for signs indicated to comply with design loads; signed and sealed by the qualified professional engineer responsible for their preparation.

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Sample warranty.

#### 1.4 CLOSEOUT SUBMITTALS

- A. Maintenance data.

#### 1.5 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: Five years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design sign structure and anchorage of dimensional character sign type(s) according to structural performance requirements.
- B. Structural Performance: Signs and supporting elements shall withstand the effects of gravity and other loads within limits and under conditions indicated.
- C. Thermal Movements: For exterior fabricated channel dimensional characters, allow for thermal movements from ambient and surface temperature changes.
  - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

### 2.2 DIMENSIONAL CHARACTERS

- A. Fabricated Channel Characters: Metal face and side returns, formed free from warp and distortion; with uniform faces, sharp corners, and precisely formed lines and profiles; internally braced for stability, to meet structural performance loading without oil-canning or other surface deformation, and for securing fasteners; and as follows.
  - 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. [A.R.K. Ramos.](#)
    - b. [ASI Sign Systems, Inc.](#)
    - c. [Gemini Incorporated.](#)
    - d. JD Signs, Inc.
  - 2. Illuminated Characters: Halo Lit character construction with LED lighting, including transformers, insulators, and other accessories for operability, with provision for servicing and concealing connections to building electrical system. Use tight or sealed joint construction to prevent unintentional light leakage. Space lamps apart from each other and away from character surfaces as needed to illuminate evenly.
    - a. Power: As indicated on electrical Drawings.
      - 1) Provide continuous raceway.
  - 3. Character Material: Sheet or plate aluminum.
  - 4. Character Height: As indicated on Drawings.

5. Character Depth: As indicated on Drawings.
6. Finishes:
  - a. Integral Aluminum Finish: Anodized color as selected by Architect from full range of industry colors and color densities.
7. Mounting: Projected studs.
  - a. Hold characters at manufacturer's recommended distance from wall surface.

### 2.3 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:
  1. Use concealed fasteners and anchors unless indicated to be exposed.
  2. For exterior exposure, furnish nonferrous-metal stainless-steel or hot-dip galvanized devices unless otherwise indicated.
  3. Exposed Metal-Fastener Components, General:
    - a. Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.
  4. Sign Mounting Fasteners:
    - a. Concealed Studs: Concealed (blind), threaded studs welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.
- B. Adhesive: As recommended by sign manufacturer.
- C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

### 2.4 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
  1. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
  2. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
  3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
  4. Internally brace dimensional characters for stability, to meet structural performance loading without oil-canning or other surface deformation, and for securing fasteners.

5. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
  1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
  2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
  3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
- B. Mounting Methods:
  1. Concealed Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
    - a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place sign in position and push until flush to surface, embedding studs in holes. Temporarily support sign in position until adhesive fully sets.
    - b. Thin or Hollow Surfaces: Place sign in position and flush to surface, install washers and nuts on studs projecting through opposite side of surface, and tighten.
  2. Back Bar and Brackets: Remove loose debris from substrate surface and install backbar or bracket supports in position, so that signage is correctly located and aligned.
- C. Remove temporary protective coverings and strippable films as signs are installed.

END OF SECTION 101419

## SECTION 102113 - TOILET COMPARTMENTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes solid-polymer units as follows:
  - 1. Toilet Enclosures: Floor-to-ceiling anchored.
  - 2. Urinal Screens: Floor anchored.

#### 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Samples: For each exposed finish.

### PART 2 - PRODUCTS

#### 2.1 SOLID-POLYMER UNITS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Bradley Corporation.
  - 2. Columbia Lockers, Partition Systems International of South Carolina.
  - 3. Global Partitions, ASI Group.
  - 4. Hadrian Manufacturing Inc.
  - 5. Legacy Polymer Products.
  - 6. Hiny Hiders Solid Plastic by Scranton Products
- B. Door, Panel, and Pilaster Construction: Solid, high-density polyethylene (HDPE) panel material, not less than 1 inch thick, seamless, with eased edges, and with homogenous color and pattern throughout thickness of material.
  - 1. Color and Pattern: Shall be selected by the Architect from the manufacturer's standard colors.
- C. Pilaster Shoes and Sleeves (Caps): Manufacturer's standard design; polymer.
  - 1. Polymer Color and Pattern: Extruded aluminum or stainless steel.
- D. Brackets (Fittings):

1. Full-Height (Continuous) Type: Manufacturer's standard design; stainless steel.

E. Heat-Sink Strip: Manufacturer's standard continuous, extruded-aluminum strip fastened to exposed bottom edges of solid-polymer components to prevent burning.

## 2.2 ACCESSORIES

A. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories.

1. Material: Stainless steel.

B. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, finished to match hardware, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use hot-dip galvanized or other rust-resistant, protective-coated steel.

## 2.3 FABRICATION

A. Floor-to-Ceiling Anchored Units: Provide manufacturer's standard corrosion-resistant anchoring assemblies complete with threaded rods, lock washers, and leveling adjustment nuts at pilasters for structural connection to floor. Provide shoes at pilasters to conceal anchorage.

B. Doors: Unless otherwise indicated, provide 24-inch- wide in-swinging doors for standard toilet compartments and 36-inch- wide out-swinging doors with a minimum 32-inch- wide clear opening for compartments indicated to be accessible to people with disabilities.

1. Hinges: Manufacturer's standard self-closing type that can be adjusted to hold doors open at any angle up to 90 degrees.

2. Latch and Keeper: Manufacturer's standard surface-mounted latch unit designed for emergency access and with combination rubber-faced door strike and keeper. Provide units that comply with accessibility requirements of authorities having jurisdiction at compartments indicated to be accessible to people with disabilities.

3. Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent door from hitting compartment-mounted accessories.

4. Door Bumper: Manufacturer's standard rubber-tipped bumper at out-swinging doors.

5. Door Pull: Manufacturer's standard unit at out-swinging doors that complies with accessibility requirements of authorities having jurisdiction. Provide units on both sides of doors at compartments indicated to be accessible to people with disabilities.

### 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.
  - 1. Maximum Clearances:
    - a. Pilasters and Panels: 1/2 inch.
    - b. Panels and Walls: 1 inch.
- B. Remove, replace or reconfigure existing components as required to provide fully integrated system.

#### 3.2 ADJUSTING

- A. Hardware Adjustment: Adjust and lubricate hardware according to manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

END OF SECTION 102113

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## SECTION 102239 - FOLDING PANEL PARTITIONS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Manually operated, acoustical panel partitions.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For operable panel partitions.
  - 1. Include plans, elevations, sections, attachment details, and numbered panel installation sequence.
  - 2. Indicate stacking and operating clearances. Indicate location and installation requirements for hardware and track, blocking, and direction of travel.
- C. Samples: For each exposed product and for each color and texture specified.

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale and coordinated with each other, using input from installers of the items involved.
- B. Setting Drawings: For embedded items and cutouts required in other work, including support-beam, mounting-hole template.
- C. Product Certificates: For each type of operable panel partition.
- D. Product test reports.
- E. Sample warranty.

#### 1.4 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

## 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

## 1.6 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of operable panel partitions that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: Five years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Acoustical Performance: Provide operable panel partitions tested by a qualified testing agency for the following acoustical properties according to test methods indicated:
  - 1. Sound-Transmission Requirements: Operable panel partition assembly tested for laboratory sound-transmission loss performance according to ASTM E90, determined by ASTM E413, and rated for not less than the STC indicated.
  - 2. Noise-Reduction Requirements: Operable panel partition assembly, identical to partition tested for STC, tested for sound-absorption performance according to ASTM C423, and rated for not less than the NRC indicated.
- B. Fire-Test-Response Characteristics: Provide panels with finishes complying with one of the following as determined by testing identical products by a testing and inspecting agency acceptable to authorities having jurisdiction:
  - 1. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency.
    - a. Flame-Spread Index: 25 or less.
    - b. Smoke-Developed Index: 450 or less.
  - 2. Fire Growth Contribution: Complying with acceptance criteria of local code and authorities having jurisdiction when tested according to NFPA 265 Method B Protocol or NFPA 286.

### 2.2 OPERABLE ACOUSTICAL PANELS

- A. Operable Acoustical Panels: Partition system, including panels, seals, finish facing, suspension system, operators, and accessories.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Advanced Equipment Corporation.
  - b. Hufcor, Inc.
  - c. KWIK-WALL Company.
  - d. Moderco Inc.
  - e. Modernfold, Inc.
  - f. Panelfold Inc.
- B. Panel Operation: Manually operated, paired panels.
- C. Panel Construction: As required to support panel from suspension components and with reinforcement for hardware attachment. Fabricate panels with tight hairline joints and concealed fasteners. Fabricate panels so finished in-place partition is rigid; level; plumb; aligned, with tight joints and uniform appearance; and free of bow, warp, twist, deformation, and surface and finish irregularities.
- D. Dimensions: Fabricate operable acoustical panel partitions to form an assembled system of dimensions indicated and verified by field measurements.
- E. STC: Not less than 50.
- F. NRC: Not less than 0.50.
- G. Panel Materials:
1. Steel Frame: Steel sheet, manufacturer's standard thickness.
  2. Steel Face/Liner Sheets: Tension-leveled steel sheet, manufacturer's standard thickness.
  3. Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use, corrosion resistance, and finish indicated; manufacturer's standard strengths and thicknesses for type of use.
  4. Gypsum Board: ASTM C1396/C1396M.
  5. Cement Board: ASTM C1288.
  6. Particleboard: ANSI A208.1.
  7. Medium-Density Fiberboard: ANSI A208.2.
  8. Plywood: DOC PS 1.
- H. Panel Closure: Manufacturer's standard.
- I. Hardware: Manufacturer's standard as required to operate operable panel partition and accessories; with decorative, protective finish.
- J. Finish Facing: Selected by Architect from manufacturer's full range.
- 2.3 SEALS
- A. Description: Seals that produce operable panel partitions complying with performance requirements and the following:
1. Seals made from materials and in profiles that minimize sound leakage.

2. Seals fitting tight at contact surfaces and sealing continuously between adjacent panels and between operable panel partition perimeter and adjacent surfaces, when operable panel partition is extended and closed.
  - B. Horizontal Bottom Seals: Manufacturer's standard continuous-contact seal exerting uniform constant pressure on floor.
  - C. Horizontal Bottom Seals: Resilient, mechanical, retractable, constant-force-contact seal exerting uniform constant pressure on floor when extended, ensuring horizontal and vertical sealing and resisting panel movement.
    1. Mechanically Operated for Acoustical Panels: Extension and retraction of bottom seal by operating handle or built-in operating mechanism, with operating range not less than 1-1/2 inches between retracted seal and floor finish.

#### 2.4 PANEL FINISH FACINGS

- A. Description: Finish facings for panels that comply with indicated fire-test-response characteristics and that are factory applied to operable panel partitions with appropriate backing, using mildew-resistant nonstaining adhesive as recommended by facing manufacturer's written instructions.
- B. Cap-Trimmed Edges: Protective perimeter-edge trim with tight hairline joints concealing edges of panel and finish facing.
- C. Trimless Edges: Fabricate exposed panel edges so finish facing wraps uninterrupted around panel, covering edge and resulting in an installed partition with facing visible on vertical panel edges, without trim, for minimal sightlines at panel-to-panel joints.

#### 2.5 SUSPENSION SYSTEMS

- A. Tracks: Steel or aluminum with adjustable steel hanger rods for overhead support, designed for operation, size, and weight of operable panel partition indicated. Size track to support partition operation and storage without damage to suspension system, operable panel partitions, or adjacent construction. Limit track deflection to no more than 0.10 inch between bracket supports. Provide a continuous system of track sections and accessories to accommodate configuration and layout indicated for partition operation and storage.
- B. Carriers: Trolley system as required for configuration type, size, and weight of partition and for easy operation; with ball-bearing wheels.
- C. Track Intersections, Switches, and Accessories: As required for operation, storage, track configuration, and layout indicated for operable panel partitions, and compatible with partition assembly specified. Fabricate track intersections and switches from steel or aluminum.

## 2.6 ACCESSORIES

- A. Storage Pocket Door: Full height at end of partition runs to conceal stacked partition; of same materials, finish, construction, thickness, and acoustical qualities as panels; complete with operating hardware and acoustical seals at soffit, floor, and jambs. Hinges in finish to match other exposed hardware.
  - 1. Manufacturer's standard method to secure storage pocket door in closed position.
  - 2. Rim Lock: Key-operated lock cylinder, keyed to master key system, to secure storage pocket door in closed position. Include two keys per lock.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install operable panel partitions and accessories after other finishing operations, including painting, have been completed in area of partition installation.
- B. Broken, cracked, chipped, deformed, or unmatched panels are not acceptable.
- C. Broken, cracked, deformed, or unmatched gasketing or gasketing with gaps at butted ends is not acceptable.
- D. Light-Leakage Test: Illuminate one side of partition installation and observe vertical joints and top and bottom seals for voids. Adjust partitions for alignment and full closure of vertical joints and full closure along top and bottom seals.

### 3.2 ADJUSTING

- A. Adjust storage pocket doors to operate smoothly and easily, without binding or warping.
- B. Verify that safety devices are properly functioning.

### 3.3 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain operable panel partitions.

END OF SECTION 102239

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## SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Public-use washroom accessories.
2. Private-use shower room accessories.
3. Childcare accessories.
4. Underlavatory guards.
5. Custodial accessories.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: Full size, for each exposed product and for each finish specified.

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Sample warranty.

#### 1.4 CLOSEOUT SUBMITTALS

- A. Maintenance data.

#### 1.5 WARRANTY

- A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.
  1. Warranty Period: 15 years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

## 2.2 PUBLIC-USE WASHROOM ACCESSORIES

### A. Toilet Tissue (Roll) Dispenser:

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. AJW Architectural Products.
  - b. American Specialties, Inc.
  - c. Bobrick Washroom Equipment, Inc.
  - d. Bradley Corporation.
  - e. Saniflow Corp.
2. Description: Single-roll dispensers for Private Restrooms, and Double-roll dispensers for Public Restrooms and Locker Rooms.
3. Mounting: Surface mounted.
4. Operation: Spindleless with tension-spring controlled delivery and self-locking device extending through core that prevents core removal until roll is empty.
5. Capacity: Designed for 4-1/2- or 5-inch-diameter tissue rolls.
6. Material and Finish: Stainless steel, No. 4 finish (satin).

### B. Waste Receptacle:

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. AJW Architectural Products.
  - b. American Specialties, Inc.
  - c. Bobrick Washroom Equipment, Inc.
  - d. Bradley Corporation.
  - e. Saniflow Corp.
2. Mounting: Surface mounted.
3. Minimum Capacity: 12.75 gal..
4. Material and Finish: Stainless steel, No. 4 finish (satin).
5. Liner: Reusable vinyl liner.
6. Lockset: Tumbler type for waste receptacle.

### C. Paper Towel Dispenser (as indicated on drawings):

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. AJW Architectural Products.
  - b. American Specialties, Inc.
  - c. Bobrick Washroom Equipment, Inc.
  - d. Bradley Corporation.



- e. Saniflow Corp.
  2. Description: Surface mounted paper towel dispenser
  3. Mounting: Surface mounted.
  4. Minimum Capacity: 400 C-fold.
  5. Material and Finish: Stainless steel, No. 4 finish (satin).
  6. Lockset: Tumbler type.
- D. Warm-Air Hand Dryer (as indicated on drawings):
  1. Manufacturers: Basis of Design: XLERATOReco XL-GR-ECO or architect approved equivalent.
  2. Description: Standard-speed, warm-air hand dryer.
    - a. Mounting: Surface mounted
    - b. Operation: Electronic sensor activated with timed power cut-off switch.
    - c. Cover Material and Finish: Graphite Textured Painted
    - d. Electrical Requirements: 120V, 4.5A, 530W, 60Hz
- E. Liquid-Soap Dispenser (for all Restrooms, Shower Rooms and sink locations):
  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. AJW Architectural Products.
    - b. American Specialties, Inc.
    - c. Bobrick Washroom Equipment, Inc.
    - d. Bradley Corporation.
    - e. Saniflow Corp.
  2. Description: Designed for dispensing antibacterial soap in liquid or lotion form.
  3. Mounting: Horizontally oriented, surface mounted.
  4. Capacity: 40 oz..
  5. Materials: Stainless Steel.
  6. Lockset: Tumbler type.
  7. Refill Indicator: Window type.
- F. Grab Bar (for all accessible toilets rooms and toilet partition stalls):
  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. AJW Architectural Products.
    - b. American Specialties, Inc.
    - c. Bobrick Washroom Equipment, Inc.
    - d. Bradley Corporation.
    - e. Saniflow Corp.

2. Mounting: Flanges with concealed fasteners.
  3. Material: Stainless steel, 0.05 inch thick.
    - a. Finish: Smooth, No. 4 finish (satin) on ends and slip-resistant texture in grip area.
  4. Outside Diameter: 1-1/2 inches.
  5. Configuration and Length: As indicated on Drawings.
- G. Sanitary-Napkin Disposal Unit (for Student Girl's Restroom 181, Faculty/Staff Women's Restrooms 113, 158, 159, 199, 202, 217, 219 and Alternate Public Women's Restroom 193):
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. AJW Architectural Products.
    - b. American Specialties, Inc.
    - c. Bobrick Washroom Equipment, Inc.
    - d. Bradley Corporation.
    - e. Saniflow Corp.
  2. Mounting: Partition mounted, dual access, or Surface mounted for single use.
  3. Door or Cover: Self-closing, disposal-opening cover and hinged face panel with tumbler lockset.
  4. Receptacle: Removable.
  5. Material and Finish: Stainless steel, No. 4 finish (satin).
- H. Mirror Unit (for all hand sink locations indicated on drawings):
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. AJW Architectural Products.
    - b. American Specialties, Inc.
    - c. Bobrick Washroom Equipment, Inc.
    - d. Bradley Corporation.
    - e. Saniflow Corp.
  2. Frame: Stainless-steel channel.
    - a. Corners: Manufacturer's standard, Welded and ground smooth.
  3. Integral Shelf (for Locker Room sinks only): 5 inches deep.
  4. Hangers: Produce rigid, tamper- and theft-resistant installation, using method indicated below.

- a. One-piece, galvanized-steel, wall-hanger device with spring-action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
  - b. Wall bracket of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.
5. Size: As indicated on Drawings, or 24"x36" if not indicated on drawings.

### 2.3 PRIVATE-USE SHOWER ROOM ACCESSORIES

#### A. Shower Curtain Rod (for all shower stalls):

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. AJW Architectural Products.
  - b. American Specialties, Inc.
  - c. Bobrick Washroom Equipment, Inc.
  - d. Bradley Corporation.
  - e. Saniflow Corp.
2. Description: 1-inch OD; fabricated from nominal 0.0375-inch-thick stainless steel.
3. Mounting Flanges: Stainless-steel flanges designed for exposed fasteners.
4. Finish: Stainless steel, No. 4 finish (satin).

#### B. Shower Curtain (for all shower stalls):

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. AJW Architectural Products.
  - b. American Specialties, Inc.
  - c. Bobrick Washroom Equipment, Inc.
  - d. Bradley Corporation.
  - e. Saniflow Corp.
2. Size: Minimum 6 inches wider than opening by 72 inches high.
3. Material: Nylon-reinforced vinyl, minimum 10 oz. or 0.008-inch-thick vinyl, with integral antibacterial agent.
4. Color: As selected from manufacturer's full range.
5. Grommets: Corrosion resistant at minimum 6 inches o.c. through top hem.
6. Shower Curtain Hooks: Chrome-plated or stainless-steel, spring wire curtain hooks with snap fasteners, sized to accommodate specified curtain rod. Provide one hook per curtain grommet.

#### C. Robe Hook (wall mounted adjacent to all shower stalls):

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. AJW Architectural Products.
  - b. American Specialties, Inc.
  - c. Bobrick Washroom Equipment, Inc.
  - d. Bradley Corporation.
  - e. Saniflow Corp.
2. Description: Double-prong unit.
3. Material and Finish: Stainless steel, No. 4 finish (satin).

D. Towel Bar (for all shower stalls):

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. AJW Architectural Products.
  - b. American Specialties, Inc.
  - c. Bobrick Washroom Equipment, Inc.
  - d. Bradley Corporation.
  - e. Saniflow Corp.
2. Description: Surface mounted towel bar with concealed mounting plates, 18” length, projects 1 5/16” from the wall
3. Material and Finish: Type 304 Stainless Steel, Bright finish

## 2.4 CHILDCARE ACCESSORIES

A. Diaper-Changing Station (for Alternate Public Restrooms):

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. American Specialties, Inc.
  - b. Diaper Deck & Company, Inc.
  - c. Foundations Children's Products.
  - d. GAMCO Specialty Accessories; a division of Bobrick.
  - e. Koala Kare Products.
2. Description: Horizontal unit that opens by folding down from stored position and with child-protection strap.
  - a. Engineered to support minimum of 250-lb static load when opened.
3. Mounting: Surface mounted, with unit projecting not more than 4 inches from wall when closed.

4. Operation: By pneumatic shock-absorbing mechanism.
5. Material and Finish: HDPE in manufacturer's standard gray color.
6. Liner Dispenser: Built in.

## 2.5 UNDERLAVATORY GUARDS

### A. Underlavatory Guard (for all exposed supply and waste piping):

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. Buckaroos, Inc.
  - b. Plumberex Specialty Products, Inc.
  - c. Truebro by IPS Corporation.
2. Description: Insulating pipe covering for supply and drain piping assemblies that prevents direct contact with and burns from piping; allow service access without removing coverings.
3. Material and Finish: Antimicrobial, molded plastic, white.

## 2.6 CUSTODIAL ACCESSORIES

### A. Utility Shelf (one for each Custodial Closet):

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. AJW Architectural Products.
  - b. American Specialties, Inc.
  - c. Bobrick Washroom Equipment, Inc.
  - d. Bradley Corporation.
  - e. Saniflow Corp
2. Description: With exposed edges turned down not less than 1/2 inch and supported by two triangular brackets welded to shelf underside.
3. Size: 24inches long by 6 inches deep.
4. Material and Finish: Not less than nominal 0.05-inch-thick stainless steel, No. 4 finish (satin).

### B. Mop and Broom Holder (one for each Custodial Mop Sink):

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. AJW Architectural Products.
  - b. American Specialties, Inc.
  - c. Bobrick Washroom Equipment, Inc.
  - d. Bradley Corporation.
  - e. Saniflow Corp.
2. Description: Unit with shelf, hooks, holders, and rod suspended beneath shelf.
3. Length: 36 inches.
4. Hooks: Four.
5. Mop/Broom Holders: Three, spring-loaded, rubber hat, cam type.
6. Material and Finish: Stainless steel, No. 4 finish (satin).
  - a. Shelf: Not less than nominal 0.05-inch-thick stainless steel.
  - b. Rod: Approximately 1/4-inch-diameter stainless steel.

C. Liquid-Soap Dispenser (one for each mop sink):

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. AJW Architectural Products.
  - b. American Specialties, Inc.
  - c. Bobrick Washroom Equipment, Inc.
  - d. Bradley Corporation.
  - e. Saniflow Corp.
2. Description: Designed for dispensing soap in liquid or lotion form.
3. Mounting: Horizontally oriented, surface mounted.
4. Capacity: 20 oz..
5. Materials: Stainless steel.
6. Lockset: Tumbler type.
7. Refill Indicator: Window type.

2.7 FABRICATION

- A. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to ASTM F 446.

END OF SECTION 102800

## SECTION 114000 - FOODSERVICE EQUIPMENT

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes equipment for foodservice facilities.
- B. Owner-Furnished Equipment: Where indicated, Owner will furnish equipment for installation by Contractor.
- C. Related Requirements:
  - 1. Division 23 "Commercial-Kitchen Hoods" for ventilation hoods.

#### 1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For fabricated equipment. Include plans, elevations, sections, roughing-in dimensions, fabrication details, utility service requirements, and attachments to other work.
- C. Samples for Initial Selection: For units with factory-applied color finishes.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: For foodservice facilities.
  - 1. Indicate locations of foodservice equipment and connections to utilities.
  - 2. Key equipment using same designations as indicated on Drawings.
  - 3. Include plans and elevations; clearance requirements for equipment access and maintenance; details of equipment supports; and utility service characteristics.
  - 4. Include details of seismic bracing for equipment.
- B. Sample warranties.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.



## 1.6 WARRANTY

- A. Refrigeration Compressor Warranty: Manufacturer agrees to repair or replace compressors that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: Five years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. NSF Standards: Provide equipment that bears NSF Certification Mark or UL Classification Mark certifying compliance with applicable NSF standards.
- B. BISSC Standards: Provide bakery equipment that complies with BISSC/Z50.2.
  - 1. Provide BISSC-certified equipment.
- C. UL Certification: Provide electric and fuel-burning equipment and components that are evaluated by UL for fire, electric shock, and casualty hazards according to applicable safety standards, and that are UL certified for compliance and labeled for intended use.
- D. Steam Equipment: Provide steam-generating and direct-steam heating equipment that is fabricated and labeled to comply with 2013 ASME Boiler and Pressure Vessel Code.
- E. Regulatory Requirements: Install equipment to comply with the following:
  - 1. ASHRAE 15, "Safety Code for Mechanical Refrigeration."
  - 2. NFPA 54, "National Fuel Gas Code."
  - 3. NFPA 70, "National Electrical Code."
  - 4. NFPA 96, "Ventilation Control and Fire Protection of Commercial Cooking Operations."
- F. Seismic Restraints: Comply with SMACNA's "Kitchen Ventilation Systems and Food Service Equipment Fabrication and Installation Guidelines," Appendix A, "Seismic Restraint Details," unless otherwise indicated.

### 2.2 FOODSERVICE EQUIPMENT

- A. See Product Data Sheets following with Basis-of-Design criteria. Subject to compliance with the requirements provide the Basis-of-Design products or Architect approved equivalent.

### 2.3 MISCELLANEOUS MATERIALS

- A. Installation Accessories, General: NSF certified for end-use application indicated.

- B. Elastomeric Joint Sealant: ASTM C920; silicone. Type S (single component), Grade NS (nonsag), Class 25, Use NT (nontraffic) related to exposure, and Use M, G, A, or O as applicable to joint substrates indicated.
  - 1. Public Health and Safety Requirements:
    - a. Sealant is certified for compliance with NSF standards for end-use application indicated.
    - b. Washed and cured sealant complies with the FDA's regulations for use in areas that come in contact with food.
  - 2. Cylindrical Sealant Backing: ASTM C1330, Type C, closed-cell polyethylene, in diameter greater than joint width.

## 2.4 FINISHES

- A. Stainless Steel Finishes: Remove tool and die marks and stretch lines, or blend into finish. Grind and polish surfaces to produce uniform finish, free of cross scratches.
- B. Powder-Coat Finishes: Comply with resin manufacturer's written instructions for application, baking, and minimum dry film thickness.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install foodservice equipment level and plumb, according to manufacturer's written instructions.
  - 1. Connect equipment to utilities.
  - 2. Provide cutouts in equipment, neatly formed, where required to run service lines through equipment to make final connections.
- B. Complete equipment assembly where field assembly is required.
  - 1. Provide closed butt and contact joints that do not require a filler.
  - 2. Grind field welds on stainless steel equipment until smooth and polish to match adjacent finish.
- C. Install equipment with access and maintenance clearances that comply with manufacturer's written installation instructions and with requirements of authorities having jurisdiction.
- D. Install cabinets and similar equipment on bases in a bed of sealant.
- E. Install closure-trim strips and similar items requiring fasteners in a bed of sealant.
- F. Install joint sealant in joints between equipment and abutting surfaces with continuous joint backing unless otherwise indicated. Produce airtight, watertight, vermin-proof, sanitary joints.

3.2 CLEANING AND PROTECTING

- A. After completing installation of equipment, repair damaged finishes.
- B. Clean and adjust equipment as required to produce ready-for-use condition.
- C. Protect equipment from damage during remainder of the construction period.

3.3 DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain foodservice equipment.

Coalfield Elementary

ITEM 1 - WALK IN COMBINATION COOLER FREEZER, REMOTE (1 REQ'D)  
Custom Model LEER

Dimensions And Basic Description

21' 2" x 14' 5-1/2" x 8' 6-1/4" (4.25" Polyurethane) Freezer (4.25" Polyurethane) Cooler COMBO  
\*INDOOR\* Approx. Wt: 6,482 lbs.

10' 7"x14' 5-1/2" Freezer ; 10' 7"x14' 5-1/2" Cooler

Floor(s)

FREEZER Floor (4.25" Floor) 16 Ga Stnls No Under/Overlay \* Suitable for Heavier Foot Traffic and Hand Carts

COOLER Floor (4.25" Floor) 16 Ga Stnls No Under/Overlay \* Suitable for Heavier Foot Traffic and Hand Carts

Finishes

\*26 Ga Stucco Galv (STD) Acrylic Coating Exterior

\*26 Ga Stucco Galv White Interior FREEZER

\*26 Ga Stucco Galv White Interior COOLER

Additional Exterior Finishes

Front 22 ga. Stainless Steel 180 (Sq Ft)

Doors

1 Door Freezer, 36x78, Left Hand, Interior SameAsWall, Exterior, SameAsWall

1 Door Cooler, 36x78, Right Hand, Interior SameAsWall, Exterior, SameAsWall

Accessories

INCLUDES UL Labels

2 1/8" Alum tread Ext Kickplate 36"x36"

2 1/8" Alum tread Int Kickplate 36"x36"

4 1810 4ft LED Light Fixture – Inc. Bulb

120 (SQ FT) 1/8 Aluminum Treadplate; 36" high on exposed front wall

42 (SQ FT) Standard closure panel(22 ga. Stainless Steel); Exposed Front

17 (LIN FT) Corner Trim(22 ga. Stainless Steel)

REFRIGERATION

REFRIGERATION GROUP(1)

1 (CCH0035LCACZA0000) Scroll 3.5 HP 208/230/3 Outdoor; Liquid Line Kit; LPC( -10 Deg. Hold )

1 (CEL0100BS6EEAB0300) COIL LOW PROF QRC ELEC DEF. 10,200 BTU 208/1 V( -10 Deg. Hold )

REFRIGERATION GROUP(2)

1 (CCH0015MCACZA0000) Scroll 1.5 HP 208/230/3 Outdoor; Liquid Line Kit; LPC( 35 Deg. Hold )

1 (CEL0105AS6AMAB0300) COIL LOW PROF QRC AIR DEF. 10,150 BTU 115 V( 35 Deg. Hold )

1 (1304964) \_SCROLL\_3.5\_HP;WAR EXTD 4YR SCROLL COMP 3.5 HP

1 (ESA-LC004) LEER 1 YR LOCAL LABOR WARRANTY 4 HP

1 (1305005) \_SCROLL\_1.5\_HP;WAR EXTD 4YR SCROLL COMP 1.5 HP

1 (ESA-LC002) LEER 1 YR LOCAL LABOR WARRANTY 2 HP - REFRIGERATION ONLY

APPROVED ALTERNATES: AMERICAN PANEL AND THERMOKOOL

ITEM 2 - COOLER FREEZER SHELVING (1 REQ'D)

Oneida (see Oneida Hospitality Group) Model SHELVING

As per plan

APPROVED ALTERNATES: METRO AND QUANTUM

ITEM 3 - DRY STORAGE SHELVING (1 REQ'D)  
Oneida Hospitality Group Model SHELVING

APPROVED ALTERNATES: METRO AND QUANTUM

ITEM 4 - CAN RACK (1 REQ'D)  
Channel Manufacturing Model CSBR-80M Dimensions: 82.25(h) x 25.5(w) x 35(d)  
Can Rack, Can And Storage Rack, Mobile, 25.5"W x 35"D x 82.25"H, Aluminum Construction, (80) #10  
Cans, 5" x 2" Heavy-Duty Swivel Plate Casters w/ Zerk Grease Fitting model # CPS25U, Made in USA,  
NSF, 115lbs. (ITEM WEIGHT ONLY), weight does not include 50 lbs. for pallet weight  
1 ea Lifetime warranty against rust and corrosion

APPROVED ALTERNATES: NEW AGE AND METRO

ITEM 5 - CONVECTION OVEN, GAS (1 REQ'D)  
Royal Range of California Model RCOS-2 Dimensions: 73.88(h) x 38(w) x 40.5(d)  
Convection Oven, gas, double-deck, standard depth, thermostatic controls, temp range 150°F - 500°F,  
electronic ignition, 2-speed fan, (4) burners, (2) interior lights, (5) chrome plated racks with (11) positions,  
pressure regulator included, porcelain interior, dual stainless steel doors with glass viewing window on  
right, stainless steel front, sides & top, legs, 1/2 HP, 140,000 BTU, cCSAus, CSA-Sanitation, Made in  
USA, ENERGY STAR-®  
1 ea Two year limited parts and labor warranty, standard  
1 ea Gas type to be specified  
1 ea Glass view window on right doors, standard  
2 ea Solid stainless steel doors on left, standard  
1 ea Single point gas connection, for stacked RCO  
1 ea Flex hose with quick disconnect & restrainer device, 3/4" x 48" long  
1 ea Casters, set of 4 (2 locking)

APPROVED ALTERNATES: GARLAND AND BLODGETT

ITEM 6 - COMBI OVEN, GAS (1 REQ'D)  
RATIONAL Model ICP 10-FULL NG 208/240V 1 PH (LM100EG) Dimensions: 39.9(h) x 42.25(w) x 38.4(d)  
(CE1GRRRA.0000240) iCombi Pro® 10-Full Size Combi Oven, natural gas, (10) 18" x 26" sheet pan or  
(20) 12" x 20" steam pan or (10) 2/1 GN pan capacity, (5) stainless steel grids included, intelligent  
cooking system with (4) assistants; iDensityControl, iCookingSuite, iProductionManager, & iCareSystem,  
(6) operating modes, (5) cooking methods, (3) manual operating modes, 85° to 572°F temperature range,  
quick clean, care control, eco mode, 6-point core temperature probe, retractable hand shower, Ethernet  
interface, Wi-Fi enabled, 152,000 BTU, 208/240v/60/1-ph, 6 ft. cord, 1.5 kW, CE, IPX5, cCSAus, NSF,  
ENERGY STAR-®  
1 ea NOTE: All discounts subject to approval by manufacturer  
1 ea 2 years parts and labor, 5 years steam generator warranty  
1 ea Model CAP Chef Assistance Program, a RATIONAL certified Chef conducts 4  
hours/location specialized application training with personnel, no charge  
1 ea Model 9999.2252 RCI RATIONAL Certified Installation, new certified installation for each  
table-top iCombi of a combi-duo, 100 miles (200 round-trip) included. (See attached  
installation flyer for details) THIS ITEM IS NON-DISCOUNTABLE, USA ONLY (NET)  
1 ea Model 9999.2002 Pre-Installation Site Consultation, provides an installation consultation  
to ensure the site has proper space and connections for gas, electric, drain & water, one  
(1) Consultation is needed for every four (4) cooking systems, includes 100 miles (200

- miles round trip). (see attached installation flyer for details) THIS ITEM IS NON-DISCOUNTABLE, USA ONLY (NET)
- 1 ea Model 9999.1009 Extended Travel Zones, for extra distance beyond the 100 miles(200 round-trip) that is included. THIS ITEM IS NON-DISCOUNTABLE, USA ONLY (NET)
  - 1 ea Model 9999.2110 Commissioning -one (1) gas iCombi - the operational function test and gas flue analysis when not completed at time of RATIONAL certified installation. Includes 100 miles (200 miles round-trip). THIS ITEM IS NON-DISCOUNTABLE, USA ONLY (NET)
  - 1 ea Model 8720.1561US Installation Kit, for gas iCombi/SCC/CMP 102G (208-240/60/1ph); gas iCombi/SCC/CMP 201G (120/60/1ph); gas iCombi/SCC/CMP 202G (208-240/60/1ph) THIS ITEM IS NON-DISCOUNTABLE, USA ONLY (NET)
  - 1 ea Model 1900.1154US Water Filtration Single Cartridge System, for any iVario, single Combi model, or XS or half-size Combi-Duos, includes: (1) single head with pressure gauge, R95H filter & filter installation kit
  - 1 ea Model 9999.2271 RCI RATIONAL Certified Installation, additional installation cost for a RATIONAL Water Filter System is available when purchased with Certified Installation of RATIONAL unit THIS ITEM IS NON-DISCOUNTABLE, USA ONLY (NET)
  - 1 ea NOTE: The RATIONAL Water Filtration Systems helps provide consistent high quality water to your RATIONAL cooking systems. The patented carbon block technology reduces the effects of sediment, chloramines and chlorine while providing the required flow rates
  - 2 ea Model 56.01.535 Cleaner tablet Active Green, for all iCombi Pro/Classic, 150 pieces/bucket (minimum order quantity- 2 ea, unless ordered with a unit)
  - 2 ea Model 56.00.562 Care Tablets, bucket of 150 packets for all iCombi Pro/Classic models and SelfCooking Center® units from 10/2008, with CareControl - Serial SG, SH or SI series (minimum order quantity: 2pcs, unless ordered with a unit)
  - 1 ea Model 60.31.165 Stand II MobilityLine, 31-1/8"H, (14) pairs of support rails, top and side panels, (4) 7-3/4" casters, for iCombi 6- and 10-full size Classic/Pro
  - 10 ea Model 6019.1250 CombiFry Basket, 1/2 GN, 12" x 10"

APPROVED ALTERNATES: BLODEGETT, ALTO-SHAAM

- ITEM 7 - TILTING SKILLET BRAISING PAN, GAS (1 REQ'D)  
Cleveland Range Model SGL30TR Dimensions: 42(h) x 36(w) x 40(d)  
DuraPan™ Tilting Skillet, gas, 30-gallon capacity, modular open base, standard with hydraulic hand tilt with quick lowering feature, stainless steel construction, includes spring-assisted cover, gallon markings and electronic spark ignition, stainless steel level adjustable feet, CE, NSF, 91,000 BTU, IPX6
- 1 ea 1-year parts & labor warranty, standard
  - 1 ea Extended Warranty, not to exceed 36 months from date of installation (K-12 Schools only)
  - 1 ea 10 Year Pan warranty (K-12 Schools only)
  - 1 ea Performance start-up included at customer request after equipment is installed (Free Water Quality Check included) (contact Cleveland Sales Representative for details)
  - 1 ea Natural Gas
  - 1 ea 120v/60/1-ph, 1.8 amps NEMA 5-15P, standard
  - 1 ea Model PT1 Power Tilt, with hand tilt override
  - 1 ea Model PCS Pan Carrier, for floor models
  - 1 ea Model SLD Sliding Drain Drawer
  - 1 ea Model DPK14 Double Pantry Faucet And Bracket For SEL30TR, SEL40TR, SGL30TR, SGL40TR, SGM30TR, SGM40TR, SEM30TR, SEM40TR

APPROVED ALTERNATES: RATIONAL AND GROEN

- ITEM 8 - EXHAUST HOOD (1 REQ'D)  
Captive-Aire Model CUSTOM  
Exhaust Hood with Make up air and Fire suppression

ITEM 9 - WORK TABLE, STAINLESS STEEL TOP (1 REQ'D)

Titan Stainless Model 7SLUB-30-14 Dimensions: 41(h) x 84(w) x 30(d)

Work Table, 84"W x 30"D x 41"H, 14/300 stainless steel top, backsplash, legs, undershelf & adjustable bullet feet, NSF

- 1 ea Model C-1014 Sink Bowl, fabricated, 10"W x 14" front-to-back x 10" deep bowl, 16/201 stainless steel construction
- 1 ea Model LD-2-PKG Lever Drain, twist handle, includes handle bracket, 2" drain (Provided and installed by Titan Stainless)
- 2 ea Model DP-2020 Drawer, 20"W x 20"D x 5"H, roller bearing slides & plastic drop in pan, stainless steel construction, NSF

APPROVED ALTERNATES: KEYSTONE FABRIATION, COMMERCIAL STAINLESS AND CONOVER STAINLESS

ITEM 10 - FLATWARE & TRAY CART (2 REQ'D)

Lakeside Manufacturing Model 213 Dimensions: 39.75(h) x 34.75(w) x 22.5(d)

Tray & Silver Cart, tubular U-frame with lower platform tray storage & top rack, accepts ten (10) flatware cylinders (not included), for (130) 16" x 22" trays, 500 lb. load capacity, 5" non-marking cushion tread casters, all stainless steel construction, Made in USA

- 2 ea Casters, 5" cushion tread, standard

APPROVED ALTERNATES: SECOSELECT AND DELFIELD

ITEM 11 - HOT FOOD SERVING COUNTER / TABLE (1 REQ'D)

SecoSelect Model HC-61 Dimensions: 36(h) x 63(w) x 30(d)

Hot Food Serving Counter, mobile, 63"W x 30"D, 4 stainless steel wells, electronic controls with digital display for temperature at a glance, master on/off switch for entire unit and individual on/off switch for each well, 500W Armor Heat® high efficiency system for each well, open shelf base on operators side, Locksteady (TM) line-up locking system, 16 ga. 304 stainless steel top, 16 ga. stainless steel exterior, 18 ga. stainless steel interior, 12 ga. galvanized steel hat channel, 16 ga. galvanized steel base framing, 2" perimeter & 4" base of high density fiberglass, 5" heavy duty casters, UL, NSF

- 1 ea 5 years "bumper-to-bumper" parts warranty & 1 year labor warranty (purchased after January 1, 2020), standard
- 1 ea 36" Counter height
- 1 ea 208v/60/1-ph, 2000 watts, 9.6 amps, cord
- 1 ea Model BOS-4 Operator Service Style, single-sided breath guard, 63"W, fixed height, Lexan front & side window panels, 1" square 16 ga. 430 stainless steel tubing frame
- 1 ea 1/4" Glass front panel, glass side panels
- 1 ea Model LED-4 LED lights, for breath guard and display shelves, (4) well
- 1 ea Model BPS-4 8" Service Shelf, located on server side, flush with top, hinged drop shelf, removable, stainless steel, (4) well
- 1 ea Model SST-16 16 Gauge 304 stainless steel countertop surface
- 1 ea Model HDC Heavy Duty Casters
- 1 ea Open storage, without doors
- 1 ea Model IMS-4 Intermediate shelf, located in under storage area, 18 gauge stainless steel, (4) well
- 1 ea Model PWD Powder Coating, specify RAL color, may require longer lead times

APPROVED ALTERNATES: DELFIELD AND MULTITERIA

ITEM 12 - SERVING COUNTER, COLD FOOD (1 REQ'D)

SecoSelect Model CTC-31 Dimensions: 36(h) x 36(w) x 30(d)

Cold Food Serving Counter, refrigerated, mobile, 36"W x 30"D, 2 pan capacity, master on/off switch for entire unit, open shelf base (operators side), drain with shut off valve, Locksteady™ line-up locking

system, stainless steel pan support rails, 16 ga. 304 stainless steel top, 18 ga. 304 stainless steel well, 16 ga. stainless steel exterior, 18 ga. stainless steel interior, 12 ga. galvanized steel hat channel, 16 ga. galvanized steel base framing, 5" heavy duty casters, CFC-free refrigerant, 1/2 HP condensing base, UL, NSF

- 1 ea 5 years "bumper-to-bumper" parts warranty & 1 year labor warranty (purchased after January 1, 2020), standard
- 1 ea 36" Counter height
- 1 ea 120v/60/1-ph, 8.7 amps, cord, NEMA 5-15P
- 1 ea Model BSG-3 Self Service Double Sided Style, double-sided breath guard, 48"W, adjustable height, acrylic front & back panels, Lexan side window panels, 1" square 16 ga. 430 stainless steel tubing frame
- 1 ea Model LED-3 LED lights, for breath guard and display shelves, (3) well
- 1 ea Model BPS-3 8" Service Shelf, located on server side, flush with top, hinged drop shelf, removable, stainless steel, (3) well
- 1 ea Model SST-16 16 Gauge 304 stainless steel countertop surface
- 1 ea Model HDC-3 Heavy Duty Casters
- 1 ea Open storage, without doors
- 1 ea Model PWD Powder Coating, specify RAL color, may require longer lead times

APPROVED ALTERNATES: DELFIELD AND MULTITERIA

ITEM 13 - SERVING COUNTER, UTILITY (1 REQ'D)

SecoSelect Model BST-31 Dimensions: 36(h) x 33(w) x 30(d)  
Solid Top Serving Counter, mobile, 33"W x 30"D, open shelf base (operators side), Locksteady™ line-up locking system, 16 ga. 304 stainless steel top, 16 ga. stainless steel exterior, 18 ga. stainless steel interior, 12 ga. galvanized steel hat channel, 16 ga. galvanized steel base framing, 5" heavy duty casters, NSF

- 1 ea 5 years "bumper-to-bumper" parts warranty & 1 year labor warranty (purchased after January 1, 2020), standard
- 1 ea 34" Counter height
- 1 ea Model BPS-2 8" Service Shelf, located on server side, flush with top, hinged drop shelf, removable, stainless steel, (2) well
- 1 ea Model SST-16 16 Gauge 304 stainless steel countertop surface
- 1 ea Model HDC Heavy Duty Casters
- 1 ea Open storage, without doors
- 1 ea Model PWD Powder Coating, specify RAL color, may require longer lead times

APPROVED ALTERNATES: DELFIELD AND MULTITERIA

ITEM 14 - MILK COOLER (1 REQ'D)

Beverage Air Model STF58HC-1-S Dimensions: 47.75(h) x 58(w) x 34(d)  
School Milk Cooler, forced air, 58"W x 34"D x 47-3/4"H, 24.3 cu. ft., dual access, flat top carton capacities, (16) 13" x 13" x 11" or (10) 19" x 13" x 11 case capacities, self-latching doors/lids with safety bumpers, cylinder lock, exterior digital thermometer, epoxy coated steel wire floor racks, electronic control, auto defrost, stainless steel interior & exterior, floor drain, R290 Hydrocarbon refrigerant, 1/3 HP, cULus, UL EPH Classified, UL-Sanitation, Made in USA

- 1 ea 3 years parts & labor warranty (excludes maintenance items)
- 1 ea Self-Contained refrigeration
- 1 ea Additional 4 years compressor warranty (part only), standard
- 1 ea 115v/60/1-ph, 3.3 amps, cord with NEMA 5-15P
- 1 ea 5" Heavy duty casters, standard

APPROVED ALTERNATES: TRAUlsen AND TRUE

ITEM 14A - MILK COOLER (1 REQ'D)

Beverage Air Model STF49HC-1-S Dimensions: 47.75(h) x 49(w) x 34(d)



School Milk Cooler, forced air, 49"W x 34"D x 47-3/4"H, 20.55 cu. ft., dual access, flat top carton capacities, (12) 13" x 13" x 11" or (8) 19" x 13" x 11 case capacities, self-latching doors/lids with safety bumpers, cylinder lock, exterior digital thermometer, epoxy coated steel wire floor racks, electronic control, auto defrost, stainless steel interior & exterior, floor drain, R290 Hydrocarbon refrigerant, 1/3 HP, cULus, UL EPH Classified, UL-Sanitation, Made in USA

- 1 ea 3 years parts & labor warranty (excludes maintenance items)
- 1 ea Self-Contained refrigeration
- 1 ea Additional 4 years compressor warranty (part only), standard
- 1 ea 115v/60/1-ph, 3.3 amps, cord with NEMA 5-15P
- 1 ea 5" Heavy duty casters, standard

APPROVED ALTERNATES: TRAULSEN AND TRUE

ITEM 15 - TWO (2) COMPARTMENT SINK (1 REQ'D)

Titan Stainless Model 2C2028-2D30-14 Dimensions: 43(h) x 102(w) x 34(d)

Sink, 2-compartments, 20"W x 28" front-to-back x 14" deep bowls, raised rolled edge, (2) 30" drainboards, stainless steel H-frame legs & adjustable bullet feet, 14/300 stainless steel construction, NSF

Modify 1 sink bowl to 10 inches deep to accept a disposer with provisions for control bracket

- 1 ea Model LD-2-PKG Lever Drain, twist handle, includes handle bracket, 2" drain (Provided and installed by Titan Stainless)
- 1 ea Model DCNW-PKG Disposer Cone Package, includes: disposer cone weldment, vacuum breaker holes & disposer control panel (Disposer cone provided by others)
- 1 ea Model PRAF Pre-Rinse Add-A-Faucet
- 1 ea Model SC-PB-2020 Sink Cover, fits 20" x 20" sink bowl, 1/2" poly construction

APPROVED ALTERNATES: KEYSTONE FABRIATION, COMMERCIAL STAINLESS AND CONOVER STAINLESS

ITEM 15A - PRE-RINSE FAUCET ASSEMBLY, WITH ADD ON FAUCET (1 REQ'D)

T&S Brass Model B-0133-12-CRBJ

EasyInstall Pre-Rinse Unit, with add-on faucet, 8" wall mount, 44" flexible stainless steel hose with B-0107-J spray valve, 18" rigid riser, add-on faucet with 12" swing nozzle with stream regulator, lever handles, quarter-turn cerama cartridges with check valves, 6" adjustable wall bracket, low lead, NSF

- 1 ea 3 year limited warranty, standard
- 1 kt Model B-0230-KIT Inlet Kit, 1/2" NPT nipple, close elbows, 24" flex supply hoses

APPROVED ALTERNATES: KROWNE AND FISHER

ITEM 16 - SHELVING, WALL MOUNTED (2 REQ'D)

Titan Stainless Model 3WMS-12 Dimensions: 10(h) x 36(w) x 12(d)

Shelf, wall mounted, 36"W x 12"D, 2" rear up turn, 16/300 stainless steel construction, NSF

APPROVED ALTERNATES: KEYSTONE FABRIATION, COMMERCIAL STAINLESS AND CONOVER STAINLESS

ITEM 18 - ICE MAKER WITH BIN, CUBE-STYLE (1 REQ'D)

Ice-O-Matic Model ICEU220HA Dimensions: 39(h) x 24.54(w) x 26.27(d)

ICE Series™ Cube Ice Maker, cube-style, undercounter, air-cooled, self-contained condenser, approximately 238 lb/108 kg production/24 hours, 70 lb. built-in bin, half-size cube, cULus, NSF, CE

- 1 ea 3 yr. parts & labor warranty, standard
- 1 ea 5 yr. parts on the compressor warranty, standard
- 1 ea 5 yr. evaporator warranty, standard

- 1 ea 115v/60/1-ph, 11.6 amps, standard
- 1 ea Model IFQ1-S Water Filter Manifold, single cartridge, 6,000 gallon capacity, 0.75 gpm maximum flow rate, IsoNet® scale inhibitor, .5 micron particle reduction, quick connect fittings (water filters must be changed every 180 days (6 months), at a minimum)
- 1 ea 1 yr parts & labor warranty (excluding cartridges), standard
- 1 ea 7 yr Evaporator warranty in lieu of standard 5 yr, if an IFQ water filter is purchased with the machine & filters replaced every 6 mo. (USA & Canada only)
- 1 ea Model IOMQ-S Water Filter Replacement Cartridge, standard cartridge, for IFQ1-S water filter system

APPROVED ALTERNATES: MANITOWOC AND HOSHIZAKI

- ITEM 19 - BUN / SHEET PAN RACK (4 REQ'D)  
Channel Manufacturing Model 560NS Dimensions: 68.5(h) x 20.5(w) x 25(d)  
Bun Pan Rack, Wire Pan Slide, Stainless Series, 20.5"W x 25"D x 68.5"H, Stainless Steel Construction, End Load, 1.5" Wire Spacing, (36) 18" x 26" or (72) 13" x 18" pans (2 per shelf), 5" Swivel Stem Casters model # CSS45PU, Made in USA, NSF, 81lbs. (ITEM WEIGHT ONLY), weight does not include 50 lbs. for pallet weight
- 4 ea Lifetime warranty against rust and corrosion
  - 4 ea Model ELC-69 Accessories, Cover — Bun Pan Racks, Plastic (10 Mil), for bun pan racks 68" to 72" high, 3lbs. (ITEM WEIGHT ONLY), covers fit both end-load and side-load bun pan racks, (3) zippers

APPROVED ALTERNATES: NEW AGE AND CHOICE

- ITEM 20 - BUSSING UTILITY TRANSPORT CART, METAL (4 REQ'D)  
Lakeside Manufacturing Model 543 Dimensions: 37.13(h) x 38.63(w) x 22.38(d)  
Utility Cart, (2) shelf, shelf size 33" x 21", U-shaped frame, all-welded stainless steel construction, 700 lb. capacity, (2) 5" swivel & (2) 8" fixed casters, NSF, Made in USA
- 4 ea Casters, (2) 5", swivel, (2) 8", fixed cushion tread, standard

APPROVED ALTERNATES: ADVANCE TABCO AND CARISLE

- ITEM 21 - REACH-IN FREEZER (1 REQ'D)  
Kelvinator Commercial Model KCHR127R1DFE Dimensions: 82.25(h) x 26.81(w) x 32.69(d)  
(738244) Reach-in Freezer, one-section, self-contained bottom mount refrigeration, 23 cubic feet capacity, stainless steel reversible door with lock, -4/-9°F temperature range, LED light, (3) vinyl coated steel shelves, 304 stainless steel interior, galvanized & stainless steel exterior, heavy duty casters, R290 Hydrocarbon refrigerant, 1/2 HP, 115v/60/1-ph, 0.8kW, 8 amps, NEMA 5-15P, cETLus, ETL-Sanitation
- 1 ea 3 year limited warranty, standard
  - 1 ea 5 year compressor warranty
  - 1 ea Model 880590 Shelf for 27" reach-in
  - 1 ea Model 880611 Shelf clips - 4 Pack

APPROVED ALTERNATES: TRAULSEN AND ULTRA SPEC VICTORY

- ITEM 22 - PASS-THRU HEATED CABINET (1 REQ'D)  
Delfield Model GAHPT2-S Dimensions: 79.38(h) x 55.22(w) x 32.44(d)  
Specification Line® Heated Cabinet, Pass-Thru, two-section, 50.0 cubic feet capacity, (4) full-height hinged solid doors (locking), (6) adjustable chrome wire shelves, 4.3" easyTouch® screen temperature

display/control with remote monitoring, incandescent interior lighting, stainless steel exterior front, sides & interior, (4) 5" locking casters, 208-240v/60/1-ph, 10.5 amps, NEMA 6-20P, NSF, cULus

- 1 ea Model 0460003CN 3 year parts & labor warranty, standard
- 1 ea Left door hinged on left, right door hinged on right, standard (Thermometer side)
- 1 ea Left door hinged on left, right door hinged on right, standard (Rear)
- 1 ea (Front) Full height solid door, standard
- 1 ea (Front) Full height solid door, standard
- 1 ea (Rear) Full height solid door, standard
- 1 ea (Rear) Full height solid door, standard
- 4 ea Model AS3978329 Additional shelf heated - chrome (per shelf)
- 1 ea Model AS3978327 Stainless steel shelf pass thru
- 1 ea Set of (4) 5" locking casters, standard

APPROVED ALTERNATES: TRAUlsen AND ULTRA SPEC VICTORY

ITEM 23 - WORK TABLE, STAINLESS STEEL TOP (1 REQ'D)

Titan Stainless Model 6SLU-30-14 Dimensions: 36(h) x 72(w) x 30(d)

Work Table, 72"W x 30"D x 36"H, 14/300 stainless steel top, legs, undershelf & adjustable bullet feet, NSF

- 3 ea Model DS-2020 Drawer, 20"W x 20"D x 5"H, roller bearing slides & stainless steel drop in pan, stainless steel construction, NSF
- 1 ea Model C4 Casters, 5"H, (2) with brake (set of 4)

APPROVED ALTERNATES: KEYSTONE FABRIATION, COMMERCIAL STAINLESS AND CONOVER STAINLESS

ITEM 24 - PASS-THRU REFRIGERATOR (1 REQ'D)

Delfield Model GARPT2P-SH Dimensions: 79.38(h) x 55.22(w) x 32.44(d)

Specification Line® Refrigerator, Pass-Thru, two-section, 50.0 cubic feet capacity, top-mounted self-contained refrigeration system, (8) half-height hinged solid doors (locking), (6) adjustable chrome wire shelves, 4.3" easyTouch® screen temperature display/control with remote monitoring, LED interior lighting, stainless steel exterior front, sides & interior, (4) 5" locking casters, GreenGenius™ R290 Hydrocarbon refrigerant, 0.38 HP, 115v/60/1-ph, 6.5 amps, NEMA 5-15P, NSF, cULus, ENERGY STAR®

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If you have any questions, please contact Customer Service at 1-800-733-8948

- 1 ea Model 0460003CN 3 year parts & labor warranty, standard
- 1 ea Model W00003ACN Additional 4 years compressor warranty (parts only), standard
- 1 ea Left door hinged on left, right door hinged on right, standard (Thermometer side)
- 1 ea Left door hinged on left, right door hinged on right, standard (Rear)
- 4 ea Model AS3978334 Additional shelf pass thru
- 1 ea Set of (4) 5" locking casters, standard

APPROVED ALTERNATES: TRAUlsen AND ULTRA SPEC VICTORY

ITEM 25 - THREE (3) COMPARTMENT SINK (1 REQ'D)

Titan Stainless Model 3C1824-2D24-14 Dimensions: 43(h) x 106(w) x 30(d)

Sink, 3-compartments, 18"W x 24" front-to-back x 14" deep bowls, raised rolled edge, (2) 24" drainboards, stainless steel H-frame legs & adjustable bullet feet, 14/300 stainless steel construction, NSF

1 ea Model LD-2-PKG Lever Drain, twist handle, includes handle bracket, 2" drain (Provided and installed by Titan Stainless)

1 ea Model LDB Lever Drain Bracket

1 ea Model PRAF Pre-Rinse Add-A-Faucet

APPROVED ALTERNATES: KEYSTONE FABRIATION, COMMERCIAL STAINLESS AND CONOVER STAINLESS

ITEM 26 - PRE-RINSE FAUCET ASSEMBLY, WITH ADD ON FAUCET (1 REQ'D)

T&S Brass Model B-0133-01

EasyInstall Pre-Rinse Unit, mixing faucet, 8" wall mount, 14" add-on 063X swing nozzle, 18" riser, overhead spring, lever handles, 56" flex hose, Eterna cartridges, spray valve (B-0107), 9" wall support (B-0109-02), 1/2" male NPT, EPAAct2005 Compliant

1 kt Model B-1105-KIT Inlet Kit, 1/2"NPT close elbows, 24" flex supply hoses

APPROVED ALTERNATES: FISHER AND KROWNE

ITEM 27 - OVERSHELF (2 REQ'D)

Titan Stainless Model 4CPRS-12 Dimensions: 2(h) x 48(w) x 12(d)

Pot Rack Middle Shelf, circular, 48"W x 12"D, 16/300 stainless steel construction, NSF

APPROVED ALTERNATES: KEYSTONE FABRIATION, COMMERCIAL STAINLESS AND CONOVER STAINLESS

ITEM 28 - DISHTABLE, SOILED "L" SHAPED (1 REQ'D)

Titan Stainless Model CUSTOM

Custom

APPROVED ALTERNATES: KEYSTONE FABRIATION, COMMERCIAL STAINLESS AND CONOVER STAINLESS

ITEM 29 - DISHWASHER, CONVEYOR TYPE (1 REQ'D)

Champion Model 44 PRO-HR

Pro Series, 44"W rack conveyor dishwasher, Proportional Rinse, Progressive anti-jam drive system, top mounted Prodigy series HMI user interface, Proactive maintenance software, 100 gallons per hour with energy sentinel (idle pump shut-off), (209) racks per hour, single-piece hood design, single-piece stainless steel upper & lower wash arms manifolds, internal removable scrap basket, dual-piece scrap screens, 20" standard vertical clearance which accommodate 18" x 26" sheet pans, full 180° opening leak proof insulated hinged access doors, automatic tank fill, door safety switches, leak-proof ball valve drains, lower front & side enclosure panels, stainless steel heavy gauge construction including base & legs, electric tank heat with heat recovery, heat recovery cabinet to come standard with single vent cowl, internal booster heater included, 2 HP wash pump, single point machine & booster connection, vent fan control, stainless steel rear manifolds, includes: (1) 20" x 20" peg rack & (1) 20" x 20" flat rack, NSF, cULus, ENERGY STAR®, Made in USA

1 ea Fuel Surcharge (NET/NET)

1 ea 1 year parts & labor warranty, standard

- 1 ea Oversized units with crated dimension of equal to or greater than 96" for shipping will require an oversize charge. Shipping to a facility without a standard receiving dock could incur additional shipping charges related to service requested.
- 1 ea Complimentary factory authorized performance test included, upon equipment start-up. Consult local Champion sales representative for coordination of the start-up. If customer is beyond 60 miles from Champion authorized service agent, consult factory.
- 1 ea Left-to-right operation
- 1 ea 480v/60/3-ph
- 1 ea Electric tank heat with heat recovery, standard
- 1 ea Electric booster, 70° rise, 21kW, built-in, standard
- 1 ea Drain water tempering kit (un-mounted)
- 2 ea Stainless steel vent cowl with 7" stack & locking damper (single)
- 1 ea 20" High hood vertical clearance for sheet pans (standard)
- 1 ea Splash shield (set)
- 1 ea Table limit switch, whisker style (unmounted) (traditional)
- 1 ea Model 115412 Insulated Tray/Steam Table pan rack

APPROVED ALTERNATES: HOBART AND STERO

ITEM 30 - DISHTABLE, CLEAN STRAIGHT (1 REQ'D)  
Titan Stainless Model CUSTOM

APPROVED ALTERNATES: KEYSTONE FABRIATION, COMMERCIAL STAINLESS AND CONOVER STAINLESS

ITEM 31 - DISHWASHER, PARTS & ACCESSORIES (1 REQ'D)  
Titan Stainless Model PLD-I  
Dishwasher Pant Leg Duct with Trim Collar, fits up to 44" dish machines, 16/300 stainless steel construction

APPROVED ALTERNATES: KEYSTONE FABRIATION, COMMERCIAL STAINLESS AND CONOVER STAINLESS

ITEM 33 - DRYING RACK UNIT (1 REQ'D)  
Metro Model MAX4-PR36VX3 Dimensions: 68(h) x 36(w) x 24(d)  
MetroMax® 4 Mobile Drying Rack Unit, 36"W x 24"D x 68"H, 4-tier, for bulk drying & trays/cutting boards/sheet pans, includes: (3) open shelf frames, (1) shelf, (4) 63" mobile posts, (2) drop-ins, (1) cutting board/tray drying rack, (4) polymer swivel casters (2 with brakes), built in Microban® antimicrobial product protection, NSF  
8 pk Model X6PEG-8PK Sorting/Drying Pegs, 6", for MetroMax grid shelving, NSF (pack of 8)

APPROVED ALTERNATES: LAKESIDE AND CAMBRO

ITEM 32 - DISPOSER (1 REQ'D)  
InSinkErator Model SS-300-12A-CC101  
SS-300™ Complete Disposer Package, with 12" diameter bowl, 6-5/8" diameter inlet, with removable splash baffle & reversible bowl cover, 3 HP motor, stainless steel construction, includes syphon breaker, solenoid valve, flow control valve, programmable CC-101 control center, auto reversing, timed run, post flush  
1 ea (1) year parts & labor warranty from date of installation (standard)  
1 ea Standard height disposer body

- 1 ea 460v/60/3-ph, 3.7 amps
- 1 ea Model SYPHON STD Syphon breaker standard, 1/2" (11477)

APPROVED ALTERNATES: HOBART AND SALVAJOR

ITEM 17 - DISPOSER (1 REQ'D)

InSinkErator Model SS-200-12A-CC101

SS-200™ Complete Disposer Package, with 12" diameter bowl, 6-5/8" diameter inlet, with removable splash baffle & reversible bowl cover, 2 HP motor, stainless steel construction, includes syphon breaker, solenoid valve, flow control valve, programmable CC-101 control center, auto reversing, timed run, post flush, adjustable leg kit

- 1 ea (1) year parts & labor warranty from date of installation (standard)
- 1 ea Standard height disposer body
- 1 ea 460v/60/3-ph, 2.2 amps
- 1 ea Model SYPHON STD Syphon breaker standard, 1/2" (11477)

APPROVED ALTERNATES: HOBART AND SALVAJOR

ITEM 1A- Walk In Cooler Freezer Shelving  
WIRE SHELVING (40 REQ'D)  
1880 Hospitality Model FF2454G Dimensions: 54(w) x 24(d)  
Focus Foodservice - Wire Shelf, 600 lb. weight capacity, 24"W x 54"L, for wet or dry storage, zinc underplated steel wire, green epoxy coated finish, NSF  
40 ea Model FG074G Focus Foodservice - Post, 74"H, stationary, grooved at 1" increments, Sanigard™ anti-microbial protection, for wet or dry storage, zinc plated leveling feet, green epoxy finish, NSF

ITEM 1A- Walk In Cooler Freezer Shelving  
WIRE SHELVING (8 REQ'D)  
1880 Hospitality Model FF2448G Dimensions: 48(w) x 24(d)  
Focus Foodservice - Wire Shelf, 800 lb. weight capacity, 24"W x 48"L, for wet or dry storage, zinc underplated steel wire, green epoxy coated finish, NSF  
8 ea Model FG074G Focus Foodservice - Post, 74"H, stationary, grooved at 1" increments, Sanigard™ anti-microbial protection, for wet or dry storage, zinc plated leveling feet, green epoxy finish, NSF

ITEM 1A - Walk In Cooler Freezer Shelving  
WIRE SHELVING (4 REQ'D)  
1880 Hospitality Model FF2460G Dimensions: 60(w) x 24(d)  
Focus Foodservice - Wire Shelf, 600 lb. weight capacity, 24"W x 60"L, for wet or dry storage, zinc underplated steel wire, green epoxy coated finish, NSF  
4 ea Model FG054G Focus Foodservice - Post, 54"H, stationary, grooved at 1" increments, Sanigard™ anti-microbial protection, for wet or dry storage, zinc plated leveling feet, green epoxy finish, NSF

ITEM 4 - Dry Storage Room 110  
WIRE SHELVING (12 REQ'D)  
1880 Hospitality Model FF2454G Dimensions: 54(w) x 24(d)  
Focus Foodservice - Wire Shelf, 600 lb. weight capacity, 24"W x 54"L, for wet or dry storage, zinc underplated steel wire, green epoxy coated finish, NSF  
12 ea Model FG086G Focus Foodservice - Post, 86"H, stationary, grooved at 1" increments, Sanigard™ anti-microbial protection, for wet or dry storage, zinc plated leveling feet, green epoxy finish, NSF

ITEM 5 - NON Food Storage Room 112  
WIRE SHELVING (16 REQ'D)  
1880 Hospitality Model FF2448G Dimensions: 48(w) x 24(d)  
Focus Foodservice - Wire Shelf, 800 lb. weight capacity, 24"W x 48"L, for wet or dry storage, zinc underplated steel wire, green epoxy coated finish, NSF  
16 ea Model FG086G Focus Foodservice - Post, 86"H, stationary, grooved at 1" increments, Sanigard™ anti-microbial protection, for wet or dry storage, zinc plated leveling feet, green epoxy finish, NSF

END OF SECTION 114000

## SECTION 123216 - MANUFACTURED PLASTIC-LAMINATE-CLAD CASEWORK

### PART 1 - GENERAL

#### 1.1 SUMMARY

A. Section Includes:

1. Plastic-laminate-clad casework.
2. Casework hardware and accessories.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For plastic-laminate-clad casework.
- C. Samples: For casework and hardware finishes.

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Quality Standard Compliance Certificates: AWI Quality Certification Program.
- B. Sample warranty.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

#### 1.5 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of casework that fail in materials or workmanship within specified warranty period.
  1. Warranty Period: Five years from date of Substantial Completion.



## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Advanced Cabinet Systems (ACS).
2. Cal-Dak Cabinets.
3. CampbellRhea.
4. Case Systems Inc.
5. CIF Laboratory Solutions.
6. Diversified Fixture.
7. Hausmann Industries, Inc.
8. International Office Products Cooperative.
9. Mica-Tec.
10. Mid Canada Millwork Ltd.
11. Plastic Sales Corporation
12. R. C. Smith Company.
13. Sidney Millwork Company.
14. Stevens Industries, Inc.
15. Terrill Manufacturing Company.
16. TMI Systems Design Corporation.
17. Windham Millwork, Inc.
18. Southern Cabinetry, Inc.

### 2.2 GENERAL REQUIREMENTS FOR CASEWORK

- A. Quality Standard: Unless otherwise indicated, comply with the AWI "Architectural Woodwork Standards" for grades of casework indicated for construction, finishes, installation, and other requirements.

1. Grade: Custom.
2. Provide inspections of casework fabrication with labels and certificates from AWI certification program indicating that casework complies with requirements of grades specified.

- B. Product Designations: Drawings indicate sizes, configurations, and finish materials of manufactured plastic-laminate-clad casework by referencing designated manufacturer's catalog numbers. Other manufacturers' casework of similar sizes and door and drawer configurations, of same finish materials, and complying with the Specifications may be considered.

### 2.3 PLASTIC-LAMINATED-FACED CABINETS

- A. Design: Frameless cabinet construction with the following door and drawer-front style:
1. Flush overlay.

B. Grain Direction for Wood-Grain Plastic Laminate:

1. Doors: Vertical with continuous vertical matching.
2. Drawer Fronts: Vertical with continuous vertical matching.
3. Face Frame Members: Lengthwise.
4. End Panels: Vertical.
5. Bottoms and Tops of Units: Side to side.
6. Knee Space Panels: Vertical.
7. Aprons: Horizontal.

C. Exposed Materials:

1. Plastic-Laminate Grade: VGS.
  - a. Colors and Patterns: As selected by Architect from manufacturer's full range.
2. Edgbanding: Plastic laminate matching adjacent surfaces.
  - a. PVC Edgbanding Color: As selected by Architect from casework manufacturer's full range.

D. Semiexposed Materials:

1. Plastic Laminate: Grade CLS unless otherwise indicated. Provide plastic laminate for semiexposed surfaces unless otherwise indicated.
  - a. Colors and Patterns: As selected by Architect from manufacturer's full range.
  - b. Provide plastic laminate of same grade as exposed surfaces for interior faces of doors and drawer fronts and other locations where opposite side of component is exposed.
2. Hardboard: Use only for cabinet backs where exterior side of back is not exposed.
3. Unless otherwise indicated, provide specified edgbanding on all semiexposed edges.

E. Concealed Materials:

1. Solid Wood: With no defects affecting strength or utility.
2. Plywood: Hardwood plywood.
3. Plastic Laminate: Grade BKL.
4. Particleboard.
5. MDF.
6. Hardboard.

2.4 MATERIALS

- A. Maximum Moisture Content for Lumber: 7 percent for hardwood and 12 percent for softwood.
- B. Hardwood Plywood: HPVA HP-1, particleboard core except where veneer core is indicated.

- C. Softwood Plywood: DOC PS 1.
- D. Particleboard: ANSI A208.1, Grade M-2.
- E. MDF: Medium-density fiberboard, ANSI A208.2, Grade 130.
- F. Hardboard: ANSI A135.4, Class 1 tempered.
- G. Plastic Laminate: High-pressure decorative laminate complying with NEMA LD 3.
  - 1. Manufacturers: Basis-of-Design: Wilsonart LLC. Subject to compliance with requirements, provide products by one of the following:
    - a. Formica Corporation.
    - b. Nevamar; a Panolam Industries International, Inc. brand
    - c. Pionite, a Panolam Industries International, Inc. brand.
    - d. Architect approved equivalent.
- H. PVC Edgbanding for Plastic Laminate: Rigid PVC extrusions, through color with satin finish, 0.12 inch thick at doors and drawer fronts, 0.04 inch thick elsewhere.
- I. Thermoset Decorative Panels: Particleboard or MDF finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for Test Methods 3.3, 3.4, 3.6, 3.8, and 3.10.
  - 1. Edgbanding for Thermoset Decorative Panels: PVC or polyester edgbanding matching thermoset decorative panels.

## 2.5 CASEWORK HARDWARE AND ACCESSORIES

- A. Hardware, General: Unless otherwise indicated, provide manufacturer's standard satin-finish, commercial-quality, heavy-duty hardware.
  - 1. Use threaded metal or plastic inserts with machine screws for fastening to particleboard except where hardware is through-bolted from back side.
- B. Butt Hinges: Stainless-steel, semiconcealed, five-knuckle hinges complying with BHMA A156.9, Grade 1, with antifriction bearings and rounded tips.
- C. Frameless Concealed Hinges (European Type): BHMA A156.9, Type B01602.
- D. Wire Pulls: Solid stainless-steel wire pulls, fastened from back with two screws.
  - 1. For sliding doors, provide recessed stainless-steel flush pulls.
- E. Semirecessed Pulls: Plastic. For sliding doors, provide recessed plastic flush-pulls.
- F. Door Catches: Zinc-plated.

- G. Door and Drawer Bumpers: Self-adhering, clear silicone rubber.
- H. Drawer Slides: BHMA A156.9, Type B05091.
- I. Drawer and Hinged-Door Locks: Cylindrical (cam) type, five-pin tumbler, brass with chrome-plated finish, and complying with BHMA A156.11, Grade 1.
  - 1. Provide a minimum of two keys per lock and six master keys.
  - 2. Provide locks where indicated.
    - a. Masterkey for up to 500 key changes.
- J. Sliding-Door Hardware Sets: Manufacturer's standard, to suit type and size of sliding-door unit.
- K. Adjustable Shelf Supports: Two-pin-locking plastic shelf rests complying with BHMA A156.9, Type B04013.
- L. Adjustable Shelf Supports: Mortise-type, zinc-plated steel standards and shelf rests complying with BHMA A156.9, Type B04071 and Type B04091.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION OF PLASTIC-LAMINATE-CLAD CASEWORK

- A. Grade: Install casework to comply with same quality standard grade as item to be installed.
- B. Install casework level, plumb, and true in line; shim as required using concealed shims. Where casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.
- C. Base Cabinets: Set cabinets straight, level, and plumb. Adjust subtops within 1/16 inch of a single plane. Align similar adjoining doors and drawers to a tolerance of 1/16 inch. Bolt adjacent cabinets together with joints flush, tight, and uniform.
- D. Wall Cabinets: Hang cabinets straight, level, and plumb. Adjust fronts and bottoms within 1/16 inch of a single plane. Fasten cabinets to hanging strips, masonry, framing, wood blocking, or reinforcements in walls and partitions. Align similar adjoining doors to a tolerance of 1/16 inch.
- E. Fasten casework to adjacent units and to masonry, framing, wood blocking, or reinforcements in walls and partitions to comply with the AWI/AWMAC/WI's "Architectural Woodwork Standards."
- F. Install hardware uniformly and precisely. Set hinges snug and flat in mortises unless otherwise indicated. Adjust and align hardware so moving parts operate freely and contact points meet accurately. Allow for final adjustment after installation.

- G. Adjust operating hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.
- H. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.

END OF SECTION 123216

## SECTION 123216 - MANUFACTURED PLASTIC-LAMINATE-CLAD CASEWORK

### PART 1 - GENERAL

#### 1.1 SUMMARY

A. Section Includes:

1. Plastic-laminate-clad casework.
2. Casework hardware and accessories.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For plastic-laminate-clad casework.
- C. Samples: For casework and hardware finishes.

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Quality Standard Compliance Certificates: AWI Quality Certification Program.
- B. Sample warranty.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

#### 1.5 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of casework that fail in materials or workmanship within specified warranty period.
  1. Warranty Period: Five years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Advanced Cabinet Systems (ACS).
2. Cal-Dak Cabinets.
3. CampbellRhea.
4. Case Systems Inc.
5. CIF Laboratory Solutions.
6. Diversified Fixture.
7. Hausmann Industries, Inc.
8. International Office Products Cooperative.
9. Mica-Tec.
10. Mid Canada Millwork Ltd.
11. Plastic Sales Corporation
12. R. C. Smith Company.
13. Sidney Millwork Company.
14. Stevens Industries, Inc.
15. Terrill Manufacturing Company.
16. TMI Systems Design Corporation.
17. Windham Millwork, Inc.
18. Southern Cabinetry, Inc.

### 2.2 GENERAL REQUIREMENTS FOR CASEWORK

- A. Quality Standard: Unless otherwise indicated, comply with the AWI "Architectural Woodwork Standards" for grades of casework indicated for construction, finishes, installation, and other requirements.

1. Grade: Custom.
2. Provide inspections of casework fabrication with labels and certificates from AWI certification program indicating that casework complies with requirements of grades specified.

- B. Product Designations: Drawings indicate sizes, configurations, and finish materials of manufactured plastic-laminate-clad casework by referencing designated manufacturer's catalog numbers. Other manufacturers' casework of similar sizes and door and drawer configurations, of same finish materials, and complying with the Specifications may be considered.

### 2.3 PLASTIC-LAMINATED-FACED CABINETS

- A. Design: Frameless cabinet construction with the following door and drawer-front style:
1. Flush overlay.

B. Grain Direction for Wood-Grain Plastic Laminate:

1. Doors: Vertical with continuous vertical matching.
2. Drawer Fronts: Vertical with continuous vertical matching.
3. Face Frame Members: Lengthwise.
4. End Panels: Vertical.
5. Bottoms and Tops of Units: Side to side.
6. Knee Space Panels: Vertical.
7. Aprons: Horizontal.

C. Exposed Materials:

1. Plastic-Laminate Grade: VGS.
  - a. Colors and Patterns: As selected by Architect from manufacturer's full range.
2. Edgbanding: Plastic laminate matching adjacent surfaces.
  - a. PVC Edgbanding Color: As selected by Architect from casework manufacturer's full range.

D. Semiexposed Materials:

1. Plastic Laminate: Grade CLS unless otherwise indicated. Provide plastic laminate for semiexposed surfaces unless otherwise indicated.
  - a. Colors and Patterns: As selected by Architect from manufacturer's full range.
  - b. Provide plastic laminate of same grade as exposed surfaces for interior faces of doors and drawer fronts and other locations where opposite side of component is exposed.
2. Hardboard: Use only for cabinet backs where exterior side of back is not exposed.
3. Unless otherwise indicated, provide specified edgbanding on all semiexposed edges.

E. Concealed Materials:

1. Solid Wood: With no defects affecting strength or utility.
2. Plywood: Hardwood plywood.
3. Plastic Laminate: Grade BKL.
4. Particleboard.
5. MDF.
6. Hardboard.

2.4 MATERIALS

- A. Maximum Moisture Content for Lumber: 7 percent for hardwood and 12 percent for softwood.
- B. Hardwood Plywood: HPVA HP-1, particleboard core except where veneer core is indicated.



- C. Softwood Plywood: DOC PS 1.
- D. Particleboard: ANSI A208.1, Grade M-2.
- E. MDF: Medium-density fiberboard, ANSI A208.2, Grade 130.
- F. Hardboard: ANSI A135.4, Class 1 tempered.
- G. Plastic Laminate: High-pressure decorative laminate complying with NEMA LD 3.
  - 1. Manufacturers: Basis-of-Design: Wilsonart LLC. Subject to compliance with requirements, provide products by one of the following:
    - a. Formica Corporation.
    - b. Nevamar; a Panolam Industries International, Inc. brand
    - c. Pionite, a Panolam Industries International, Inc. brand.
    - d. Architect approved equivalent.
- H. PVC Edgebanding for Plastic Laminate: Rigid PVC extrusions, through color with satin finish, 0.12 inch thick at doors and drawer fronts, 0.04 inch thick elsewhere.
- I. Thermoset Decorative Panels: Particleboard or MDF finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for Test Methods 3.3, 3.4, 3.6, 3.8, and 3.10.
  - 1. Edgebanding for Thermoset Decorative Panels: PVC or polyester edgebanding matching thermoset decorative panels.

## 2.5 CASEWORK HARDWARE AND ACCESSORIES

- A. Hardware, General: Unless otherwise indicated, provide manufacturer's standard satin-finish, commercial-quality, heavy-duty hardware.
  - 1. Use threaded metal or plastic inserts with machine screws for fastening to particleboard except where hardware is through-bolted from back side.
- B. Butt Hinges: Stainless-steel, semiconcealed, five-knuckle hinges complying with BHMA A156.9, Grade 1, with antifriction bearings and rounded tips.
- C. Frameless Concealed Hinges (European Type): BHMA A156.9, Type B01602.
- D. Wire Pulls: Solid stainless-steel wire pulls, fastened from back with two screws.
  - 1. For sliding doors, provide recessed stainless-steel flush pulls.
- E. Semirecessed Pulls: Plastic. For sliding doors, provide recessed plastic flush-pulls.
- F. Door Catches: Zinc-plated.

- G. Door and Drawer Bumpers: Self-adhering, clear silicone rubber.
- H. Drawer Slides: BHMA A156.9, Type B05091.
- I. Drawer and Hinged-Door Locks: Cylindrical (cam) type, five-pin tumbler, brass with chrome-plated finish, and complying with BHMA A156.11, Grade 1.
  - 1. Provide a minimum of two keys per lock and six master keys.
  - 2. Provide locks where indicated.
    - a. Masterkey for up to 500 key changes.
- J. Sliding-Door Hardware Sets: Manufacturer's standard, to suit type and size of sliding-door unit.
- K. Adjustable Shelf Supports: Two-pin-locking plastic shelf rests complying with BHMA A156.9, Type B04013.
- L. Adjustable Shelf Supports: Mortise-type, zinc-plated steel standards and shelf rests complying with BHMA A156.9, Type B04071 and Type B04091.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION OF PLASTIC-LAMINATE-CLAD CASEWORK

- A. Grade: Install casework to comply with same quality standard grade as item to be installed.
- B. Install casework level, plumb, and true in line; shim as required using concealed shims. Where casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.
- C. Base Cabinets: Set cabinets straight, level, and plumb. Adjust subtops within 1/16 inch of a single plane. Align similar adjoining doors and drawers to a tolerance of 1/16 inch. Bolt adjacent cabinets together with joints flush, tight, and uniform.
- D. Wall Cabinets: Hang cabinets straight, level, and plumb. Adjust fronts and bottoms within 1/16 inch of a single plane. Fasten cabinets to hanging strips, masonry, framing, wood blocking, or reinforcements in walls and partitions. Align similar adjoining doors to a tolerance of 1/16 inch.
- E. Fasten casework to adjacent units and to masonry, framing, wood blocking, or reinforcements in walls and partitions to comply with the AWI/AWMAC/WI's "Architectural Woodwork Standards."
- F. Install hardware uniformly and precisely. Set hinges snug and flat in mortises unless otherwise indicated. Adjust and align hardware so moving parts operate freely and contact points meet accurately. Allow for final adjustment after installation.

- G. Adjust operating hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.
- H. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.

END OF SECTION 123216

## SECTION 281300 - ACCESS CONTROL SYSTEM

### PART 1 - GENERAL

#### 1.01 System Description

- A. This section of this division of this technical specification provides a general description, functional requirements, and criteria for an access control system.
- B. The specified Access Control System shall interface and connected to door control hardware (electrified locks, magnetic locks, door monitor switches, other monitoring contacts and control devices, etc.) as specified in other applicable divisions of this specification.

#### 1.02 Vendor Qualifications

- A. The manufacturer of the product specified in this section shall have a minimum of eight (8) years of documented experience in the manufacture and design of access control and site management systems.
- B. The contractor shall be an authorized vendor for the access control and site management system specified and a minimum of three (3) years of documented experience installing and servicing similar systems.

#### 1.03 Codes and Standards

- A. The access control system shall conform to all applicable requirements of NFPA 70 and NFPA 101.
- B. The access control system shall conform to all local jurisdiction requirements.

#### 1.04 Commissioning

- A. Prior to final acceptance of the access control system installation, the following testing and documents shall be performed and provided to the Owner.
  - 1. Perform and document a complete system acceptance test.
  - 2. Provide testing reports indicating all devices tested, pass/fail status, and actions taken to resolve problem(s) on failed tests.
  - 3. Provide “as designed” drawings showing each device and wiring connection and electronic enclosure legends showing cabling in-out.
  - 4. Provide a complete set of operating instructions for hardware devices and a complete software user manual. The documentation shall including module reference guides for all electronic enclosures.

#### 1.05 Design, Maintenance, and Support

- A. System design

1. All equipment and materials provided shall be standard components, regularly manufactured and utilized in the manufacturer's system.
2. All system components (electronic hardware) shall be non-proprietary by design and implementations providing an open protocol platform; where as multiple manufacturers have developed software that is capable of integrating with the components provided. The integrated product shall be a single cohesive management and control system.
3. All software and components shall have been previously and thoroughly tested with proven installations in actual use similar in size and functionality to the system and requirements as specified herein.
4. The software shall be Microsoft Windows based and designed to operate with the most recently released Microsoft Operating Systems.
5. The Database Engine shall be Sequel Server or at a minimum SQL Express.

B. Warranty

1. All equipment specified in this section of this specification shall have a one (1) year warranty commencing on the date of substantial completion of the project or owner use.
2. During the warranty period advanced replacement parts shall be maintained by the vendor at no additional cost to Owner.

C. Support

1. Support for all access control system components shall be provided through vendor provided 24 hour technical assistance program.
2. All access control and management system components shall be available on a one-day turn around from the manufacturer.
3. The manufacturer shall offer and provide remote modem or internet access for direct factory support to the vendor. This factory level support shall provide system diagnostics and troubleshooting support on all system related issues at no additional cost to the owner.
4. The vendor shall offer a support agreement providing owner access to factor support on software related issues and software updates during the agreement period. The vendor shall provide a published copy of this agreement with their submittal package. This agreement shall be elective; manufacturer's who require mandatory annual software license agreements for owner and/or vendor support shall be considered non-compliant and unacceptable.

D. Access Control Software Upgrades

1. Access control software upgrades that fix or provide a patch to a functionality problem shall be provided to the owner free of charge as long as the version of software provided under this specification remains the current manufacturer's version or for up to two (2) years after a new version release.
2. Major access control software revisions that provide new functionality to the product shall be provided free of charge for up to one (1) year from the date of substantial completion.
3. The access control software shall offer system upgrades as may be required and as necessary to expand, and manage the owner's site or sites. Upgrades shall be offered at a published flat fee for the primary system software, single license modules shall be included in the

primary. Manufacturers offering system upgrades where the cost is subject to each licensed software module originally or purchased in the future shall be considered non-compliant and unacceptable.

4. The vendor shall submit a list of all software upgrades or expansions modules. This list shall identify all cost for upgrades or expansions for the system to the next qualifying operational level. Contractor shall provide this list as part of the project submittal package.

## PART 2 - PRODUCTS

### 2.01 Acceptable Manufacturers:

- A. Provide an Access Control System that integrates with owners':
  1. Avigilon
- B. Computer hardware and peripherals shall be from an approved, major computer manufacturer.
- C. Refer to section 2.10 of this technical specification for specific computer hardware and operating system requirements.

### 2.02 Access Control Software

- A. Provide Avigilon ACM Version 6.X reader expansion license/s required to support new readers.

### 2.03 System Control Processor (SCP) Dual Reader Interface

- A. Where required by design and indicated on the drawings, the system control processor (SCP) Dual Reader Interface shall be a 32-bit micro-controller utilized as the standard management processor between additional down line access reader, input monitor and relay output modules and the HOST system and software as specified herein.
- B. The SCP Dual Reader Interface shall support up to two (2) security industry standard reader communication and control ports. Each port shall terminate with industry standard access control readers and/or data entry/display terminals (keypad with display) for authorized access and egress management. Each SCP access port shall have supervised portal monitoring (door status), request to exit monitoring (manual or automated inputs) as well as electrified lock output control.
- C. The SCP shall meet the following, minimum, design and performance specifications.
  1. The SCP internal memory shall be a minimum of 1 MB.
  2. Each SCP shall have the capability to support up to thirty-two (32) module address, as required by the design and indicated on the drawings.
  3. SCP shall provide capacity for up to, and in any combination, 64 reader locations including status / position monitoring, egress request automation and electric lock control, 248 input monitoring points, and 248 relay output points; as required by design and indicated on the drawings.
  4. The SCP shall allow the user to assign and manage a combination of up to thirty-one (31) down-line modules.

5. The SCP down-line modules shall provide the following control features: access control (Dual Reader I/O modules), Alarm and Input Monitoring (Eight Input Modules) and Relay Output Control (Eight Relay Modules), as required by design and indicated on the drawings.
6. SCP shall provide user selection of serial, dial-up and/or Ethernet (TCP/IP) communications to the host computer with the specified system software. An external network device or network attachment card shall be required for the SCP to connect to the HOST system on a conventional Ethernet. The user shall connect with the SCP using static IP conventions.
7. The SCP optional Network Interface Circuit (NIC) shall support 10/100-BaseT automation.
8. SCP shall maintain a distributed database independent from the host computer so that local processing, within the SCP and I/O modules, shall not rely on the host computer to process card access attempts or defined site control events. Site control events shall be special user configured process tasks and shall occur as defined with or without HOST connectivity.
9. SCP shall internally support multiple access levels per card holder, holidays and group holidays, precision access, and multiple time zone assignments.
10. Each SCP in the access system shall support a minimum of eight (8) active card formats per processor.
11. SCP shall internally support anti-passback functions including free pass, exempt flags, last area accessed, last reader accessed and time and date of last access.
12. SCP shall internally support area management functions including two man rules, two card rules, multiple occupancy, maximum occupancy, and nested areas. Area management functions shall be defined in a minimum of up to 32 Access Area assignments per SCP. Access Areas shall be treated within the system as a single logical point and any controls applied manually or by automation will apply to all of the access points assigned within the Access Area. Access Area processing shall be fully distributed allowing operations assigned to tasks to be processed with or without HOST connectivity.
13. SCP shall internally support alarm management functions incorporating inputs and reader events into Alarm Zones allowing the zones to be armed and disarmed creating various user definable events that are supported in SCP tasks and HOST macro processing. The SCP shall support a minimum of 64 fully user configurable Alarm Zones per processor. Alarm Zone processing shall be fully distributed allowing operations assigned to tasks to be processed with or without HOST connectivity.
14. SCP alarm management shall provide task as well as arm / disarm functionality using a standard keypad/display terminal/card reader with features for user command and key selection. The SCP shall support down loads to the display of the keypad for date and time, zone status, error messages and special text messaging defined by the user.
15. SCP shall internally support up to two hundred fifty six (256) user definable tasks configured to execute pre-defined process operations in response to manual user commands, input or event changes, time zone activations, automated commands or Macro operations.
16. SCP shall internally support up to two hundred fifty six (256) user definable user commands configured to execute pre-defined process commands in response to manual user commands, input or event changes, time zone activations, automated commands or Macro operations.
17. The SCP shall support a serial data output function that allows the user to link to any event or status change received by the SCP with an ACSII data file communicated through an assigned serial data port to other control equipment. ACSII messages shall be standard format and allow up to 90 characters to be send per message not including required CR or

CRLF requirements. Port assignment, data channel and data append information shall be user defined. The data port provided on the SCP shall be IEEE standard RS-485 connectivity.

18. SCP shall allow variable stored transaction storage from 1,000 to 100,000 events per SCP.
  19. The SCP shall allow variable local card database storage from 5,000 to 25,000 records per SCP.
  20. The SCP operational programming shall be stored in non-volatile Flash Memory allowing for on-line program upgrades.
  21. SCP shall provide on board memory battery backup to retain all database information during a complete power loss for up to sixty (60) days, per manufacturer's specifications.
  22. SCP shall utilize two-wire RS-485 communications. The minimum data rate shall be 38,400KBps at IEEE standards for up to 4000 feet for interconnection to up to 31 access reader, monitor input and relay output modules.
  23. SCP shall be provided with 12VDC power supply and Battery Back-up sized for the application as recommended by the manufacturer with a minimum 30% spare capacity.
- D. The SCP Dual Reader Interface shall support the following:
1. SCP shall support up to two (2) security industry standard readers and/or data entry/display terminals (keypad with display) for access or egress authorizations.
  2. SCP reader ports shall provide up to 150 mA of unregulated 12 Vdc power for each reader. At a minimum card/data input support shall be Wiegand, TTL or RS-485 format. Single and dual wire LED output shall be provided supporting bicolor display. Reader buzzer support shall also be provided.
  3. SCP shall provide four (4) on board fully supervised monitoring points (inputs). These monitoring points shall be configured as follows: (2) Monitoring points shall be dedicated for access portal status (door contact inputs) one per reader port. (2) Monitoring points shall be dedicated for exit request inputs (manual or automated egress) one per reader port.
  4. SCP input monitoring point settings shall be user defined as normally open, normally closed or supervised normally open or normally closed. At a minimum input supervision shall be a series parallel 1/4W, 1%, 1K by 1K Ohm resistor circuit.
  5. The SCP shall provide two (2) on board output relays for controlling electrified devices or switching inputs. These relays shall be dedicated for electric portal locking device control one per reader port.
  6. All SCP output relays shall be Form-C, 5A@30 Vdc, resistive relays.
  7. All SCP output relays shall allow configuration for fail safe or fail secure operation and shall support ON, OFF, and PULSE, commands.
- E. SCP shall meet or exceed the following standards and/or compatibility.
1. SCP shall be UL294 recognized and CE compliant.
  2. SCP shall be FCC Part 15 Class A
- F. Each SCP shall be installed either in a dedicated enclosure or share an enclosure with other associated access, input or output system modules.



1. SCP shall have a dedicated cabinet tamper monitor input.
2. SCP shall have a dedicated power fail monitor input.
3. When sharing an enclosure with other associated access reader, input monitor and relay output modules, only one of the modules will be required to monitor cabinet tamper and power fail inputs.

#### 2.04 Access Control Eight Channel Multiplexer

- A. When required by design and indicated on the drawings, the access control Eight Channel Multiplexer (ECM) shall provide additional IEEE RS-485 communications channels for use between the system control processor (SCP) and the associated access, input and output control modules.
- B. The ECM shall meet the following, minimum, design and performance specifications.
  1. ECM shall provide eight two-wire RS-485 communication channels from a single RS-232 or RS-485 data input channel.
  2. ECM shall have automatic fault port partitioning in order to protect the integrity of the communication bus.
  3. ECM shall provide for both star and home-run configurations with operating distances, on each channel, of up to the IEEE standard of 4000 feet.
- C. Each ECM shall be installed either in a dedicated enclosure or share an enclosure with other associated SCP, access, input and output system modules.
- D. The Eight Channel Multiplexor (ECM) shall be an RS2 Technologies, LLC model MUX-8.

#### 2.05 Access Control Dual Reader I/O Module

- A. The System Control Processor (SCP) shall provide distributed processing and management for each Dual Reader I/O Module incorporated in the system.
- B. The Dual Reader I/O Module shall meet the following, minimum, design and performance specifications.
  1. Dual Reader I/O Module shall support security industry standard magnetic, Wiegand, proximity and specified biometrics readers.
  2. Dual Reader I/O Module shall support keypads and integrated keypad readers.
  3. Dual Reader I/O Module shall support connectivity and interface with a system arm / disarm functionality using a standard keypad/display terminal/card reader with features for user command and key selection. The Dual Reader I/O Module shall support down loads from the SCP to the display of the keypad for date and time, zone status, error messages and special text messaging defined by the user.
  4. All hardware interface and card format settings shall be loaded through software commands from the specified system software to associated SCP modules to each Dual Reader I/O Module.
  5. Dual Reader I/O Module shall support up to two (2) security industry standard readers and/or data entry/display terminals (keypad with display) for access or egress authorizations.

6. Dual Reader I/O Module shall support different reader technologies on the same module, user defined.
  7. Dual Reader I/O Module reader ports shall provide up to 150 mA of unregulated 12 Vdc power for each reader. At a minimum card/data input support shall be Wiegand, TTL or RS-485 format. Single and dual wire LED output shall be provided supporting bicolor display. Reader buzzer support shall also be provided.
  8. Dual Reader I/O Module shall provide four (4) on board fully supervised monitoring points (inputs). These monitoring points shall be configured as follows: (2) Monitoring points shall be dedicated for access portal status (door contact inputs) one per reader port. (2) Monitoring points shall be dedicated for exit request inputs (manual or automated egress) one per reader port.
  9. Dual Reader I/O Module input monitoring point settings shall be user defined as normally open, normally closed or supervised normally open or normally closed. At a minimum input supervision shall be a series parallel 1/4W, 1%, 1K by 1K Ohm resistor circuit.
  10. The Dual Reader I/O Module shall provide two (2) on board output relays for controlling electrified devices or switching inputs. These relays shall dedicated for electric portal locking device control one per reader port.
  11. All Dual Reader I/O Module output relays shall be Form-C, 5A@30 Vdc, resistive relays.
  12. All Dual Reader I/O Module output relays shall allow configuration for fail safe or fail secure operation and shall support ON, OFF, and PULSE, command states.
  13. In the event of a communication failure with a System Control Processor (SCP), the Dual Reader I/O Module shall be capable of locally processing access requests based on facility code verification.
  14. The Dual Reader I/O Modules operational programming shall be stored in non-volatile Flash Memory allowing for on-line program upgrades.
  15. Dual Reader I/O Module shall utilize IEEE standard two-wire RS-485 communications with data rates up to 38,400KBps up to an IEEE standard of 4000 feet.
- C. Each Dual Reader I/O Module shall be installed either in a dedicated enclosure or share an enclosure with other associated access control system modules.
1. Dual Reader I/O Module shall have a dedicated cabinet tamper input.
  2. Dual Reader I/O Module shall have a dedicated power monitor input.
  3. When sharing an enclosure with other associated access, input and output control modules, only one of the modules shall be required to monitor cabinet tamper and power fail inputs.
  4. Up to 32 Dual Reader I/O Modules shall be allowed to connect with the SCP defined herein.

#### 2.06 Access Control Card Reader

- A. Where indicated on the drawings, the access control card readers shall interface with the access control reader modules and the door control hardware, as specified in other applicable sections of this specification. The Proximity Card Reader shall be equal to Allegion MT15.
- B. The card reader shall meet the following, minimum, design and performance specifications.

1. Reader technology shall be proximity technology as required by Owner
  2. Reader shall be weatherproof type when installed in exterior or other wet environments.
  3. Reader shall communicate with the reader I/O modules using the industry standard wiegand interface.
  4. Reader shall operate on 12VDC or 5VDC power from the reader I/O modules at a maximum current rating of 150 mA per reader.
- C. The card reader type and model shall be field selected by the Owner and system vendor to meet the exact needs of each entry point.
- D. The system vendor shall supply a reader application schedule indicating each reader, as referenced on the drawings, and specifying type and model. This schedule shall be supplied with the submittal package as required in the submittal section of this technical specification.
- E. Submit reader cut sheets as required in the submittal section of this technical specification.
- 2.07 Access Control Data Entry/Display Terminal (Intelligent Keypad with Display)
- A. When required by design and indicated on the drawings, the access control data entry/display terminal shall interface with a Single or Dual Reader I/O Module, as specified by design and indicated on the drawings.
- B. The Entry/Display Terminal shall meet the following, minimum design and performance specifications.
1. Entry/Display Terminal shall have a two (2) line backlit display supporting sixteen (16), 7.5mm high characters per line.
  2. Entry/Display Terminal shall have a sixteen (16) button backlit keypad supporting both standard numeric keys and four (4) programmable function keys. The programmable function keys shall be user configurable for up to 8 separate command functions.
  3. Entry/Display Terminal shall display time in 12- or 24-hour format.
  4. Entry/Display Terminal firmware shall be FLASH based and field upgradeable.
  5. Entry/Display Terminal shall be either surface mounted or mount over a 3-gang box.
  6. Entry/Display Terminal shall utilize two-wire RS-485 communications with speeds up to 38,400KBps up to 4000 feet.
- C. Entry/Display Terminal shall support one (1) internal/external card reader.
1. Data entry/display terminal reader port shall provide up to 150 mA of unregulated 12 Vdc power for a card reader, a card/data input supporting Wiegand or RS-485 format, two-wire or one-wire LED output with bicolor support, and buzzer output.
- 2.08 Access Control Eight Input Module
- A. When required by design and indicated on the drawings, the access control Sixteen Input Module shall interface sixteen (16) auxiliary general purpose and fully supervised input monitor points for security monitoring through the system control processor (SCP) and HOST specified software.