BID DOCUMENTS COVER SHEET

CONTRACT DOCUMENTS

FOR

C-637 AUTOMATED ADA DOORS

AT

CONTRA COSTA COLLEGE
2600 Mission Bell Drive
San Pablo, CA. 94806

CONTRA COSTA COMMUNITY COLLEGE DISTRICT

Consist of the following:

ADDENDUM #1

DSA File # 7-C1
DSA Application #01-115673

GROUP 4 ARCHITECTURE, RESEARCH + PLANNING
211 Linden Avenue
South San Francisco, CA 94080

February 10, 2017
CONTRA COSTA COMMUNITY COLLEGE DISTRICT
C-637 AUTOMATED ADA DOORS
Contra Costa College

Date: February 10, 2017

NOTICE TO ALL CONTRACTORS

You are hereby notified of the following changes, clarifications and/or modifications to the original Contract Documents, Project Manual, Drawings, Specifications and/or previous Addenda. This Addendum shall supersede the original Contract Documents and previous Addenda wherein it contradicts the same, and shall take precedence over anything to the contrary therein. All other conditions remain unchanged.

This Addendum forms a part of the Contract Documents and modifies the original Contract Documents dated January 20, 2017. Acknowledge receipt of this Addendum in space provided on the Bid Proposal Form. Failure to acknowledge may subject Bidder to disqualification.

A. Deletions, Additions, Changes, Revisions

Item:

1. Add: Meeting Minutes from Pre-Bid Meeting and Site Visit, held on January 31, 2017 (attached).
2. Revision: Section 00100 NOTICE INVITING BIDS, Page 1, Paragraph 1, SCOPE OF WORK.
   Revise SCOPE OF WORK to read as follows:
   
   SCOPE OF WORK: The project consists of converting doors to full automatic with guide rails. Remove wall-mounted push buttons where occurred. Patch, repair and paint walls as required. Remove low-energy door operator where noted on Contract Drawings. Install new full-energy door operators, overhead sensors, control mats, thresholds and guiderails as required by the Contract Documents.
3. Revision: Section 00800 SUPPLEMENTARY GENERAL CONDITIONS
   Replace existing Section 00800 SUPPLEMENTARY GENERAL CONDITIONS, in its entirety, with the attached Section 00800 SUPPLEMENTARY GENERAL CONDITIONS.
4. Delete: Gymnasium per sheet A2.3 has been deleted from scope of work. All scope shown on A2.3 is deleted.
5. **Revision**: Applied Art per sheet A2.5 will be basic scope of work. All scope shown on A2.5 is part of the base bid scope of work. There is no longer any Add Alternate #1.

6. **Add**: Technical specifications as follows (attached).
   017329 CUTTING AND PATCHING
   017419 CONSTRUCTION WASTE MANAGEMENT
   024119 SELECTIVE STRUCTURE DEMOLITION
   055000 METAL FABRICATIONS
   055213 PIPE AND TUBE RAILINGS
   079200 JOINT SEALANTS
   087113 AUTOMATIC DOOR OPERATORS
   099100 PAINTING
   260500 COMMON WORK RESULTS FOR ELECTRICAL
   260503 EQUIPMENT WIRING CONNECTIONS
   260519 LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
   262726 WIRING DEVICES

7. **Revision**: Specification 087100 Door Hardware, delete par. 1.04.H. There is no LEED requirement

8. **Revision**: See the following revised drawings for additional changes (attached).
   A1.0 SITE KEY PLAN
   A2.1 FLOOR PLANS, SECTIONS & PHOTOS – ART BUILDING
   A2.3 FLOOR PLANS, SECTION & PHOTOS – GYMNASIUM
   A2.4 FLOOR PLANS, SECTION & PHOTOS – GYM ANNEX
   A2.5 FLOOR PLANS, SECTIONS & PHOTOS – APPLIED ART

B. Attachments:
   - Pre-Bid/Site Visit Meeting Minutes
   - Site visit questions and responses
   - Section 00800 SUPPLEMENTARY GENERAL CONDITIONS
   - Technical specifications (as listed in Item #6, above)
   - Spec Section 087100 Door Hardware (as listed in Item #7 above)
   - Revised drawings (as listed in Item #8, above)

C. For questions regarding this Addendum, please contact:
   Jovan Esprit
   Contra Costa Community College District
   500 Court St., Martinez, CA 94553
   Email: jesprit@4cd.edu
   Facsimile: 925-370-6517
ADDENDUM #1

All other terms and conditions of BID are to remain the same.

Group 4 Architecture, Research + Planning  
211 Linden Avenue  
South San Francisco, CA 94080

[Signature]

Architect of Record: Jonathan Hartman

Division of the State Architect

END OF ADDENDUM #1
MEETING MINUTES
MANDATORY PRE-BID MEETING

Date: January 31, 2017
Time: 10:00 am
Location: Contra Costa College
Building and Grounds Department Conference Room
2600 Mission Bell Drive, San Pablo, CA

Project Team Members:
- Ray Pyle  Chief Facilities Planner – Contra Costa Community College District (CCCCD)
- Kathleen Halaszynski  Director of Construction Program Control – CCCC
- Ben Azarnoush  District Design Director – CCCC
- Ron Johnson  Project Manager – Critical Solutions, Inc. (CSI)
- Supriya Shrestha  Construction Manager – CSI
- Gary Ching  Project Architect – Group 4
- Bruce King  Buildings & Grounds Manager – Contra Costa College (CCC)
- Jovan Esprit  Contracts Manager – CCCC

Welcome and Introductory Remarks
- Ron Johnson
An onsite job walk/field presentation followed the meeting. Attendance at a job walk for this project was mandatory. Those attending the job walk obtained a Certification of Site Visit (Section 00450), signed by the Project Manager / Construction Manager. This signed form must be submitted with your bid.

Brief Project Description
- Gary Ching
Changing four doors. Doors will be converted to automatic swing function with reuse of low-energy or addition of full-energy operators, overhead sensors, control mats, thresholds and guardrails. Gym doors eliminated due to plans for future construction.

This is not a LEED Project.

- Ron Johnson
All questions related to this project shall be directed, in writing thru RFI's, for inclusion in addenda. Addendum #1 will be issued no later than February, 14, 2017.

Addendum #1 removes the gym door, as well as references in the technical specifications to LEED since this is not a LEED project.

Project Work Restrictions (Section 00800/PART 3 Supplementary General Conditions)
Ron Johnson
  a. Part 3 (Supplementary General Conditions) will be updated by Addendum (e.g., work on Saturdays is not required; it is optional).
  b. CSI will work with College on work restrictions, path of travel, maintain safe access and business hours etc.
  c. Temporary partition to be erected by Contractor to mitigate noise.

**Bid Phase Communications & Correspondence:**
- All questions related to this Project must be submitted in writing and directed to:

  **Jovan Esprit, Contracts Manager**
  Contra Costa Community College District
  Email: jesprit@4cd.edu
  500 Court St., Martinez, CA 94553
  Facsimile: 925-370-6517

**Addenda Update:**
- Addendum #1 will be issued no later than February 14, 2017

**Bid Phase Schedule Milestones**
- Last day for RFI: February 7, 2017, prior to 5:00 p.m.
- Last Addendum Issued: February 14, 2017
- Bid Opening: **February 23, 2017, 2:00 p.m.**
- Award of Contract: March 3, 2017 (approximate)
- Notice to Proceed: March 16, 2017 (approximate)

**Bid Opening:**
- **Bids must be received at the Contra Costa Community College District Office at 500 Court St, Martinez, CA by Tuesday, February 23, 2017, prior to 2:00 PM.**
- All bids will be time stamped at the reception counter in the building lobby.
- Any bid received after the bid opening time will be rejected.
- An announcement will be made at the two-minute mark prior to the bid opening deadline.

**Bid Package:**
- Review your bid package carefully before submitting it.
- **Be sure to include all required documentation.**

**Contract Duration Discussion**
- Section 00600, Construction Agreement
- 64 Calendar Days to Substantial Completion (SC)
- 30 Calendar Days between SC and Final Completion (FC)
- See Work Restrictions noted above

**Substitution requests MUST comply with Contract Documents**
- Refer to SECTION 00800 - Supplementary General Conditions

**Site Walk/Field Presentation**
- Reviewed each door location.
- Certifications of Site Visit were distributed to attendees.
# PRE-BID MEETING

## Sign-in Sheet

**PROJECT TITLE:** C-637 Automated ADA Doors

**DATE / TIME:** January 31, 2017, 10:00 a.m.

**LOCATION:** Building and Grounds Conference Room, Contra Costa College

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<th>COMPANY NAME</th>
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<td>Elvedin Parolic</td>
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<td>Email Address</td>
<td><a href="mailto:bids@bbroscon.com">bids@bbroscon.com</a></td>
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| Marvin Collins Construction | Jordan Lau                       | PM                           |
| Please provide business card |
| Office Phone              | (510) 741-2100            |
| Cell Phone                | (510) 495-7971           |
| Email Address             | Jordan@marvincoconstruction.com |

| MARVIN COLLINS CONSTRUCTION | ADAM SANCHEZ                     | PM                           |
| Please provide business card |
| Office Phone               | (610) 741-2100            |
| Cell Phone                 | (610) 734-3754            | Fax (610) 741-2105           |
| Email Address              | adams@marvincoconstruction.com |

| Southland Construction   | Thishikesh Lombe          | Project Engineer              |
| Please provide business card |
| Office Phone             | 925 469 1101              |
| Cell Phone               | 510 432 6686              |
| Email Address            | Thisingnwals@Southlandcm.com |
**Pre-Bid Meeting Sign-in Sheet**

**Project Title:** C-637 Automated ADA Doors  
**Date / Time:** January 31, 2017, 10:00 a.m.  
**Location:** Building and Grounds Conference Room, Contra Costa College

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<tr>
<td>Email Address</td>
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Page _________ of __________
1) **Question:**
   In lieu of patching and repairing after removal of actuator buttons, could a cover plate be used to cover the area?

   **Response:**
   Yes, a finished, stainless steel metal cover plate, the same size or slightly larger, can be used to cover the affected areas. A basic j-box cover plate is not acceptable.

2) **Question:**
   At Applied Art’s interior storefront, can a metal trim be used in lieu of patching and repairing it?

   **Response:**
   Yes, a metal trim painted to match the storefront can be used in lieu of patching and repairing it.

3) **Question:**
   Does the vinyl floor tile at Applied Arts need to be the exact match?

   **Response:**
   No, a similar tile may be used. The College may have some tile left that can be used, but Contractor should include the cost of material and installation in their bid.

4) **Question:**
   At Applied Art, can the interior EXIT sign remain?

   **Response:**
   Yes, the interior EXIT shall remain.

5) **Question:**
   At Gym Annex, is there power above ceiling for the door operator and control mats?

   **Response:**
   Architect will investigate, and include information in Addendum #1.

6) **Question:**
   At places where a control mats are shown, can an IR sensor be used at the interior instead?

   **Response:**
   No IR sensor at the interior control mats per Contract Documents.
7) **Question:**
At Gym Annex, when work is being performed, the door may not be accessible to the public. Will that be acceptable?

**Response:**
Yes, Contractor must provide and post signs to direct the public to access doors at the south side. At least a minimum of four (4) signs are required. Contractor to confirm quantity and location of signs with the District.

8) **Question:**
At Gym Annex, will the elevator remain operational and accessible?

**Response:**
Yes, the elevator shall remain operational and accessible to the public. The scope of work of this project shall not block elevator access.

9) **Question:**
Some construction operation may be noisy. Is there a limitation as to when those operations can happen?

**Response:**
Yes, when scheduling work, notify and coordinate with District’s Construction Manager. All work and activities during active student hours shall be pre-coordinated with the District’s Construction Manager to avoid disruption to classes.
SECTION 00800
SUPPLEMENTARY GENERAL CONDITIONS

PART 1 - GENERAL

1.1 SCOPE OF WORK
   A. See Section 00100 Notice Inviting Bids.
   B. See the Contract Drawings and Specifications (as listed in the Table of Contents) for the detailed scope of work.

1.2 REFERENCES
   A. The publications listed below form a part of this specification by reference.
      1. Current California Occupational Safety and Health Act Regulations
      2. Current California Occupational Safety and Health Construction Safety Orders
      3. This work will be contracted using the District’s Short Form Construction Agreement; See Section 00600.

1.3 SUBMITTALS
   A. Provide submittals in the format, and as described below:
      1. Submittals shall be submitted to the District, electronically in PDF format, within seven (7) Calendar Days from the Notice to Proceed, except as otherwise noted.
      2. Submit three (3) original (not less than 8-1/2” x 11”, nor more than 30” x 42”) wet-signed, and one (1) color PDF file for submittals that require shop drawings, unless otherwise directed by District and accepted by the Architect on Record.
      3. Submittals that require local and State agency approval, shall conform to this Specification and the requirements of the local or State agency.
      4. District will review and provide a response to submittals within seven (7) calendar days (excluding holidays). Submittals that include design documents prepared by a licensed California Engineer will be submitted for the District’s records. Any District review and response to the Contractor’s design documents by a licensed California Engineer will be for format and general compliance only. Contractor and Contractor’s licensed California Engineer are responsible for compliance with all applicable State of California codes, laws and regulations applicable to this project.
   B. Provide submittals for all equipment, if any, listed in the Contract Documents.
   C. The Schedule of Values shall be submitted to the District within seven (7) calendar days after the Notice of Award. The Schedule of Values shall be broken down by the following minimum categories:
      1. Demolition
      2. Electrical Conduit and Wire
3. Automatic Operators
4. Overhead Sensors
5. Control Mats
6. Guardrails
7. Door Hardware
8. Other Work (or provide additional detail)
9. Final Clean
10. O&M and Warranties
11. As-Built Drawings

The District will only pay for Work installed at the Site.

D. CPM construction schedule (Microsoft Project) shall be submitted within seven (7) calendar days from the Contract Award date. Contractor shall submit the schedule to the District in electronic format (PDF version). District and Contractor shall meet and review the schedule. The Notice to Proceed will not be issued until the District accepts the schedule, or accepts it with conditional changes. Below are the minimum activity types that shall be included in the schedule:

1. Contractor Submittals
2. Submittal Reviews by the District/AOR
3. Procurement and Fabrication
4. Construction activities corresponding to the Schedule of Values
5. Substantial Completion Milestone
6. Final Completion Milestones

1.4 Submittals are for review of conformance with the requirements of the Contract.

PART 2 - PRODUCTS

2.1 MATERIALS:
A. Contractor Provided Materials: The Contractor provided materials shall include any associated equipment and appurtenances required for performing the contract properly and in accordance with the equipment manufacturer’s literature.
B. All materials shall be new, unless otherwise authorized or specified in the technical specifications or required by the drawings.

2.2 SUBSTITUTIONS:
A. One Product Specified. Unless the Specifications state that no substitution is permitted, whenever the Contract Documents indicate any specific material, product, thing or service, or any specific name, make, trade name, or catalog number, with or without the words “or equal,” such specification shall be deemed to be used for the purpose of facilitating description of the material, product, thing or service desired and shall be deemed to be
followed by the words “or equal” unless the Contract Documents specify “no substitution allowed”, “no equal”, “no equivalent”, or other language with similar meaning, in which case no substitutions will be allowed. The Contractor may, unless otherwise stated, within three (3) work days after the bid opening, submit a substitution request for any material, product, thing or service, which shall be materially equal or better in every respect to that so indicated or specified (“Specified Item”) and will completely accomplish the purpose of the Contract Documents.

7. Products Specified Which are Commercially Unavailable. If the Contractor fails to make a request for substitutions for products, within three (3) work days after bid opening, and such products subsequently become commercially unavailable, the Contractor may request a substitution for such commercially unavailable item. The decision to grant this request is solely at the District’s discretion. The written approval of the District, consistent with the procedure for Change Orders, shall be required for the use of a proposed substitute material. The District may condition its approval of the substitution upon the delivery to District of an extended warranty or guaranty or other assurances of adequate performance of the substitution as well as an equitable deduction in the contract price should the substituted item cost less than the Specified Item. All risks of delay due the approval of a requested substitution by the District, DSA, or any other governmental agency having jurisdiction, shall be on the requesting party. All additional costs, all procurement and construction delays, and all costs for review by the Architect or its consultants shall be the responsibility of the Contractor and will be deducted from Contractor’s pay request.

8. Substitution Request Form. Requests for substitutions of materials, products, things or services in place of a Specified Item must be submitted to the District in writing on the District’s Substitution Request Form (“Request Form”) within three (3) work days after bid opening, except as provided for above.

The Request Form must be accompanied by evidence as to whether the proposed substitution:

(a) Is equal in quality/service/ability to the Specified Item;
(b) Will entail no changes in detail, construction, and scheduling of related work;
(c) Will be acceptable in consideration of the required design and artistic effect;
(d) Will provide no cost disadvantage to the District;
(e) Will require no excessive or more expensive maintenance, including adequacy and availability of replacement parts; and
(f) Will required no change of the construction schedule.

9. In completing the Request Form, the bidder shall state, with respect to each requested substitution, that the bidder will agree to provide the Specified Item in the event that the District denies the bidder’s request for such requested substitution. In the event the District denies the bidder’s requested substitution for a Specified Item, the bidder shall provide the Specified Item without any additional cost or charge to the District, and waives all rights to submit a claim.
10. After bids are opened, the apparent lowest bidder shall provide, within three (3) days of opening such bids, any and all Drawing, Specifications, samples, performance data, calculations, and other information, as may be required to assist the Architect and the District in determining whether the proposed substitution is acceptable. The burden of establishing these facts shall be upon the bidder.

11. After the District’s receipt of such evidence by the bidder, the District will make its final decision as to whether the bidder’s request for substitution for any Specified Items will be granted. The decision as to whether a proposed request for substitution is equal to a Specified Item shall be at the sole discretion of the District. Any request for substitution that is granted by the District shall be documented and processed through a Change Order. The District may condition its approval of any substitution upon delivery to the District of an extended warranty or guaranty or other assurances of adequate performance of the substitution. Any and all risks of delay due to approval by the District, DSA or any other governmental agency having jurisdiction shall be on the bidder.

12. If the Architect and District accept a proposed substitution, the Contractor agrees to pay for all District expenses, including but not limited to Division of the State Architect fees, engineering and design services, compensation to the Architect and affected engineers for their required time to process such substitution through the Division of the State Architect, if required, and to make all changes and adjustments in materials or the work of all trades directly or indirectly affected by the substituted item or items at no cost to the District.

PART 3-EXECUTION AND RELATED REQUIREMENTS (REVISE NUMBERING-Should start with 3.1)

3.1 GENERAL

A. Work Restrictions:

1. Contractor shall maintain a safe path of travel at ALL times for all pedestrians and vehicles during construction. Contractor shall provide safety barricades and alternative routes of travel for pedestrians and vehicles at all times, unless otherwise approved by the District. Contractor shall provide temporary warning/safety, and wayfinding signage to the satisfaction of the District and in compliance with local and state requirements as applicable. Contractor shall provide a drawing showing the proposed location of the signage for review and approval by the District prior to the start of work at the site.

2. Contractor shall only work during normal business hours during the week (7:00 am to 7:00 pm), unless otherwise approved by the District, in writing. Work that will disrupt the path of travel or generate noise that will disrupt classes, or other College activities, shall be scheduled after normal business hours, or on Saturdays, but must be reviewed and approved by the District and included in the Contractor’s CPM Schedule. Work on Federal holidays is not allowed.

3. Contractor will be allowed to have access and use Campus utilities for temporary water and electricity, but Contractor shall be responsible to investigate prior to bid, and be responsible for all work necessary to connect to existing utilities for temporary use.
4. Contractor shall provide temporary sanitary facilities for use by all workers throughout the course of the contract. Contractor shall comply with the minimum requirements of the Contra Costa Health Department. Contractor is not permitted to use any Campus toilet facilities.

B. Scheduling, Coordination and Sequence of Work: Before commencing work at the site, the Contractor shall confirm that all requirements have been met pertaining to scheduling of the work. The Contractor shall further determine that all required notices have been given. See Article 1.3, Submittals above for CPM scheduling requirements. The Work shall be prosecuted in such a manner as to cause the least interference with the normal functions of the Campus activity.

C. Interruption of Utilities Services: Utility interruptions, if any are required, shall be after normal business hours, kept to a minimum, and shall be at such times and duration as approved ahead of time by the District. No interruption shall occur unless scheduled and approved with the District at least two work days in advance, as to time and duration of such interruption.

D. Material, equipment, tools and workmen shall be scheduled and delivered to the Site in a timely manner to avoid delay in the work. Materials provided shall be inspected by the Contractor to make certain they are in compliance with the specifications and are free from defects and damage.

E. Measurements: Before fabrication, obtain necessary field measurements and verify all measurements.

F. Contractor shall provide protection to existing facilities (e.g., furniture, fixtures, equipment, furnishings, interior finishes, etc.) that may be damaged by the work of the Contractor. Damage to items while accomplishing the work shall be repaired to their original condition, or replaced with new items at no additional cost to the District.

G. Facilities: Protect electrical and mechanical services and utilities. Where removal of existing utilities and pavement is specified or indicated, provide approved barricades, temporary covering of exposed areas, and temporary services or connections for electrical and mechanical utilities.

H. Dust, Debris Control and Removal: Prevent the spread of dust and debris to surrounding areas and occupied portions of the buildings to avoid the creation of a nuisance or hazard in the surrounding area. Demolition waste and debris generated from the work being performed shall be cleaned up daily and promptly removed from the site.

3.2 PERFORMANCE:

A. Workmanship: Skilled personnel shall execute in a careful, neat, and proficient manner and in compliance with accepted trade practices all work. All work shall be executed in accordance with Cal/OSHA standards and safety orders. All work on this contract shall comply with all Local, State, and Federal Environmental Laws.

B. As used herein, "replace" means provide new materials to replace existing or missing materials.

C. The Contractor shall field verify all measurements for existing conditions.
D. Minor Materials and Work: Minor materials and work not specifically mentioned herein, but necessary for the proper completion of the specified work, shall be furnished without additional cost to the District.

E. Unforeseen Major Repairs: Should deteriorated materials of a major nature be uncovered during the work, or suspected hazardous materials discovered, it shall be brought to the immediate attention of the Project Inspector and District. Repairs, if any, shall be made as directed in writing by the District, and an adjustment will be made in the contract price in accordance with the terms of the contract.

F. Existing Work: Where existing work is changed or removed, or where new work adjoins, connects to, or abuts existing work, the existing work shall be altered as necessary and connected in a substantial and workmanlike manner. All new work shall match, as nearly as practicable, existing, adjoining, and/or adjacent similar work. Operations affecting existing work shall be conducted with care not to damage work in place, and all existing work damaged by such operations shall be rectified or replaced without additional expense to the District.

3.3 PROJECT CLOSEOUT REQUIREMENTS (After Substantial Completion & Before Final Completion)

A. Refer to the Drawings and Specifications listed in Section 00010, Table of Contents, and these Supplementary General Conditions, for requirements.

B. Provide final clean-up of Site prior to Final Completion.

C. Warranty

1. The Contractor warrants to the District that material and equipment furnished under the Contract will be of the highest quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. Contractor’s warranty and guaranty to District includes, but is not limited to the following representations:

a. In addition to any other warranties and guaranties provided elsewhere, Contractor shall, and hereby does, warrant all Work after the Certificate of Substantial Completion date issued by District and shall repair or replace any or all such work, together with any other work, which may be displaced in so doing that may prove defective in workmanship or materials within a one (1) year period from date of completion as defined in Public Contract Code Section 7107(c) without expense whatsoever to District, ordinary wear and tear, unusual abuse or neglect excepted. District will give notice of observed defects with reasonable promptness. Contractor shall notify District upon completion of repairs.

b. In the event of failure of Contractor to comply with above mentioned conditions within one week after being notified in writing, District is hereby authorized to proceed to have defects repaired and made good at expense of
Contractor who hereby agrees to pay costs and charges therefore immediately on demand.

c. If, in the opinion of the District, defective Work creates a dangerous condition or requires immediate correction or attention to prevent further loss to the District, the District will attempt to give the notice required by this Article. If the Contractor cannot be contacted or does not comply with the District’s requirements for correction within a reasonable time as determined by the District, the District may, notwithstanding the provisions of this article, proceed to make such correction or attention which shall be charged against Contractor. Such action by the District will not relieve the Contractor of the guarantee provided in this Article or elsewhere in this Contract.

d. This Article does not in any way limit the guarantee on any items for which a longer warranty or guaranty is specified or on any items for which a manufacturer gives a guarantee for a longer period. Contractor shall furnish District all appropriate guaranty or warranty certificates upon completion of the project.

2. Format - All Warranties/Guaranties and shall include:

a. Contractor, subcontractor, and equipment supplier shall provide Warranties and Guaranties on their original company letterhead with original signature.

b. Contractor shall provide original Warranties and Guaranties. Photo copies, fax and e-mail copies are not acceptable.

c. A sample Warranty Form is attached for Contractor’s use; include company letterhead at the top of the form. Contractor’s own warranty form can be used, but must contain the information included in the provided sample Warranty Form.

3. Preparation

a. Contractor shall obtain warranties and guaranties, executed in duplicate by each applicable and/or responsible subcontractor(s), supplier(s), and manufacturer(s), within fifteen (15) days after Certificate of Substantial Completion date of the applicable Work. Except for items put into use with District’s permission, Contractor shall leave date of beginning of time of warranty or guaranty blank until the date of completion is determined by District.

b. Contractor’s Response to Construction Warranty and Guaranty Service Requirements: Following oral or written notification by the District, respond to construction warranty and guaranty service requirements within 24 hours, or earlier in case of emergency.

4. Warranty and/or Guaranty Tags

a. At the time of installation of mechanical equipment or other major system elements, tag each warranted or guaranteed item with a durable, oil and water resistant tag approved by the District. Attached each tag with a copper wire and spray with a silicone waterproof coating. The date of Substantial Completion and the Contractor Authorized signature must remain blank until the date the District makes a determination of Substantial Completion. Show the following information on the tag:
WARRANTY/GUARANTY INFORMATION – [insert project number and name on actual tag]

a. Type of product/material ________________________________
b. Model number_______________________________________
c. Serial number________________________________________
d. Contract number______________________________________
e. Warranty/Guaranty period _______ (months) from__________ to_____________
f. Inspector’s signature___________________________________
g. Construction Contractor_________________________________
   Address________________________________________________
   Telephone number________________________________________
h. Warranty or Guaranty contact_____________________________
   Address________________________________________________
   Telephone number________________________________________
i. WARNING - PROJECT PERSONNEL TO PERFORM ONLY OPERATIONAL MAINTENANCE DURING THE WARRANTY PERIOD.

3.4 Project As-Built

A. Contractor shall dedicate one complete full size set of the Contract Drawings and one complete Project Manual for use in documenting as-built conditions, including but not limited to; RFIs, ASI, PCOs and Change Order.

B. Contractor shall submit to District in hard copy one original and two copies of all Project As-Built Documents. In addition, one electronic copy shall be submitted to District. District reserves the right to require resubmittal in accordance with these Supplementary General Conditions if the documents are inaccurate or incomplete, or otherwise fail to meet the requirements of these Contract Documents.

C. Electronic Media Format: Electronic media format for all Project As-Built Documents shall be Adobe PDF, with chapter markers and/or bookmarks inserted in place of the equivalent hard copy section tabs. Electronic copy shall include all tables, charts, drawings, codes and all other matters reflected in hard copies. Electronic media files shall be delivered on a unique CD-ROM or flash drive.

3.5 TIME OF COMPLETION

A. See Section 00300, Bid Proposal Form for specific requirements to complete the Work. Time requirements are also included in Section 00600, Construction Agreement.

B. Substantial Completion: The date on which the Work or designated portion thereof, as certified by the District and Architect, is sufficiently complete, in accordance with the Contract Documents, so the District may occupy or utilize the Work or designated portion thereof for the use for which it is intended.

C. Remaining Work after Substantial Completion: If the Architect or District determines that the work required by the Contract is Substantially Complete during any inspection conducted pursuant to this Agreement, the Contractor shall be notified of that determination and the District shall determine if there is Remaining Work. A list of Remaining Work shall be issued only by the District or the Architect and only after the
District has certified Substantial Completion. The District or Architect shall give the Contractor the necessary instructions for correction or completion of the Remaining Work, and the Contractor shall immediately comply with and execute such instructions within the Contract Time. Upon completion of the Remaining Work, another inspection shall be made that shall constitute the Final Inspection, provided the Remaining Work has been completed to the satisfaction of the District. If the remaining work has been completed to the satisfaction of the District, the District shall make the final acceptance and notify the Contractor in writing of this acceptance as of the date of Final Inspection.

D. Final Completion: The date when all Work for the total project has been completed in accordance with the terms of the Contract Documents and has been inspected following completion of Work identified in the Punch list Inspection and accepted by the Architect and the District. Final Completion is also sometimes referred to as Final Acceptance.

3.6 ADDITIONAL REQUIREMENTS FOR DSA-APPROVED PROJECTS

A. All substitutions affecting DSA regulated items shall be considered as a Construction Change Document or Addenda, and shall be approved by DSA prior to fabrication and installation, as required by IR A-6 and Section 4-338(c), Part 1. Substitutions shall be for any material, system or product that would otherwise be regulated by DSA.

B. All Addenda must be signed by Architect and approved by DSA (Section 4-338, Part 1).

C. The Construction Change Documents (Section 4-338(c), Part 1) must be signed by all the following:

1. A/E of Record
2. Structural Engineer (when applicable)
3. Delegated Professional Engineer (when applicable)
4. DSA

END OF SECTION 00800
SUBSTITUTION REQUEST FORM

Contractor Name: ____________________________
Contract #: ____________________________

RFS # ____________________________ Date: ____________
DSA Application #: ____________________________
Campus: ____________________________
Project No., Name: ____________________________

Contractor pursuant to General Conditions submits the proposed items. If the District accepts such items so described, the undersigned may furnish such item with all necessary labor, materials, equipment and incidentals to perform and complete the Work.

<table>
<thead>
<tr>
<th>Item No.</th>
<th>SPECIFIED ITEM OR DRAWING</th>
<th>SPECIFICATION SECTION</th>
<th>PROPOSED SUBSTITUTION (and name of Subcontractor if different)</th>
</tr>
</thead>
</table>

CERTIFICATION
Under penalty of perjury under the Laws of California, I certify that the proposed substitution will be readily available, perform adequately the functions and achieve the results called for by the design concept, be similar in substance to that specified, and be suited to the same use as that specified in Contract Documents.

Contractor: ____________________________
(Please print name of company) ____________________________
Name and Title (print/type) ____________________________
Contractor Authorized Representative ____________________________
Date ____________________________

A. Does the substitution affect dimensions shown on Drawings?

B. Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitution?

C. What effect does the substitution have on other trades?

D. Will substitution cause change to Project Schedule, or to critical delivery dates? Add? Shorten?

E. Differences between proposed substitution and specified item?

F. What is the Cost Differential including all mark-ups?

G. Are Manufacturer's guarantees for the proposed item the same as for item specified? Explain differences.

H. The undersigned accepts full responsibility for delays caused by redesign of other items of the Work necessitated by substitution.

I. The undersigned states that the function, appearance and quality are equivalent or superior to the specified item.

A/E Response: ____________________________
District Representative Response: ____________________________

O Accepted
O Not Accepted
O Accepted As Noted
O Received Too Late

BY: ____________________________ Date: ____________________________

O Accepted
O Not Accepted
O Accepted As Noted
O Received Too Late

BY: ____________________________ Date: ____________________________
[Company Letterhead]

WARRANTY/GUARANTEE FORM

PROJECT NAME: ___________________________________________________________

PROJECT NUMBER: _______________________________________________________

WARRANTY/GUARANTEE FORM: ____________________________________________

(Name of Contractor, Sub-Contractor, Installer, or Supplier as applicable)

hereby unconditionally warrants that the

Work performed pursuant to Contract Number has been done in accordance with the requirements of the Contract therefore and further warranties the work of the Contract to be and remain free of defects in workmanship and materials for a period of one (1) year from the date of completion of the Contract, unless a longer warranty period is called for by the Contract Documents, in which case the terms of the longer warranty shall govern. The Contractor hereby agrees to repair or replace any and all work, together with any adjacent work which may have been damaged or displaced in so doing, that may prove to be not in accordance with the requirements of the Contract or that may be defective in its workmanship or materials within the warranty period specified, without any expense whatsoever to the District, ordinary wear and tear and unusual abuse and neglect only expected. [The Contractor has provided Contract bonds that will remain in full force and effect during the warranty period.]

The undersigned Contractor further agrees that within ten (10) calendar days after being notified in writing by the Contra Costa Community College District of any work not in accordance with the requirements of the Contract or any defects in the work, he will commence and prosecute with due diligence all work necessary to fulfill the terms of this warranty, and to complete the work within a reasonable period of time. In the event he fails to so comply, he does hereby authorize the Contra Costa Community College District to proceed to have such work done at the Contractor's expense and Contractor shall pay the cost thereof upon demand. The District shall be entitled to all costs, including reasonable attorneys’ fees, necessarily incurred upon the Contractor’s refusal to pay the above costs.

Notwithstanding the foregoing paragraph, in the event of an emergency constituting an immediate hazard to the health or safety of the employees of the Contra Costa Community College District, or its property or licensees, the District may undertake at the Contractor’s expense without prior notice, all work necessary to correct such a hazardous condition when it was caused by the work of the Contractor not being in accordance with the requirements of this Contract, or being defective, and to charge the same to the Contractor as specified in the preceding paragraph.

The warranty set forth herein is not intended by the parties, nor shall it be construed, as in any way limiting or reducing the District’s rights to enforce all terms of the Contract referenced hereinabove or the time for enforcement thereof. This warranty is provided in addition to, and not in lieu of, the District’s right on such Contract.
SECTION 017329 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Requirements and limitations for cutting and patching of Work.

B. Contractor shall be responsible for cutting, fitting and patching required to complete the following work:
   1. Make its parts fit together properly.
   2. Uncover work to provide for installation of ill-timed work.
   3. Remove and replace defective work.
   4. Remove and replace work not conforming to Contract Documents.
   5. Remove samples of installed work as required for testing.
   6. Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit. In-fill and patch openings left by removal of piping, conduit, etc.

C. Coordinate unanticipated cutting and demolition with the Architect prior to executing work.

D. Provide special care to protect the areas of the building to be retained. Match surrounding materials and finishes. All new concrete shall match the texture, degree of smoothness and corner conditions of existing adjacent concrete.

E. Contractor shall be responsible for patching of existing walls and ceilings to a reasonably smooth condition. This may require the removal and cutting of existing ceiling framing, hangers and brackets and patching of the remaining indents and holes.
   1. Contractor shall be responsible for cutting, fitting and patching required to complete Work.
   2. Coordinate unanticipated cutting and demolition with the Contracting Officer prior to execution of the work.
   3. Provide special care to protect the historic fabric of the buildings scheduled to be retained. Match surrounding materials and finishes.
   4. Limitations on cutting structural and other types of members.

1.3 SUBMITTALS

A. Shop Drawings: Submit prior to cutting of any structurally or visually significant portion of the Work which is not specifically shown on the Drawings. Obtain written permission for exact location and size of openings from the Architect.
   1. Before cutting into any portion of the structure, obtain written permission from the Architect for each hole to be cut or enlarged. Submit shop drawings
indicating exact location and size of detail of reinforcement of such openings.

B. Submit written request in advance of cutting or alteration which affects:
1. Structural integrity of any element of Project.
2. Integrity of weather-exposed or moisture-resistant element.
3. Efficiency, maintenance, or safety of any operational element.
5. Work of Owner or separate contractor.

C. Include in request:
1. Identification of Project.
2. Location and description of affected work.
3. Necessity for cutting or alteration.
4. Description of proposed work, and products to be used.
5. Alternatives to cutting and patching.
6. Effect on work of Owner or separate contractor.
7. Written permission of affected separate contractor.
8. Date and time work will be executed.

1.4 WARRANTY

A. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void any warranties required or existing.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Primary Products: Identical to those required for original installation.
1. For exposed surfaces, use materials that virtually match existing adjacent surfaces to fullest extent possible if identical materials are unavailable or cannot be used.
2. Use materials whose installed performance will equal or surpass that of existing materials.

B. Product Substitution: For any proposed change in materials, submit request for substitution under provisions of Section 00800.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspect existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.

B. After uncovering existing work, inspect conditions affecting performance of work.

C. Report unsatisfactory or questionable conditions to Architect in writing; do not
proceed with work until Architect has provided further instruction.

D. Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

A. Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.

B. Provide protection from elements for areas which may be exposed by uncovering work.

C. Avoid cutting existing pipes, conduit, or ductwork serving building but scheduled to be removed or relocated until provisions have been made to bypass them.

D. Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at earliest feasible time and complete.

1. Cut existing construction to provide for installation of other components or performance of other construction activities and subsequent fitting and patching required to restore surfaces to original condition.

3.3 PERFORMANCE

A. Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.

B. When warranty may be affected by alterations to original installation of weather exposed and moisture resistant elements, and sight-exposed surfaces, employ original installer to perform cutting and patching.

C. Cut rigid materials using masonry saw or core drill. Pneumatic tools are not allowed without prior approval.

D. Restore work with new products in accordance with requirements of Contract Documents.

E. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

F. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material, to full thickness of the penetrated element.

3.4 CUTTING AND PATCHING

A. General: Execute cutting, fitting, and patching to complete work.

1. Fit products together, to integrate with other work.

2. Uncover work to install ill-timed work.

3. Remove and replace defective or non-conforming work.

4. Remove samples of installed work for testing when requested.

5. Provide openings in the work for penetration of mechanical and electrical work.
B. Cutting:
   1. Perform cutting, associated structural reinforcing, and patching in a manner to prevent damage to other Work, and to provide proper surfaces for the installation of new materials, equipment and repairs. Adjust and fit products to provide a neat installation.
   2. Cut rigid materials using masonry saw or core drill. Pneumatic tools are not allowed without prior written approval.

C. Gypsum Board and Gypsum Plaster: At Contractor's option, on existing walls and ceilings designated for cutting and patching work, the Contractor may use any of the following methods, or combination thereof, to match adjacent wall plane and finish, and as required to meet the required fire ratings:
   1. Patch gypsum board walls or ceilings with new gypsum board the same thickness as existing surface.
   2. Patch gypsum plaster walls or ceilings using gypsum plaster to match and align with the adjacent surface thickness.
   3. Remove entire gypsum board or gypsum plaster surface plane and replace with new gypsum board to the corner of the wall or ceiling plane.

D. At partitions and ceilings indicated as "existing to remain", provide modification of finishes for new Work including, but not necessarily limited to, acoustical treatment, electrical, plumbing, etc. See Drawings for extent of work.
   1. At Contractor's option, where modifications are required, finishes may be cut and patched, or removed and replaced on one or both sides.

E. Patching:
   1. Patch surfaces to match adjacent surfaces. Finish to nearest intersection. For an assembly, refinish entire unit.
   2. Patch to achieve security; strength; weather protection, as applicable; efficiency, operational life, maintenance, and safety of operational elements; and to preserve continuity of existing fire ratings.
   3. Patch surfaces to successfully duplicate undisturbed adjacent profiles, materials, textures, finishes and colors. Use materials which match existing construction.
   4. Where there is dispute as to whether duplication is successful or has been achieved to a reasonable degree, the Architect's decision will be final.
   5. Fit work to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
   6. At penetrations of fire-rated walls, partitions, ceilings, and floor construction completely seal voids with fire-rated material in accordance with applicable code, and U.L. specifications to full thickness of the penetrated element.

3.5 FINISHING

A. Finish or refinish, as applicable, cut and patched surfaces to match adjacent finishes. Replace materials which are damaged or abused and cannot be neatly repaired as a result of cutting and patching operations.

B. Refinish entire surfaces as necessary to provide even finish to match adjacent finishes:
   1. For continuous surfaces, refinish to nearest intersection or natural break.
   2. For an assembly, refinish entire unit.

C. Painting: Paint over complete surface planes, unless otherwise indicated or directed.
Over patched wall and ceiling surfaces, paint to nearest cutoff line for entire surface, such as the intersection with adjacent wall or ceiling, beam, or to nearest opening frame, unless otherwise indicated or directed. Painted surfaces shall not appear spotty or touched-up.

END OF SECTION 017329
SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Administrative and procedural requirements for the following:
   1. Salvaging non-hazardous demolition and construction waste.
   2. Recycling non-hazardous demolition and construction waste.
   3. Disposing of non-hazardous demolition and construction waste.

1.3 RELATED SECTIONS

A. Section 024119 - Selective Structure Demolition: Disposition of waste resulting from partial demolition of buildings, structures, and site improvements.

1.4 WASTE MANAGEMENT GOALS FOR THE PROJECT

A. The Owner has established that this Project shall minimize the creation of construction and demolition waste on the job site. Contributing factors include over-packaging, ordering error, poor planning, improper storage, breakage, mishandling, and contamination. Recycle as many of the waste materials as economically feasible. Minimize waste sent to landfills.

B. Diversion Goals: A minimum of 75% of total project waste shall be diverted from landfill. The following waste categories, at a minimum, shall be diverted from landfill through recycling or salvage:
   1. Clean dimensional wood, pallet wood
   2. Plywood, OSB, and particleboard
   3. Concrete
   4. Cardboard, paper, packaging
   5. Metals
   6. Gypsum drywall (unpainted)
   7. Paint
   8. Glass
   9. Plastics
   10. Carpet and pad
   11. Beverage containers

C. Salvage may include donations of materials to charitable organizations.
1.5 PERFORMANCE GOALS

A. Use sustainable or renewable materials.
   1. Select Forest Stewardship Council (FSC) certified wood products for framing, flooring, finishes, furnishings and temporary construction applications such as bracing, concrete formwork and pedestrian barriers.
   2. Select rapidly renewable materials that sustainably replenish themselves in a less than 10-year cycle (e.g. linoleum: cork and linseed).
   3. Select materials that minimize damage to natural habitats.

B. Use resources efficiently.
   1. Reuse existing building materials from demolished buildings where possible.
   2. Select materials that use resources efficiently.
   3. Use construction practices that achieve the most efficient use of resources and materials.
   4. Recycle minimum 75% (by weight) of construction, demolition and land-clearing debris.
   5. Select recycled content materials (target is 20% of building materials that contain in aggregate a minimum average the post-consumer recycled content and 50% post-industrial recycled content).
   6. Select materials that can be recycled at the end of their useful life (e.g. metal products, carpet).

C. Use durable materials.
   1. Select materials with the longest usable life.
   2. Select materials with the least burdensome maintenance requirements.

1.6 SUBMITTALS

A. Waste Management Plan: Within 1 week of contract award, the Contractor shall submit to the Owner a Waste Management Plan. The Plan shall contain the following:
   1. Designation of the party who will implement the plan
   2. Analysis of the estimated job-site waste to be generated, including types and quantities
   3. Proposed Alternatives to Landfilling: a list of each material planned to be salvaged or recycled during the course of the Project and the proposed destination of each material

B. Progress Reports: Submit a monthly Waste Management Progress Report. The report shall contain the following information:
   1. Project title, name of company completing report, and dates of period covered by the report
   2. Amount (in tons or cubic yards) of material landfilled from the Project and identity of the landfill
   3. For each material recycled or salvaged from the Project, provide the following:
      a. Amount (in tons or cubic yards)
      b. Date(s) removed from the job site
      c. Receiving party
      d. Cost: Bin rental, hauling, and facility fees
e. What was done with the material

4. Include legible copies of on-site logs, manifests, weight tickets, and receipts. Manifests shall be from recycling and/or disposal site operators who can legally accept the materials for the purpose of reuse, recycling, or disposal.

C. Project Completion Report:
1. Submit a letter at project close out tabulating the total waste material, quantities diverted and the means by which diverted, and declaring that the waste management goal has been met. Calculations may be done by weight or volume, but must be consistent throughout.

1.7 PROJECT MEETINGS

A. Waste management plans and implementation shall be discussed at the following meetings:
1. Pre-construction meeting
2. Regular job-site meetings

1.8 QUALIFIED CONSTRUCTION WASTE RECYCLING SERVICES

A. Construction waste shall be delivered to appropriate, qualified recycling services

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 WASTE MANAGEMENT PLAN IMPLEMENTATION

A. Coordinate waste materials handling and separation for all trades, and document results of the Waste Management Plan.

B. Provide separation, handling, transportation, recycling, salvage, and landfilling for all demolition and waste materials.

C. Designate a specific area for separation of material for salvage and recycling. Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination or mixing materials.

D. Maintain an on-site log, which includes for each load of materials removed from site: type of material, load volume and/or weight, recycling/hauling service, date accepted by recycling service or landfill, and facility fee.

E. Do not handle, separate, store, salvage, or recycle hazardous materials with other materials. Follow material-specific instructions any hazardous materials. Contact Project Manager if no instructions are evident.

F. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
1. Distribute waste management plan to everyone concerned within three days of submittal return.
2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

G. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
   2. Provide methods for controlling dust and dirt, environmental protection, and noise control.

3.2 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
   1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION 017419
SECTION 024119 - SELECTIVE STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Demolition and removal of selected portions of a building or structure.

B. Demolition and reuse of selected exterior elements.

C. Repair procedures for selective demolition operations.

1.3 RELATED SECTIONS

A. Section 017329 - Cutting and Patching: For cutting and patching procedures for selective demolition operations.

1.4 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.5 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

B. Historic items, relics, and similar items of interest or value to Owner that may be encountered during selective demolition remain Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.

1. Coordinate with Owner's Construction Manager, who will establish special procedures for removal and salvage.
1.6 SUBMITTALS

A. Qualification Data: For firms and persons specified in "Quality Assurance" Article below to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

B. Provide detailed information, for review prior to demolition commencement, on methods and sequencing for accomplishing this Work.
   1. Information may be in the form of drawings, print mark-overs or field markings, and walk-throughs with Architect and Owner as required to adequately describe the Work to be done and procedures to be followed.

C. Proposed Dust-Control and Noise-Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.

D. Schedule of Selective Demolition Activities: Indicate the following:
   1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
   2. Interruption of utility services.
   3. Coordination for shutoff, capping, and continuation of utility services.
   4. Use of elevator and stairs.
   5. Locations of temporary partitions and means of egress, including for other tenants affected by selective demolition operations.
   6. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

E. Pre-demolition Photographs: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.

1.7 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Professional Engineer Qualifications: Must hold valid California license.

C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Standards: Comply with ANSI A10.6 and NFPA 241.

E. Pre-demolition Conference: Conduct conference at Project site. Review methods and procedures related to selective demolition including, but not limited to, the following:
   1. Inspect and discuss condition of construction to be selectively demolished.
   2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

1.8 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
   1. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.

C. Owner assumes no responsibility for condition of areas to be selectively demolished.
   1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

D. Storage or sale of removed items or materials on-site will not be permitted.

E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

F. Exercise special care to protect the building finishes and other items to remain.
   1. Damage or disturbance to these items shall be promptly restored, repaired, or replaced to match existing at no cost to the Owner.

G. If the Contractor has any questions as to the extent of items to remain, he shall notify the Architect and request a clarification before proceeding.

H. Provide bracing and support as required to maintain integrity and security of portion of existing structures to remain.

I. Provide dirt and dust barriers, debris containers, removal routes and disposal to protect areas to remain. Provide cleanup services to maintain cleanliness of these spaces from dirt caused by demolition work.

J. Traffic:
   1. Conduct demolition operations and the removal of debris to ensure minimum interference with streets, walks, and other adjacent occupied or used facilities.
   2. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from authorities having jurisdiction.

K. Where existing unidentified utilities, structures or services are discovered, or other unsatisfactory conditions are uncovered, submit information to the Architect in writing for resolution prior to proceeding.
PART 2 - PRODUCTS

2.1 REPAIR MATERIALS

A. Use repair materials identical to existing materials.
   1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
   2. Use materials whose installed performance equal or surpasses that of existing materials.

B. Comply with material and installation requirements specified in individual Specification Sections.

2.2 DEMOLISHED MATERIALS

A. Removed items become the property of the Contractor for disposal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas affected by Work of this Section and verify that required protection is in place.

B. Verify that utilities have been disconnected and capped.

C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

D. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

E. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

F. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.
   1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

G. Where existing condition conflicts with representations of the Contract Documents or existing materials are confirmed asbestos-bearing, notify the Owner's Representative in writing and obtain written clarification or direction prior to proceeding.

H. Do not commence demolition Work until unsatisfactory conditions have been corrected.
3.2 PREPARATION

A. Provide protection as necessary and in accordance with applicable regulations, and insure that protection is properly in place prior to Work commencement:
   1. For workmen, public, Owner's employees, and other contractors.
   2. For existing finishes, structures, equipment, utilities, systems, and improvements to remain.

B. Lay out cutting work at jobsite and coordinate with related work for which cutting is required. Review proposed layout with Architect prior to performing cutting operations.

C. Verify existing utility services to remain in operation during course of Work, cooperate with Owner in scheduling Work so there will be a minimum of interference. Prearrange utility shutdown or temporary interruption with Owner prior to Work commencement.

D. Notify utility companies having service connections within building such as water, electricity, gas, sewer and other connections.

E. Contact municipal and regulatory agencies affected by and interested in the Work, including but not limited to Public Works, Fire, and Building Inspection. Secure necessary information and permits required, and make detailed arrangements for smooth, safe prosecution of the Work.

F. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
   2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.

G. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
   1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
   2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
   3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
   4. Cover and protect furniture, furnishings, and equipment that have not been removed.

H. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather-tight enclosure for building exterior.
   1. Where heating or cooling is needed and permanent enclosure is not complete,
provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.

I. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.

J. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
   1. Strengthen or add new supports when required during progress of selective demolition.

3.3 UTILITY SERVICES

A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.

B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction.
   1. Provide at least 72 hours' notice to Owner if shutdown of service is required during changeover.

C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
   1. Owner will arrange to shut off indicated utilities when requested by Contractor.
   2. Arrange to shut off indicated utilities with utility companies.
   3. If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.
   4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

3.4 POLLUTION CONTROLS

A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.
   1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, fungal growth and pollution.
   2. Wet mop floors to eliminate trackable dirt and wipe down walls and doors of demolition enclosure. Vacuum carpeted areas.

B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
   1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.5 SELECTIVE DEMOLITION

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated.

B. Remove designated interior structures, parts, and finishes at beginning of work to minimize hazardous working conditions and to provide comparatively clean surfaces for installation of new work.

C. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
   2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
   3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
   4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
   5. Maintain adequate ventilation when using cutting torches.
   6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
   7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
   8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
   9. Dispose of demolished items and materials promptly.
  10. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.

D. Existing Facilities: Comply with Owner’s requirements for using and protecting elevators, stairs, walkways, loading docks, building entries, and other building facilities during selective demolition operations.

3.6 REMOVALS

A. Where required by the Drawings or specified, and when so directed to be salvaged and reinstalled, remove existing materials and fixtures, equipment, etc. in the most careful manner possible to avoid damage; and, if damaged, restore such items to conditions satisfactory to the Architect.
B. Materials to be removed and not reinstalled shall become the property of the Contractor who shall be responsible for their timely removal from the Project site and their legal disposal.

C. Removed and Salvaged Items: Comply with the following:
1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

D. Removed and Reinstalled Items: Comply with the following:
1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

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

F. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.

G. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI-Recommended Work Practices for Removal of Resilient Floor Coverings.
1. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.

3.7 PATCHING AND REPAIRS

A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.

B. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
1. Completely fill holes and depressions in existing masonry walls that are to remain with an approved masonry patching material applied according to manufacturer's written recommendations.

C. Finishes: Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

D. Floors and Walls: Where walls or partitions that are demolished extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an
even surface of uniform finish color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

1. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.

2. Where patching occurs in a painted surface, apply primer and intermediate paint coats over patch and apply final paint coat over entire unbroken surface containing patch. Provide additional coats until patch blends with adjacent surfaces.

3. Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

E. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

F. Where repair scope is more than incidental, repairs shall comply with current codes.

3.8 CLEANING

A. Construction Waste Management: Manage construction waste in accordance with provisions of Section 017419 Construction Waste Management.

B. Provide cleaning during demolition as necessary and to the acceptance of the Architect.

C. Leave all portions of demolition area in a level, safe, and sanitary condition acceptable to public authorities and Architect.

3.9 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally disposed of them.

END OF SECTION 024119
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Shop fabricated ferrous metal items, galvanized and prime painted.
   1. Steel pipe columns for supporting wood frame construction.
   2. Steel weld plates and angles not specified in other Sections.
   3. Miscellaneous steel trim.

1.3 SUBMITTALS

A. Product Data: For each product specified.

B. Shop Drawings: Show fabrication and installation details for metal fabrications.
   1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
   2. Provide templates for anchors and bolts specified for installation under other Sections.
   3. Show a large scale construction of various parts, methods of joining, thickness of metals, profiles of surfaces, reinforcing, anchorage, and structural supports.
   4. Include information regarding concealed and exposed joints, welds, and fastenings.
   5. Where welded connectors and concrete inserts are required to receive work, show size and locations required.
   6. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Welding certificates.

D. Qualification Data: For professional engineer.

E. ICC-ES Reports: Submit ICC-ES reports for expansion bolts, demonstrating acceptability of expansion bolts to authorities having jurisdiction over the Work.

1.4 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to the following:
   1. AWS D1.1, " Structural Welding Code--Steel."
   2. AWS D1.3, " Structural Welding Code--Sheet Steel."
B. Design Criteria:
   1. Work shall be designed to support normally imposed loads and conform to AISC requirements.
   2. Built-up parts shall not exhibit warp.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle packaged materials in original containers with seals unbroken and labels intact until time of use.

B. Discharge materials carefully onto clean concrete surface or raised platform in safe, dry, protected area.

C. Store materials at site in manner to avoid damage by other work and materials. Protect from rusting and other damage. Identify bolts or other loose materials. Remove any damaged items from site and replace at no extra cost to Owner.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication and indicate measurements on Shop Drawings.
   1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.
   2. Provide allowance for trimming and fitting at site.

1.7 COORDINATION

A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
   1. Ensure timely fabrication of items to be embedded or enclosed by other work.
   2. Furnish information and assistance required for locating embedded items and be responsible for proper locations.

B. Coordinate installation of steel weld plates and angles for casting into concrete that are specified in this Section but required for work of another Section. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

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

A. Steel:
   1. Structural Steel Shapes: ASTM A36, conforming to AISC specifications.
   5. Steel Bars: ASTM A36.
   6. Steel Tubing: ASTM A500, Grade A.
   7. Steel Plate: ASTM A36.

2.3 FASTENERS

A. General: Provide Type 304 or 316 stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633, Class Fe/Zn 5, where built into exterior walls. Select fasteners for type, grade and class required.

B. Typical Unfinished Bolts, Nuts, and Washers: Regular hexagon-head bolts, ASTM A307, Grade A (ASTM F568M, Property Class 4.6); with hex nuts, ASTM A563 (ASTM A563M); and, where indicated, flat washers.

C. Expansion Bolts: FS FF-S-325, Group II, Type 4.

D. Expansion Anchors: Anchor bolt and sleeve assembly with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E488, conducted by a qualified independent testing agency.

E. Anchor Bolts: ASTM F1554, Grade 36.
   1. Provide hot-dip or mechanically deposited, zinc-coated anchor bolts where item being fastened is indicated to be galvanized.

2.4 MISCELLANEOUS MATERIALS

A. Grout: ASTM C1107; non-shrink, non-metallic grout, factory-packaged, nonstaining, noncorrosive, nongaseous grout. Provide grout specifically recommended by manufacturer for interior and exterior applications.

B. Concrete Fill: Comply with requirements in Section 03300 for normal-weight, air-entrained, ready-mix concrete with a minimum 28-day compressive strength of 3000 psi, unless otherwise indicated.

C. Primer: Zinc-chromate type.

D. Zinc for Galvanizing: ASTM A123.

E. Welding Rods and Bare Electrodes: E-70XX.
2.5 SPECIALTY FABRICATED PRODUCTS

A. Preparation:
   1. Coordinate with other work supporting or adjoining miscellaneous metal and verify
      requirements for cutting out, fitting, and attaching.
   2. Verify sizes, designs, and locations of items; do so at site whenever construction
      progress permits.

B. General Requirements:
   1. Fabricate items from materials noted and make true to profiles shown. Obtain the
      Architect's approval of proposed variations.
   2. Miter corners and angles of frames and moldings unless otherwise noted.
   3. Perform cutting, shearing, drilling, punching, threading, tapping as required for items
      or their adjacent work.
   4. Drill or punch holes; do not use cutting torch.
   5. Ensure shearing and punching leaves true lines and surfaces.
   6. Items to be Galvanized: Fabricate in accordance with recommended practices of
      ASTM A385 and A386 unless specifically noted otherwise.
   7. Fabricate exterior items for assembly and installation on site without field welding of
      joint.
   8. Ensure metal thickness and assembly details provide ample strength and stiffness.
   9. Size sleeves for approximately 1/4-inch clearance all around.

C. Fastening:
   1. Provide fasteners and anchor assemblies required for complete fabrication, field
      assembly, and erection.
   2. Conceal fastenings wherever practicable.
   3. Size internally threaded diameters to accommodate galvanized threaded bolts where
      galvanizing is required.
   4. Permanent connections in Ferrous Metal Items: Employ welding wherever
      practicable; avoid bolts and screws.

D. Welding:
   1. Use electric shielded-arc process according to AWS D1.1.
   2. Maintain shape and profile of item welded.
   3. Prevent heat blisters, run-throughs, and surface distortions.
   4. Welds Normally Exposed to View in Finished Work: Make uniform and grind
      smooth.
   5. Exposed Welds: Remove burrs, flux, welding oxide, air spots and discoloration;
      grind smooth, polish, or otherwise finish to match material welded.

E. Bolted and Screwed Connections:
   1. Use bolts for field connections only, and then only as noted. Countersink heads;
      finish smooth and flush.
   2. Provide washers under heads and nuts bearing on wood.
   3. Draw nuts tight and prevent loosening of permanent connections by nicking threads.
   4. Use beveled washers where bearing is on sloped surfaces.
   5. Where necessary to use screws for permanent connections in ferrous metal, use flat
      head type, countersink, fill screw slots, and finish smooth and flush.
6. Evenly space exposed heads.

2.6 FINISHES

A. Preparations of Surfaces:
1. Thoroughly clean mill scale, rust, dirt, grease, and other foreign matter from ferrous metal prior to galvanizing, hot phosphate treatment or painting.
2. Where hand-cleaning methods are not adequate, clean in accordance with SSPC-SP 1, SSPC-SP 2, or SSPC-SP 7 as required.
3. Completely eliminate burrs, rough spots and pitting from normally exposed ferrous metal items.

B. Finish Schedule: Unless noted otherwise in Materials or Standard Catalog Products Articles.
1. Ferrous Metal, Interior Items:
   a. Concealed: Clean, chemically etch, and shop-apply one prime-coat.
   b. Exposed: Clean, treat with hot phosphate, chemically etch, and shop-apply one prime-coat.
2. Ferrous Metal, Exterior Items:
   a. Concealed: Clean and hot-dip galvanize in accordance with galvanizing standards.
   b. Exposed: Clean, then hot-dip galvanize in accordance with galvanizing standards, chemically etch, and shop-apply one prime-coat.
3. Items Noted as Chrome-Plated: Same as US26D finish.
4. Hardware Including Fasteners (Bolts, Nuts, Washers, Etc.):
   a. Finish to match items fastened.
   b. Where galvanizing is required, hot-dip galvanize according to ASTM A153.

2.7 SOURCE QUALITY CONTROL

A. Test and Inspections: The Owner will engage a testing laboratory to test welds per CBC Chapter 17.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine areas to receive work and verify that setting conditions and dimensions are correct to receive items.

B. Do not start installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install work plumb, true, rigid, and neatly trimmed out.
B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

C. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

D. Field Welding: Comply with the following requirements:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

E. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag bolts, wood screws, and other connectors.

F. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

G. Do not tighten fastener through finish alone without spacer washers.

H. Provide concrete inserts or predrilled expansion bolts in fastening items into concrete.

I. Protect dissimilar metals from contact with each other or with other materials causing corrosion.

J. Fasten work tightly to prevent rattle or vibration except where expansion-contraction tolerances are required.

K. Use non-shrink grout mixed in accordance with manufacturer's direction for setting frames, plates, sills, bolts and similar items.

L. Set items shown or required to be installed in sleeves with quick setting anchor cement unless otherwise noted.

M. Protect metal from damage to surface, profile and shape.

3.3 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.
B. Install pipe columns on concrete footings with grouted baseplates. Position and grout column baseplates as specified in "Installing Bearing and Leveling Plates" Article.
   1. Grout baseplates of columns supporting wood framing.

3.4 ADJUSTING AND CLEANING

A. Remove protective devices only when items will be safe from other construction operations or removal is required to permit related work.

B. Following installation, clean field welds, field bolts and abraded portions and apply an additional spot coat of the same paint used for shop prime coat and leave entire work in a neat, clean and acceptable condition.
   1. Clean prime-coated items as required for finish painting.
   2. Remove misplaced or spattered paint.

C. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
   1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

END OF SECTION 055000
SECTION 055213 - PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Steel pipe and tube handrails, guardrails, and fittings at new exterior ramps.

B. Definitions in ASTM E985 for railing-related terms apply to this Section.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's literature for products used in metal fabrications, including paint, grout and pre-manufactured items.

B. Shop Drawings: Show fabrication and installation of handrails and railings. Include plans, elevations, sections, component details, and attachments to other Work.
   1. For installed handrails and railings indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Structural Analysis: Provide calculations demonstrating compliance of pre-engineered handrail and infill system with ADA and local building codes, including structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

D. Product Test Reports: From a qualified testing agency indicating handrails and railings comply with ASTM E985, based on comprehensive testing of current products.

PART 2 - PRODUCTS

2.1 MATERIALS

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

B. Steel Pipe: ASTM A53; Type F or Type S, Grade A, standard weight Schedule 40; unless another grade and weight are required by structural loads, finish as specified.

C. Tubing: ASTM A500 (cold formed).
D. Ornamental Stock: ASTM A500, Grade A, round steel rods, size as indicated on Drawings.

PART 3 - EXECUTION – NOT USED

END OF SECTION 055213
SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES
A. Exterior Joints in Vertical Surfaces and Horizontal Non-traffic Surfaces:
   1. At flashing and sheet metal.
   4. Perimeter joints around frames of storefronts, doors, windows, and louvers.

B. Interior Joints in Vertical Surfaces and Horizontal Non-traffic Surfaces:
   1. Control and expansion joints on exposed interior surfaces of exterior walls.
   2. Perimeter joints of exterior openings where indicated.
   3. Perimeter joints between interior wall surfaces and frames of interior doors and windows.
   4. Control and expansion joints in ceiling and overhead surfaces.
   5. Acoustical joints in wall and ceiling surfaces.

C. Joint sealant primers and accessories.

1.3 PERFORMANCE REQUIREMENTS
A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.4 SUBMITTALS
A. Product Data: Provide data and installation instructions for each type of joint sealant required.

B. Samples for Verification: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
   1. Submit 2 copies of manufacturer’s standard color chart with physical samples of each color. Submit information on availability of custom colored sealants.

C. Certification by joint sealant manufacturer that sealants plus the primers and cleaners required for sealant installation comply with local regulations controlling use of volatile organic compounds (VOCs).
D. Submit manufacturer’s letter of certification that products are appropriate for the uses intended.

E. Product Test Reports: Based on comprehensive testing of product formulations performed by a qualified testing agency, indicating that sealants comply with requirements.

F. Qualification Data: For Installer.

G. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.

B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

C. Product Testing: Obtain test results for "Product Test Reports" Paragraph in "Submittals" Article from a qualified testing agency based on testing current sealant formulations within a 36-month period preceding the Work.
   1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C1021 to conduct the testing indicated, as documented according to ASTM E548.
   2. Test elastomeric joint sealants for compliance with requirements specified by reference to ASTM C920, and where applicable, to other standard test methods.

D. Sealant manufacturer shall confirm in writing that all materials contacting the sealants, including joint backings, gaskets, spacers, and joint substrates, are compatible with the sealant to be installed. Schedule sufficient time to test these materials for compatibility with the sealant, as necessary. Compatibility tests shall be performed to the sealant manufacturer’s standards.

E. Sealant manufacturer shall confirm in writing the appropriate joint preparation and priming techniques required to obtain rapid, acceptable adhesion of the joint sealants to the joint substrates.

F. Perform field adhesion testing of joint sealants to all surface types. Field adhesion testing shall be completed and results shall be reviewed and approved by sealant manufacturer and installer before commencing sealant installation.

G. Pre-Installation Meeting: Review joint application procedures, compatibility tests, adhesion tests, and warranty requirements in a meeting involving installer, manufacturer or manufacturer’s representative, building owner or manager, consultant, and contractor.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multi-component materials intact
and legible.

B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:
   1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer.
   2. Below 40 deg F (4.4 deg C).
   3. When joint substrates are wet or retaining moisture.

B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than allowed by joint sealant manufacturer for application indicated.

C. Joint Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.

1.8 WARRANTY

A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
   1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
   1. Warranty Period: Two years from date of Substantial Completion.

C. Failure of the materials and workmanship include leakage, hardening, cracking, crumbling, melting, shrinkage or running of the sealant or caulking, or the staining of adjacent materials.

D. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
   1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
   2. Disintegration of joint substrates from natural causes exceeding design specifications.
   3. Mechanical damage caused by individuals, tools, or other outside agents.
   4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.
PART 2 - PRODUCTS

2.1 MATERIALS

A. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

B. Colors: Provide color of exposed joint sealants to match colors indicated by reference to manufacturer's standard designations.

C. Provide selections made by Architect from manufacturer's full range of standard colors for products of type indicated.

D. Joint Sealant Types:
   1. Weatherproofing sealant.
   2. Storefront silicone sealant.
   3. Perimeter and control joint sealant.
   4. Flashing sealant.
   5. Self-leveling sealant.
   7. Acoustical sealant.
   8. Sealants and putty pads for 1-hour rated walls.

2.2 EXTERIOR JOINT SEALANTS

A. Exterior Polyurethane Weatherproofing and Control Joint Sealant: ASTM C920, Type S, Grade NS, Class 25, Use NT, M, G, A, and O; single component, chemical curing, non-staining, non-bleeding, non-sagging type; color as selected; use in exterior vertical surfaces such as, but not limited to:
   1. Window and door perimeters.
   2. Perimeter joints between exterior wall surfaces and frames of doors, windows, storefronts, louvers, and similar openings.
   3. Control and expansion joints in ceilings and overhead surfaces.
   4. Acceptable Sealants:
      a. Pecora Corporation; Dynatrol I.
      b. Sika Corporation, Inc.; Sikaflex 1a.
      c. BASF (Sonneborne); NP 1.
      d. Tremco; Dymonic FC.

B. Concrete Walkway Joint Sealant: ASTM C920, Type M and A, Grade P, Class 25, Use T, M, and O; multi-component, pourable urethane sealant.
   1. Acceptable Sealants:
      b. Sika, Inc. SikaFlex 2c SL.
      c. Tremco Incorporated, THC 900/901.

2.3 INTERIOR JOINT SEALANTS

A. Interior Weatherproofing and Control Joint Sealant: ASTM C920, Type S, Grade NS, Class 25, Use NT, M, G, A, and O; single component, chemical curing, non-staining,
non-bleeding, non-sagging type; color as selected; use in interior surfaces such as, but not limited to:
1. Control and expansion joints on exposed interior surfaces of exterior walls.
2. Perimeter joints on exposed interior surfaces of exterior openings.
3. Other interior joints in vertical surfaces and non-traffic horizontal surfaces subject to movement for which no other sealant is specified.
4. Acceptable Sealants:
   a. Pecora Corporation; Dynatrol I-XL.
   b. Sika Corporation, Inc.; Sikaflex 1a.
   c. BASF (Sonneborne); NP 1.
   d. Tremco; Dymonic FC.

B. Interior Latex Joint Sealant: Provide product complying with ASTM C834, Type S, Use O, Grade NS; use at interior joints in vertical surfaces and non-traffic horizontal surfaces such as, but not limited to:
1. Perimeters of interior door and window frames.
2. Interior wall surfaces scheduled to receive latex paints.
3. Control and expansion joints on exposed interior surfaces of exterior walls.
4. Perimeter joints on exposed interior surfaces of exterior openings.
5. Perimeter joints between interior wall surfaces and frames of interior doors, windows, storefronts, louvers, elevator entrances and similar openings.
6. Trim or finish joints subject to movement.
7. Acceptable Sealants:
   b. BASF (Sonneborn); Sonolac.
   c. Tremco; Tremflex 834.

C. Acoustical Sealant for Exposed and Concealed Joints: Non-sag, paintable, nonstaining, latex sealant, with a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), complying with ASTM C834 that effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E90; use for drywall or plaster wall systems, bedding electrical boxes and other wall outlets.
1. Acceptable Sealants: One of the following or approved equal:
   a. Pecora Corporation; AIS 919 Accoustical and Insulation Latex Sealant.
   c. Tremco, Inc.; Tremflex 834 or Tremco Acoustical Sealant.

2.4 JOINT SEALANT BACKING

A. General: Provide sealant backings and accessory materials, including primers, of material and type that are non-staining; are compatible with joint substrates, sealants, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Foam Joint Fillers: Non-gassing, preformed, compressible, resilient, non-staining, non-waxing, non-extruding strips of flexible plastic foam of one of materials indicated below, as recommended by manufacturer for compatibility with their sealant; of size, shape, and density to control sealant depth, prevent three-sided adhesion, provide a surface against which to tool, and otherwise contribute to producing optimum sealant
CONTRA COSTA COLLEGE AUTOMATED ADA DOORS
Group 4 Architecture Research + Planning, Inc.

Addendum #1 - February 10, 2017

performance:
1. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin) or Type B (bicellular material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance and as recommended by sealant manufacturer.
2. Elastomeric Tubing Sealant Backings: Flexible cellular rubber tubing complying with ASTM D1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F (minus 32 deg C). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.

2.5 MISCELLANEOUS MATERIALS
A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from pre-construction joint sealant-substrate tests and field tests. Certify that primer will not permanently stain adjacent joint surfaces.
B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming in any way joint substrates and adjacent nonporous surfaces, and formulated to promote optimum adhesion of sealants with joint substrates.
C. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints, to mask off adjacent joint surfaces where sealant is not permanently intended to be applied.
D. Bondbreaker Tape: Polyethylene pressure sensitive adhesive tape, to be used in areas where backer rod cannot fit and where three-sided adhesion is to be avoided.

PART 3 - EXECUTION

3.1 EXAMINATION
A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance.
B. Verify that joint sizes and surfaces are free of defects and acceptable for installation of joint sealants.
C. Verify joint dimensions and shapes to ensure they are within the sealant manufacturer’s guidelines. Resolve any variances prior to installation. Do not proceed with sealant installation until the unsatisfactory conditions have been corrected.

3.2 PREPARATION
A. Thoroughly clean the areas that the new sealant will contact using a de-greasing solvent not harmful to the environment using the two-rag wipe technique. IPA (isopropyl alcohol) is not a degreasing solvent. The new sealant should have a minimum contact area of 1/4".
B. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
   1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
   2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
      a. Concrete.
      b. Masonry.
   3. Remove laitance and form-release agents from concrete.
   4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
      a. Metal.
      b. Glass.
      c. Porcelain enamel.
      d. Glazed ceramic tile.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 JOINT PRIMING

A. Prime joint substrates where indicated or where recommended by joint sealant manufacturer based on pre-construction joint sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's recommendations.

B. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Allow primer to dry. Do not prime areas that cannot be sealed the same day.

3.4 INSTALLATION OF SEALANT BACKINGS

A. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
   1. Do not leave gaps between ends of joint fillers.
   2. Do not stretch, twist, puncture, or tear joint fillers.
   3. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.
3.5 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations of ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Perform acoustical sealant application work in accordance with ASTM C919.

D. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.

E. Install joint backing to maintain the following joint ratios, but in no case less than 1/4 inch (6 mm):
   1. Joints up to 1/2 inch wide: 1:1 width to depth ratio.
   2. Joints Greater than 1/2 inch wide: 2:1 width to depth ratio; maximum 1/2 inch joint depth.
   3. Sub-caulk joints that are deep, or joints without suitable backstop, to proper depth.
   4. Protect side walls of joint (to depth of caulking) with bond breaker tape.
   5. Install with adhesive on 2 faces in contact with sides of joints.

F. Tooling of Non-sag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint.
   1. Remove excess sealant from surfaces adjacent to joints.
   2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
   3. Provide concave joint configuration per Figure 5A in ASTM C1193, unless otherwise indicated.
   4. Provide flush joint configuration where indicated per Figure 5B in ASTM C1193.

3.6 CLEANING

A. Clean off excess sealants and sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

B. Construction Waste Management: Manage construction waste in accordance with provisions of Section 017419 Construction Waste Management.

C. Leave finished work in a neat, clean condition with no evidence of spillovers onto adjacent surfaces.
3.7 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion.

B. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so that and installations with repaired areas are indistinguishable from original work.

END OF SECTION 079200
SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions of Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.

B. This Section includes the following, but is not necessarily limited to:

1. Door Hardware, including electric hardware.
2. Storefront and Entrance door hardware.

C. Related Sections: The following sections are noted as containing requirements that relate to this Section, but may not be limited to this listing.

1. Auto Operator - Section 087113

1.03 REFERENCES

A. 2013 California Building Code, CCR, Title 24.
B. BHMA – Builders’ Hardware Manufacturers Association
C. CCR – California Code of Regulations, Title 24, Part 2, California State Accessibility Standards.
D. DHI – Door and Hardware Institute
   1. NFPA 80 - Fire Doors and Other Opening Protectives
   2. NFPA 105 - Smoke and Draft Control Door Assemblies
F. UL - Underwriters Laboratories.
   1. UL 10C - Fire Tests of Door Assemblies
   2. UL 305 - Panic Hardware
G. WHI - Warnock Hersey Incorporated
H. SDI - Steel Door Institute

1.04 SUBMITTALS & SUBSTITUTIONS
A. General: Submit in accordance with Conditions of the Contract and Division 1 Specification sections.

B. Submit product data (catalog cuts) including manufacturers' technical product information for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.

C. Submit electronic version (Acrobat) of schedule organized vertically into “Hardware Sets” with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:

1. Include a Cover Sheet with:
   a. Job Name, location, telephone number.
   b. Architects name, location and telephone number.
   c. Contractors name, location, telephone number and job number.
   d. Suppliers name, location, telephone number and job number.
   e. Hardware consultant's name, location and telephone number.

2. Job Index information included:
   a. Numerical door number index including; door number, hardware heading number and page number.
   b. Complete keying information (referred to DHI hand-book "Keying Systems and Nomenclature"). Provision should be made in the schedule to provide keying information when available; if it is not available at the time the preliminary schedule is submitted.
   c. Manufacturers' names and abbreviations for all materials.
   d. Explanation of abbreviations, symbols, and codes used in the schedule.
   e. Mounting locations for hardware.
   f. Clarification statements or questions.
   g. Catalog cuts and manufacturer’s technical data and instructions.

3. Vertical schedule format sample:

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<th>Heading Number 1 (Hardware group or set number – HW-1)</th>
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</thead>
<tbody>
<tr>
<td>(a) 1 Single Door #1 - Exterior from Corridor 101</td>
<td>(b) 90°</td>
<td>(c) RH</td>
</tr>
<tr>
<td>(d) 3’ 0”x7” 0” x 1-3/4” x (e) 20 Minute (f) WD x HM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(g) 1 (h) (i) ea</td>
<td>(j) Hinges - (k) 5BB1HW 4.5 x 4.5 NRP (l) ½ TMS (m) 626 (n) IVE</td>
<td></td>
</tr>
<tr>
<td>2 6AA 1 ea</td>
<td>Lockset - ND50PD x RHO x RH x 10-025 x JTMS 626 SCH</td>
<td></td>
</tr>
</tbody>
</table>

(a) - Single or pair with opening number and location. (b) - Degree of opening (c) - Hand of door(s) (d) - Door and frame dimensions and door thickness. (e) - Label requirements if any. (f) - Door by frame material. (g) - (Optional) Hardware item line #. (h) - Keyset Symbol. (i) - Quantity. (j) - Product description. (k) - Product Number. (l) - Fastenings and other pertinent information. (m) - Hardware finish codes per ANSI A156.18. (n) - Manufacture abbreviation.

D. Make substitution requests in accordance with Division 1. Substitution requests must be made prior to bid date. Include product data and indicate benefit to the project. Furnish samples of any proposed substitution.
E. Wiring Diagrams: Provide product data and wiring and riser diagrams for all electrical products listed in the Hardware Schedule portion of this section.

F. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.

G. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

H. LEED Certification Points: Submit information and certifications necessary to achieve maximum points for LEED certification; coordinate and cooperate with Owner and Architect in providing information necessary for required LEED rating.

1.05 QUALITY ASSURANCE

A. Obtain each type of hardware (latch and lock sets, hinges, closers, exit devices, etc.) from a single manufacturer.

B. Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities in the project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this project and that employs an experienced architectural hardware consultant (AHC) who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.

1. Responsible for detailing, scheduling and ordering of finish hardware.
2. Meet with Owner to finalize keying requirements and to obtain final instructions in writing.
3. Stock parts for products supplied and are capable of repairing and replacing hardware items found defective within warranty periods.

C. Hardware Installer: Company specializing in the installation of commercial door hardware with five years documented experience.

D. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and tested by UL or Warnock Hersey for given type/size opening and degree of label. Provide proper latching hardware, door closers, approved-bearing hinges and seals whether listed in the Hardware Schedule or not.

1. Where emergency exit devices are required on fire-rated doors, (with supplementary marking on doors' UL labels indicating "Fire Door to be Equipped with Fire Exit Hardware") provide UL label on exit devices indicating "Fire Exit Hardware".

E. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.

1.06 DELIVERY, STORAGE AND HANDLING

A. Coordinate delivery of packaged hardware items to the appropriate locations (shop or field) for installation.
B. Hardware items shall be individually packaged in manufacturers’ original containers, complete with proper fasteners. Clearly mark packages on outside to indicate contents and locations in hardware schedule and in work.

C. Provide locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, etc.

D. Inventory door hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.

1.07 WARRANTY

A. Provide warranties of respective manufacturers’ regular terms of sale from day of final acceptance as follows:

1. Electronic: One (1) year.
2. Exit devices: Three (3) years.
3. All other hardware: Two (2) years.

1.08 MAINTENANCE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

1.09 PRE-INSTALLATION CONFERENCE

A. Convene a pre-installation conference at least one week prior to beginning work of this section.


C. Agenda: Review hardware schedule, products, installation procedures and coordination required with related work. Review District's keying standards.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

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<tr>
<th>Item</th>
<th>Manufacturer</th>
<th>Acceptable Substitutes</th>
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<tbody>
<tr>
<td>Hinges</td>
<td>Ives</td>
<td>Hager, Stanley, McKinney</td>
</tr>
<tr>
<td>Locks, Latches &amp; Cylinders</td>
<td>Schlage</td>
<td>None – Owner Standard</td>
</tr>
<tr>
<td>Exit Devices</td>
<td>Von Duprin</td>
<td>None – Owner Standard</td>
</tr>
<tr>
<td>Closers</td>
<td>LCN</td>
<td>None – Owner Standard</td>
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<tr>
<td>Push, Pulls &amp; Protection Plates</td>
<td>Ives</td>
<td>Trimco, BBW, DCI</td>
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</tbody>
</table>
**2.02 MATERIALS**

**A. Hinges:** Exterior out-swinging door buttshall be non-ferrous material and shall have stainless steel hinge pins. All doors to have non-rising pins.

1. Hinges shall be sized in accordance with the following:
   a. **Height:**
      1) Doors up to 42" wide: 4-1/2" inches.
      2) Doors 43" to 48" wide: 5 inches.
   b. **Width:** Sufficient to clear frame and trim when door swings 180 degrees.
   c. **Number of Hinges:** Furnish 3 hinges per leaf to 7'-5" in height. Add one for each additional 2 feet in height.

2. Furnish non-removable pins (NRP) at all exterior out-swing doors and interior key lock doors with reverse bevels.

**B. Pivots:** High strength forgings and castings with precision bearings for smooth operation. Positive locking vertical adjustment mechanism to allow installer to precisely position the door and balance the load.

**C. Continuous Hinges:** As manufactured by Ives, an Allegion Company. UL rated as required.

**D. Exit devices:** Von Duprin as scheduled.

1. Provide certificate by independent testing laboratory that device has completed over 1,000,000 cycles and can still meet ANSI/BHMA A156.3 - 2001 standards.
2. All internal parts shall be of cold-rolled steel with zinc dichromate coating.
3. Mechanism case shall have an average thickness of .140".
4. Compression spring engineering.
5. Non-handed basic device design with center case interchangeable with all functions.
6. All devices shall have quiet return fluid dampeners.
7. All latchbolts shall be deadlocking with ¾" throw and have a self-lubricating coating to reduce friction and wear.
8. Device shall bear UL label for fire and or panic as may be required.
9. All surface strikes shall be roller type and utilize a plate underneath to prevent movement.
10. Lever Trim: “Breakaway” design, forged brass or bronze escutcheon with a minimum of .130" thickness, match lockset lever design.
12. Furnish glass bead kits for vision lites where required.
13. All Exit Devices to be sex-bolted to the doors.
14. Panic Hardware shall comply with CBC Section 11B.404.2.7 and shall be mounted between 34” and 44” above the finished floor surface.
   a. Provide exit devices UL certified to meet maximum 5 pound requirements according to the California Building Code section 11B-309.4, and UL listed for Panic Exterior Fire Exit Hardware.

2.03 FINISHES

A. Generally to be satin chrome US26D (626 on bronze and 652 on steel) unless otherwise noted.
B. Furnish push plates, pull plates and kick or armor plates in satin stainless steel US32D (630) unless otherwise noted.
C. Door closers shall be powder-coated to match other hardware, unless otherwise noted.
D. Aluminum items to be finished anodized aluminum except thresholds which can be furnished as standard mill finish.

2.04 FASTENERS

A. Screws for strikes, face plates and similar items shall be flat head, countersunk type, provide machine screws for metal and standard wood screws for wood.
B. Screws for butt hinges shall be flathead, countersunk, full-thread type.
C. Fastening of closer bases or closer shoes to doors shall be by means of sex bolts and spray painted to match closer finish.
D. Provide expansion anchors for attaching hardware items to concrete or masonry.
E. All exposed fasteners shall have a phillips head.
F. Finish of exposed screws to match surface finish of hardware or other adjacent work.
G. All Exit Devices and Lock Protectors shall be fastened to the door by the means of sex bolts or through bolts.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify that doors and frames are square and plumb and ready to receive work and dimensions are as instructed by the manufacturer.
B. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and requirements of DHI.
B. Use the templates provided by hardware item manufacturer.

C. Mounting heights for hardware shall be as recommended by the Door and Hardware Institute. Operating hardware will to be located between 34” and 44” AFF.

D. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

E. Drill and countersink units that are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

F. Set thresholds for exterior doors in full bed of butyl-rubber sealant.

G. If hand of door is changed during construction, make necessary changes in hardware at no additional cost.

H. Hardware Installer shall coordinate with security contractor to route cable to connect electrified locks, panic hardware and fire exit hardware to power transfers or electric hinges at the time these items are installed so as to avoid disassembly and reinstallation of hardware.

I. Hardware Installer shall also be present with the security contractor when the power is turned on for the testing of the electronic hardware applications. Installer shall make adjustments to solenoids, latches, vertical rods and closers to insure proper and secure operation.

J. All wiring for electro-mechanical hardware mounted on the door shall be connected through the power transfer and terminated in the interface junction box specified for in the Electrical Section.

K. Conductors shall be minimum 18 gage stranded, multicolored. A minimum 12 in. loop of conductors shall be coiled in the interface junction box. Each conductor shall be permanently marked with its function.

L. If a power supply is specified in the hardware sets, all conductors shall be terminated in the power supply. Make all connections required for proper operation between the power supply and the electro-mechanical hardware. Provide the proper size conductors as specified in the manufacturer’s technical documentation.

3.03 ADJUST AND CLEAN

A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.

B. Clean adjacent surface soiled by hardware installation.

C. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy, return to that work area and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

D. Instruct Owner's Personnel in proper adjustment and maintenance of hardware finishes, during the final adjustment of hardware.
E. Continued Maintenance Service: Approximately six months after the completion of the project, the Contractor accompanied by the Architectural Hardware Consultant, shall return to the project and re-adjust every item of hardware to restore proper functions of doors and hardware. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures. Replace hardware items which have deteriorated or failed due to faulty design, materials or installation of hardware units. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

3.04 HARDWARE LOCATIONS

A. Conform to CCR, Title 24, Part 2; and ADAAG; and the drawings for access-compliant positioning requirements for the disabled.

3.05 FIELD QUALITY CONTROL

A. Hardware supplier is responsible for providing the services of an Architectural Hardware Consultant (AHC) or a proprietary product technician to inspect installation and certify that hardware and its installation have been furnished and installed in accordance with manufacturers’ instructions and as specified herein.

3.06 SCHEDULE

A. The items listed in the following schedule shall conform to the requirements of the foregoing specifications.

B. The Door Schedule on the Drawings indicates which hardware set is used with each door.

**Manufacturers Abbreviations (Mfr.)**

| VON | = | Von Duprin | Exit Devices |

**GROUP NO. 01**

| 2 EA | POWER TRANSFER | EPT10 | 695 | VON |
| 1 EA | ELEC PANIC | QEL+-3547A-EO | 313 | VON |
| 1 EA | ELEC PANIC | QEL+-3547A-NL-OP-388-613 | 613/313 | VON |
| 1 EA | POWER SUPPLY | PS914  900-2RS | LGR | VON |

AUTO OPERATOR SPECIFIED IN SECTION 087113

**GROUP NO. 02**

| 2 EA | POWER TRANSFER | EPT10 | 689 | VON |
| 2 EA | EL CONVERSION KIT | QEL+-KIT | | VON |
| 1 EA | POWER SUPPLY | PS914  900-2RS | LGR | VON |

AUTO OPERATOR SPECIFIED IN SECTION 087113
### GROUP NO. 03

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*AAUTO OPERATOR SPECIFIED IN SECTION 087113*

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*AAUTO OPERATOR SPECIFIED IN SECTION 087113*

### GROUP NO. 05

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*AAUTO OPERATOR SPECIFIED IN SECTION 087113*

**END OF SECTION**
SECTION 087113 – AUTOMATIC DOOR OPERATORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes the following types of automatic door operators:
   1. Full energy power door operators for swinging doors.

B. Related Sections:
   1. Division 7 Sections for caulking to the extent not specified in this section.
   2. Division 8 Section “Door Hardware” for hardware to the extent not specified in this Section.
   3. Division 26 Section for electrical connections including conduit and wiring for automatic entrance door operators and access control devices.

1.3 REFERENCES

A. References: Comply with the version year adopted by the Authority Having Jurisdiction.
   3. CUL – Approved for use in Canada.
   5. NFPA 80 - Fire Doors and Windows.
   7. NFPA 105 - Installation of Smoke Door Assemblies.

B. American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA).

C. Underwriters Laboratories (UL).
   1. UL Listed R-9469 Fire Door Operator with Automatic Closer.
   2. UL10C – Positive Pressure Fire Tests of Door Assemblies.
   3. UL 325 - Standard for Safety for Door, Drapery, Gate, Louver, and Window Operators and Systems.
4. UL991 Listed - Tests for Safety-Related Controls Employing Solid-State Device.
5. UL244A – Solid – State Controls for Appliances.
7. UL1310 – Class 2 Power Units.

D. Canadian Standards Association (CSA).
1. CAN/CSA-C22.2 NO 223-M91 – Power Supplies With Extra-Low-Voltage Class 2 Outputs.

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


1. AAMA 611 Voluntary Specification for Anodized Architectural Aluminum.

H. National Association of Architectural Metal Manufacturers (NAAMM).
1. Metal Finishes Manual for Architectural Metal Products.

I. International Code Council (ICC).
2. CBC: California Building Code.

1.4 DEFINITIONS

A. Double Egress Doors: A pair of doors that swing with the two doors moving in opposite directions with no mullion between them.

B. Double Swing Doors: A pair of doors that swing with the two doors moving in opposite directions with a mullion between them; each door functioning as a single swing door.

C. Activation Device: Device that, when actuated, sends an electrical signal to the door operator to activate the operation of the door.
1. Knowing act: Consciously initiating the opening of a power operated door using acceptable methods including wall mounted switches such as push plates and controlled access devices such as keypads, card readers and key switches.

D. Safety Device: A device that detects the presence of an object or person within a zone where contact could occur and provides a signal to stop the movement of the door.

E. AAADM: American Association of Automatic Door Manufacturers.
1.5 PERFORMANCE REQUIREMENTS

A. General: Provide automatic door operators that have been designed and fabricated to comply with specified performance requirements, as demonstrated by testing manufacturer’s corresponding standard systems.

B. Automatic door equipment accommodates medium to heavy pedestrian traffic and have the following minimum performance characteristics:
   1. Up to 700 pound (317.5 kg) weight of doors, 48 inches (1219 mm) maximum door width per operator.

C. Operator capable of operating within temperature ranges of -31° F to 160° F (-35° C to 71° C).

D. Opening Force requirements for Egress Doors: In the event of power failure to the operator, swinging automatic entrance doors shall open with a manual force, not to exceed 30lbf (133N) applied at 1” (25 mm) from the latch edge of the door.

E. Break Away Device: Swinging automatic entrances shall require no more than 50 lbf (222 N) applied 1” (25 mm) from the latch edge of the door. When the door(s) is opened in the breakout mode, powered operated components excluding spring power shall not operate the doors.

F. Closing Time:
   1. Doors shall be field adjustable to close from 90 degrees to 10 degrees in 2 seconds or longer as applicable per ANSI/BHMA A156.10 standards.
   2. Doors shall be field adjusted to close from 10 degrees to fully closed in not less than 1.5 seconds.

1.6 SUBMITTALS

A. Comply with Section 00800 - Submittal Procedures.

B. Product Data: Manufacturer’s product sheets including installation details, material descriptions, dimensions of individual components and profiles, fabrication, operational descriptions and finishes.

C. Shop Drawings: Submit manufacturer’s shop drawings, including elevations, sections and details, indicating dimensions, materials, operator, motion/presence sensor control device, anchors, hardware, finish, options and accessories.
   1. Indicate required clearances, and location and size of each field connection.
   2. Indicate locations and elevations of entrances showing activation and safety devices.
   3. Wiring Diagrams: For power, signal, and activation / safety device wiring.

D. Samples: Submit manufacturer’s samples of aluminum finish.

E. Manufacturers Field Reports: Submit manufacturer’s field reports from AAADM certified technician of inspection and approval of doors for compliance with ANSI/BHMA A156.10 after completion of installation.
F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door opening installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the hardware and their nearest service representatives. The final copies delivered after completion of the installation test to include spare parts list.

G. Warranties and Maintenance: Special warranties and maintenance agreements specified in this Section.

1.7 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 10 years of documented experience in manufacturing of doors and equipment of similar to that indicated for this Project and that have a proven record of successful in-service performance.
   1. A manufacturer with company certificate issued by AAADM.

B. Installer Qualifications: Installers, trained by the primary product manufacturers, with a minimum 5 years documented experience installing and maintenance of units similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

C. Certified Inspector Qualifications: Certified by AAADM.

D. Source Limitations for Automatic Operators: Obtain each type of door operator and sensor components specified in this Section from a single source, same manufacturer unless otherwise indicated.

E. Certifications: Operators shall be certified by the manufacturer to meet performance design criteria in accordance with the following standards.
   3. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems.
   4. UL Listed R-9469 Fire Door Operator with Automatic Closer.

F. Emergency Exit door requirements: Comply with requirements of authorities having jurisdiction for automatic entrance doors serving as a required means of egress.

1.8 COORDINATION

A. Coordinate door operators with doors, frames and related work to ensure proper size, thickness, hand, function and finish. Coordinate hardware for automatic entrances with hardware required for rest of the project.
B. Electrical System Roughing-in: Coordinate layout and installation of power door operators with connections to power supplies and access control system as applicable.

1.9 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Automatic Door Operators shall be free of defects in material and workmanship for a period of one (1) year from the date of substantial completion.

C. During the warranty period a factory-trained technician shall perform service and affect repairs. An inspection shall be performed after each adjustment or repair.

D. During the warranty period all warranty work, including but not limited to emergency service, shall be performed during normal business hours.

E. Manufacturer shall have in place a dispatch procedure that shall be available 24 hours a Day, 7 Days a week for emergency call back service.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Manufacturer: ASSA ABLOY Entrance Systems, 1900 Airport Road, Monroe, NC 28110. Toll Free (877) SPEC-123. Phone (704) 290-5520 Fax (704 ) 290- 5555 Website www.assaabloyentrance.com contact: specdesk.na.aaes@assaabloy.com

B. Substitutions: Requests for substitution and product approval in compliance with the specifications must be submitted in writing and in accordance with the procedures outlined in Division 1, Section, “Substitution Procedures”. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 AUTOMATIC SWING DOOR OPERATOR

A. Model: Besam SW200i full energy automatic door operator (Basis of Design):

1. Configuration: Operator to control single swinging doors and pairs of swinging doors as indicated on the drawings and specified below:
   a. Traffic Pattern: Two way.

a. Automatic operator shall be capable of operating and controlling up to a 700 pound (317.5 kg) door, 48 inches (1219 mm) in width.
b. Surface Mounted Operator:
   1) Side Access Operator Housing: Operator is contained in 5-1/8” (130.2 mm) deep x 4 5/16” (110 mm) high extruded aluminum housing with a removable cover. Side Access Operator Housing: Operator is contained in a 6 inch (152.4 mm) deep x 6 inch (152.4 mm) high extruded aluminum housing with a hinged cover. [Bottom Load Operator Housing: Operator is contained in a 6 inch (152.4 mm) x 6 inch (152.4 mm) high, extruded aluminum housing with removable bottom cover.
   2) Surface Mounted Housing: Continuous for full width of door.
   3) Connecting Hardware: Surface mounted operators to have a steel arm from the operator, mounted to the top face of the swing door.
   4) UL Listed R-9469 Fire Door Operator with Automatic Closer (surface mounted operator).
c. Operator can be field adjusted to comply with ANSI/BHMA A156.19 American National Standard for Power Assist and Low Energy Operated Doors. Activation devices may also need to be switched to knowing-act activation devices for compliance with ANSI/BHMA A156.19.
d. Electrical Characteristics: Maximum power consumption is 300 watts (2.5 amps at 120 VAC), 50/60hz, built-in thermal overload protection.

3. Door Operation:
a. Opening Cycle: The adjustable speed operator mechanically powers the drive shaft and the torque control maintains constant speed throughout the opening cycle regardless of stack pressures or wind speed. Operator shall allow manual door operation with operational forces as indicated to fully open the door applied at 1” (25 mm) from the latch edge of the door.
   1) Manual push force shall be adjustable from 5 lbf to 30 lbf maximum.
b. Hold Open: The operator shall stop and hold the door open at the selected door opening angle for an adjustable period of time (1.5 seconds to 30 seconds).
c. Closing Cycle: Spring close with speed controlled power assist.
   1) Upon loss of power, dynamic braking will control the door insuring controlled closing.
   2) Selectable Torque Control: Automatically adjusts torque without changing the closing speed of the operator.
      a) When the torque control is activated, the closing speed shall remain constant regardless of stack pressures or wind speed.
      b) Torque Cancellation: The torque control is deactivated whenever there is a signal received from door mounted sensors.
      c) The torque control is disabled during manual use of the door.
d. Wind Force Dampening: The operator electromechanically counteracts wind forces, slowing down the door movement to safely open or close the door.
e. Stack Pressure Compensation: Operator shall counteract positive stack pressures, negative stack pressures, and sudden changes of stack pressures. The operator never allows the door to open or close faster than the speed control settings, regardless of pressures.
f. Obstruction Control: The operator will stop and reverse the door movement.
g. Electric Lock Management:
   1) Internal module for electrified locking integration.
2) Electric Lock Output: Selectable 12 VDC, maximum 1200 mA / 24 VDC, maximum 600 mA.
3) Lock monitoring prevents operator(s) from opening door(s) until release of electrified lock.
4) Operator pulls door closed before opening, automatically unjamming electric latch hardware.
5) Sequenced operation between operators for pairs of doors allowing lock release and astragal coordination.

h. Lock Retry Circuit: If attempt to fully close the door is unsuccessful, the operator will automatically reverse open 10 degrees and reclose in an attempt to successfully close the door.

i. Selectable Alarm Reset: The operator can be field set so that after receiving an alarm signal, the operator will not accept any activation impulses and will operate only as a manual door closer until manually reset.

j. Electronic Controls: Solid state integrated circuit controls the operation and switching of the swing power operator. The electronic control provides low voltage power supply for all means of actuation. The controls include time delay (1 to 30 seconds) for normal cycle.

k. Control Switch: Automatic door operators shall be equipped with the following type of multi-position function switch:

1) 2 position rocker switch mounted on end cap (On-Off).

4. Operator Interface:
   a. Safety Sensor Integration for overhead presence safety device and door mounted reactivation safety sensors.

2.3 ACTIVATION DEVICES

A. General: Provide activation devices in accordance with ANSI/BHMA A156.10 standards, for condition of exposure and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated. Coordinate activation and devices with door operation and door operator mechanisms.

B. Automatic Activation Device:

1. Motion Sensors: Self-contained, K-band-frequency, microwave-scanner unit; achieving both a narrow or wide sensing pattern, adjustable to provide detection field sizes and functions required by ANSI/BHMA A156.10.
   a. Motion Sensors to offer three motion detection actions; bi-directional, uni-directional, and uni-MTF detection.

2. Control Mats: Larco Safety Mat Systems.

2.4 SAFETY DEVICES

A. General: Provide safety devices in accordance with ANSI/BHMA A156.10 standards, for condition of exposure and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated. Coordinate safety devices with door operation and door operator mechanisms.
B. Presence Detection Systems and Safety Devices:

1. Besam I-Adapt Flex Safety Sensor System A102 (Basis of Design), Combination of an Overhead Presence Sensor (OPS) and Door Mounted Presence Sensors (DMPS) as specified:
   a. Overhead Presence Sensor (OPS): Header mounted, overhead presence sensor utilizing infrared technology for detection; adjustable to provide detection field sizes and functions required by ANSI/BHMA A156.10. Unit to provide the following two independently adjustable patterns of detection:
      1) The door closed position covering the area on the swing side of the door.
      2) The door open position including an area of detection that reaches through the threshold toward the non-swing side of the door.
      3) The unit is not active during the door closing cycle.
   b. Door Mounted Presence Sensor (DMPS): Door mounted infrared presence safety device (mounted at top of each door); adjustable to provide detection field sizes and functions required by ANSI/BHMA A156.10.
      1) The door mounted presence detector shall be mounted on both the swing (pull) side and the approach (push) side of the door (2 sensors per leaf), providing detection on both sides of the door.
      2) Unit to provide detection during the travel of the door.
      3) Upon detection the sensor shall provide a signal to stop or reverse the door action.

2. Besam I-Adapt Flex Safety Sensor System A101 (Basis of Design), Combination of an Overhead Presence Sensor (OPS) and a Door Mounted Presence Sensor (DMPS) as specified:
   a. Overhead Presence Sensor (OPS): Header mounted, overhead presence sensor utilizing infrared technology for detection; adjustable to provide detection field sizes and functions required by ANSI/BHMA A156.10. Unit to provide the following two independently adjustable patterns of detection:
      1) The door closed position covering the area on the swing side of the door.
      2) The door open position including an area of detection that reaches through the threshold toward the non-swing side of the door.
      3) The unit is not active during the door closing cycle.
   b. Door Mounted Presence Sensor (DMPS): Door mounted infrared presence safety device (mounted at top of each door); adjustable to provide detection field sizes and functions required by ANSI/BHMA A156.10.
      1) The door mounted presence detector shall be mounted on both the swing (pull) side and the approach (push) side of the door (2 sensors per leaf), providing detection on both sides of the door.
      2) Unit to provide detection during the travel of the door.
      3) Upon detection the sensor shall provide a signal to stop or reverse the door action.

a) On "knowing act" double egress doorways, the door mounted presence detector shall be mounted on the approach (push) side of the door (1 sensor per leaf).
2.5 ACCESSORIES

A. Guide Rails: Fabricated from tubing, minimum 30 inches (762 mm) high, and finished to match doors unless otherwise indicated; positioned and projecting from face of door jamb for distance as indicated, but not less than that required by ANSI/BHMA A156.10 for type of door and direction of travel.
   1. Mounting: Floor, freestanding.

B. Guide Rails: To be as detailed (see architectural drawings).

C. Guide Rail Finishes:
   1. Painted Finish:
      a. Prime and Paint with high performance paint
   2. To match architects sample.

2.6 ALUMINUM FINISHES

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

B. Automatic Operator Enclosure:
   1. Anodized Finish:
      a. AAMA 611, Clear, AA-M12C22A41, Class I, 0.018 mm.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, wall and floor construction, and other conditions affecting performance.

B. Examine roughing-in for electrical source power to verify actual locations of wiring connections.

C. Proceed only after such discrepancies or conflicts have been resolved.

3.2 INSTALLATION

A. Do not install damaged components. Fit joints to produce hairline joints free of burrs and distortion. Rigidly secure non-movement joints.

B. Operators: Install automatic operators plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place.
   1. Install surface mounted hardware using concealed fasteners to greatest extent possible.
   2. Set headers, carrier assemblies, tracks, operating brackets and guides level and true to location with anchorage for permanent support.
C. Door Operators: Connect door operators to electrical power distribution system as specified in Division 26 Sections.

D. Sealants: Comply with requirements specified in division 7 Section “Joint Sealants” to seal between the operator housing and the adjacent wall surface.

E. Signage: Apply signage on both sides of each door and sidelite as required by ANSI/BHMA A156.10 and manufacturers installation instructions.

3.3 FIELD QUALITY CONTROL

A. Manufacturers Field Services:
   1. Manufacturer’s representative shall provide technical assistance and guidance for installation of doors.
   2. Before placing doors into operation, AAADM certified technician shall inspect and approve doors for compliance with ANSI/BHMA A156.10. Certified technician shall be approved by manufacturer.

3.4 ADJUSTING

A. Adjust door operators, controls and hardware for smooth and safe operation and for weather tight closure. Adjust doors in compliance with ANSI/BHMA A156.10.

3.5 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by automatic operator installation.

B. Clean metal surfaces promptly after installation. Remove excess sealants, compounds, dirt and other substances. Repair damages finish to match original finish.

3.6 DEMONSTRATION

A. Engage a factory-authorized representative to train Owner's maintenance personnel to adjust, operate, and maintain safe operation of the door.

END OF SECTION
SECTION 099100 - PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Surface preparation, painting, and finishing of exposed interior and exterior items and surfaces.

B. Surface preparation, priming, and finish coats specified in this Section are in addition to shop-priming and surface treatment specified under other Sections.

C. Painting exposed surfaces whether or not colors are designated in schedules, except where a surface or material is specifically indicated not to be painted or is to remain natural. Where an item or surface is not specifically mentioned, paint the same as similar adjacent materials or surfaces. If color or finish is not designated, the Architect will select from standard colors or finishes available.

D. Painting includes field-painting exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.

E. Painting is not required on prefinished items, finished metal surfaces, concealed surfaces, operating parts, and labels.

F. Labels: Do not paint over Underwriters Laboratories, Factory Mutual or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

G. Magnetic wall paint.

1.3 RELATED SECTIONS

A. Section 055213 - Pipe and Tube Railings: Shop-priming ferrous metal.

1.4 DEFINITIONS

A. VOC Ranges: Ranges listed are as prescribed by Master Painters Institute (MPI), Architectural Painting Specification Manual as follows:

1. VOC Range E3: Lowest; <51 g/l.
2. VOC Range E2: Next lowest; 51-200 g/l.
3. VOC Range E1: Highest allowable; 201-350 g/l.
4. VOC Range E0: Outside range.
B. General: Standard coating terms defined in ASTM D16 apply to this section.

1. Low Gloss: Refers to a 'velvet-like' finish with a gloss maximum of 10 when measured with a 60-degree meter per ASTM D523.
2. Low Sheen: Refers to an eggshell finish with a gloss range between 5 and 20 when measured with a 60-degree meter per ASTM D523.
3. Satin: Refers to a low-sheen finish with a gloss range between 15 and 35 when measured with a 60-degree meter per ASTM D523.
4. Semi-gloss: Refers to a satin-like finish with a gloss range between 20 and 35 when measured with a 60-degree meter per ASTM D523.
5. Gloss: Refers to a high-sheen finish with a gloss range higher than 65 when measured with a 60-degree meter per ASTM D523.

1.5 SUBMITTALS

A. Product Data: For each paint system specified.

1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer’s catalog number and coating material proposed for use.
2. Manufacturer’s Information: Provide manufacturer’s technical information, including label analysis and instructions for handling, storing and applying each coating material proposed for use.
3. Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).

B. Samples for Verification Purposes: Submit samples for review of color and texture; provide list of material and application for each coat of each finish sample.

1. Brush-Outs: Submit samples of each color and material with texture to simulate actual conditions, on hardboard.
   a. Submit 8" by 10" samples of wood finishes on actual wood surfaces; label and identify each as to location and application.
2. Field Samples: Duplicate painted finishes of approved samples on actual wall surfaces and components for approval prior to commencing work.
   a. Size: Minimum 100 sf located where approved.
   b. Components: One full component as directed.
   c. Simulate finished lighting conditions for review.
3. Opaque Colors and Finishes: Submit samples, on hardboard, using materials accepted for Project, of each color and paint finish selected with texture to simulate actual conditions. Prepare three samples, 8-112 Inches by 11 Inches, with required number of paint coats clearly visible.
4. Transparent and Stained Finishes: Prepare samples on species and quality of wood to be used in the Work. Re-submit as requested until acceptable sheen, color, and texture are achieved. Label and identify each sample as to location and application.

C. Closeout Submittal: Provide paint cards fully labeled with manufacturer of each paint system applied on the project. Provide the following with each system:
1. Manufacturer name.
2. Manufacturer’s paint product.
3. Primer name and number.
4. Color name and number.
5. Gloss level.
6. Locations where used.

1.6 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide primers and undercoat paint produced by the same manufacturer as the finish coats.

B. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution prior to commencing work.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
   a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
   b. Other Items: Architect will designate items or areas required.

2. Components: One full component as directed.

3. Simulate finished lighting conditions for review.

4. Install mock-up using means and methods identical to those that are going to be employed during full production.

5. Allow coating to cure in accordance with manufacturer’s written instructions.

6. Perform adhesion test on existing paint to remain using X-cut method per ASTM D3359. Ratings 4A and 5A acceptable.

7. Final approval of color selections will be based on mockups.
   a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

8. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the job site in the manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:

1. Product name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.
C. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.8 PROJECT CONDITIONS

A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 deg F (10 deg C) and 90 deg F (32 deg C).

B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 deg F (7 deg C) and 95 deg F (35 deg C).

C. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

D. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by the manufacturer during application and drying periods.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.

1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers – Interior Paints: Subject to compliance with requirements, manufacturers offering interior 0-low VOC paint products that may be incorporated into the Work include, but are not limited to, the following:

1. Benjamin Moore; EcoSpec WB.
2. Glidden Professional; Lifemaster No VOC.
3. Kelly-Moore; Enviro-Cote.
5. PPG Architectural Finishes; Pure Performance.
6. Substitutions: In accordance with Section 00800.

B. Acceptable Manufacturers – Exterior Paints: Subject to compliance with requirements, manufacturers offering exterior paint products that may be incorporated into the Work include, but are not limited to, the following:

1. Benjamin Moore.
2. Glidden Professional.
5. PPG Architectural Finishes.
6. Substitutions: In accordance with Section 00800.

2.2 PAINT MATERIALS

A. Material Compatibility: Provide block fillers, primers, finish coat materials, and related materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by the manufacturer based on testing and field experience.

B. Material Quality: Provide the manufacturer's best-quality trade sale paint material of the various coating types specified. Paint material containers not displaying manufacturer's product identification will not be acceptable.

C. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish the manufacturer's material data and certificates of performance for proposed substitutions.

D. Colors: Match colors indicated by reference to the manufacturer's standard color designations.

E. Magnetic Wall Paint:
   1. Basis-of-Design Manufacturer: Rustoleum Magnetic Primer; 247596.

2.3 PRIMERS

A. Primers: Provide the manufacturer's recommended factory-formulated primers that are compatible with the substrate and finish coats indicated.
   1. VOC Content: E Range of E2-E3.

B. Concrete Primers: Factory-formulated alkali-resistant acrylic-latex primer.

C. Ferrous Metal Primers: Factory-formulated rust-inhibitive water-based metal primer. Use quick drying type at interior applications.

D. Galvanized Metal Primers: Factory-formulated galvanized metal primer.

E. Interior Gypsum Board Primer: Factory-formulated white latex-based primer for interior application.

2.4 UNDERCOAT MATERIALS

A. Undercoat Materials: Provide the manufacturer's recommended factory-formulated undercoat materials that are compatible with the substrate and finish coats indicated.
   1. VOC Content: E Range of E3.

B. Interior Enamel Undercoat: Ready-mixed enamel.
2.5 EXTERIOR FINISH PAINT MATERIAL

A. Finish Paint: Provide the manufacturer's recommended factory-formulated finish-coat materials that are compatible with the substrate and undercoats indicated.
   1. VOC Content: E Range of E2-E3.


2.6 INTERIOR FINISH PAINT MATERIAL

A. Finish Paint: Provide the manufacturer's recommended factory-formulated finish-coat materials that are compatible with the substrate and undercoats indicated.
   1. VOC Content: E Range of E3.

B. Interior, Flat, Latex-Based Paint: Ready-mixed, latex-based paint for a flat finish.

C. Interior, Semigloss, Latex Enamel: Semigloss, latex enamel.

D. Ferrous and Zinc-Coated Metal Surfaces, Gloss, Latex Enamel: Gloss, low odor, latex enamel.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions under which painting will be performed for compliance with paint application requirements. Surfaces receiving paint must be thoroughly dry before paint is applied.

B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

C. Notify the Architect about anticipated problems using the materials specified over substrates primed by others.

D. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
   1. Concrete: 12 percent.
   2. Wood: 15 percent.
   3. Gypsum Board: 12 percent.
   4. Plaster: 12 percent.

E. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
   1. Beginning coating application constitutes acceptance of substrates and conditions.
3.2 PREPARATION, GENERAL

A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted, or provide surface-applied protection prior to surface preparation and painting. Remove these items, if necessary, to completely paint the items and adjacent surfaces.

B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease prior to cleaning. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

C. Provide barrier coats over incompatible primers or remove and reprime. Notify Architect in writing about anticipated problems using the specified finish-coat material with substrates primed by others.

D. Follow proper procedures, methods, guidelines, and regulations for paint preparation related to lead paint sanding. Wear goggles, NIOSH-approved respirators, rubber gloves, and appropriate clothing.

E. Clean building exterior using pressurized hot water.
   1. Clean heavily soiled areas with fiber brush and water.
   2. Equip pressure washer with fan tip nozzle of 250 degree minimum.
   3. Do not permit water temperature to exceed 180 degrees F.
   4. Do not permit water pressure to exceed 1,200 psi.

F. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces where moisture content exceeds that permitted in manufacturer's printed directions.

G. Exposed Equipment: Verify installations are complete before initiating preparation of surfaces of exposed mechanical and electrical piping, conduit, ductwork, and equipment for field-painting.

H. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by the paint manufacturer, and touch up with the same primer as the shop coat.

I. Factory-Primed and Enamel Substrates: Wipe clean and dry.

J. Following completion of painting operations in each space or area, have items reinstalled by workers skilled in the trades involved.

3.3 SURFACE PREPARATION

A. Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.

B. Plaster:
   1. Clean plaster adjacent to new repairs so that the paint bonds and blends into new and
old, minimum 6 inches beyond repairs.

2. Allow new plaster to cure thoroughly (30 days minimum) prior to applying paint. Moisture content shall be 8 percent or less, as measured with a moisture meter, at time of paint application.

3. Scrub surfaces of existing plaster with a solution of 10 percent tri-sodium-phosphate to remove any glaze, and to etch the surface. Wash the solution from the surface using clean water.

4. Patch cracks, holes and defects with patching plaster. Remove all powder and dust by washing with clear water.

5. Spot prime patches and stains.

C. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off. Remove excess build-up of multiple layers of existing paint to restore original profiles to the greatest extent possible.

1. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended know sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.

2. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, and cases.

   a. When transparent finish is required, backprime with spar varnish.

3. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.

D. Interior Wood Doors: Must be stripped and primed for refinishing.

1. Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off. Remove excess build-up of multiple layers of existing paint to restore original profiles to the greatest extent possible.

2. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended know sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.

3. Seal tops, bottoms, and cutouts of stripped wood doors with a heavy coat of varnish or sealer.

4. See Section 081416 for additional priming requirements for existing wood doors.

E. Steel Substrates: Clean non-galvanized ferrous metal surfaces that have not been shop-coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with recommendations of the Steel Structures Painting Council (SSPC) and written instructions of paint manufacturer.

1. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.

2. Touch up bare areas and shop-applied prime coats that have been damages. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.

F. Apply primers to metal surfaces in the field under any of the following circumstances:

1. Where it can be established that shop primer was applied more than 30 days (7 days for some primers, verify with metal shop) before delivery to the site.
2. If shop-applied primer is contaminated during transport or storage.
3. If salts are deposited from marine fog, road salts, construction dusts, etc. during storage.

3.4 MATERIALS PREPARATION

A. Carefully mix and prepare paint materials according to manufacturer’s directions.

B. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.

C. Stir material before application to produce a mixture of uniform density; stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.

D. Use only thinners approved by the paint manufacturer and only within recommended limits.

3.5 APPLICATION

A. General: Apply paint according to manufacturer’s directions. Use applicators and techniques best suited for substrate and type of material being applied.

B. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.

C. Paint colors, surface treatments, and finishes are indicated in the schedules.

D. Provide finish coats that are compatible with primers used.

E. The number of coats and the film thickness required are the same regardless of the application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. Sand between applications where sanding is required to produce a smooth even surface according to the manufacturer’s directions.

F. Apply additional coats if undercoats, stains, or other conditions show through final coat of paint until paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners, receive a dry film thickness equivalent to that of flat surfaces.

G. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.

H. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.

I. Do not paint fire-treated plywood backboards to be used for telephone or electrical equipment unless permitted by authorities having jurisdiction.

J. Finish exterior doors on tops, bottoms, and side edges same as exterior faces.
K. Omit primer on metal surfaces that have been shop-primed and touch-up painted.

3.6 SCHEDULING PAINTING

A. Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

B. Allow sufficient time between successive coats to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.

3.7 APPLICATION PROCEDURES

A. Apply paints and coatings by brush, roller, spray, or other applicators according to the manufacturer's directions.

B. Brushes: Use brushes best suited for the material applied.

C. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.

D. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required.

E. Minimum Coating Thickness: Apply materials no thinner than the manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.

F. Block Fillers: Apply block fillers to concrete at a rate to ensure complete coverage with pores filled.

G. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime-coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

H. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling such as laps, irregularity in texture, skid marks, or other surface imperfections.

I. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with specified requirements.

J. Painted surface shall be considered unacceptable if any of the following are evident under final lighting source (including daylight) for interior surfaces:
   1. Visible defects are evident on vertical surfaces when viewed at normal viewing angles from a distance of not less than 39-inches (1000 mm).
   2. Visible defects are evident on horizontal surfaces when viewed at normal viewing
3. Visible defects are evident on ceiling, soffit and other overhead surfaces when viewed at normal viewing angles.

4. When the final coat on any surface exhibits a lack of uniformity of color, sheen, texture, and hiding across full surface area.

5. Coating exhibits lack of full adhesion to surfaces, including but not limited to bubbling, peeling, chipping, and other adhesion defects.

3.8 CLEANING

A. Construction Waste Management: Manage construction waste in accordance with provisions of Section 017419 Construction Waste Management.

B. Cleanup: At the end of each work day, remove empty cans, rags, rubbish, and other discarded paint materials from the site.

C. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.9 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.

B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

C. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.10 PAINT SYSTEMS SCHEDULES

A. Schedule: Only major areas are scheduled. Treat miscellaneous and similar items and areas within room or space with similar system.

B. Number of Coats: Where number of coats is specified, it is only as a minimum requirement. Apply additional coats, at no additional cost to Owner, if necessary to completely hide base material, produce uniform color, and provide satisfactory finish result.

C. Systems Specifications: These specifications are a guide and are meant to establish procedure and quality. Confer with Architect to determine exact finish desired.

D. Acceptance of Final Colors: Do not apply final coats of paint for either exterior and interior systems until colors have been accepted by Architect.

E. Painted surfaces shall be considered unacceptable, as judged solely by the Architect, if any of the following are evident under natural lighting source for exterior surfaces and final lighting source (including daylight) for interior surfaces:

1. Visible defects are evident on vertical surfaces when viewed at normal viewing angles from a distance of not less than 39-inches (1000 mm).

2. Visible defects are evident on horizontal surfaces when viewed at normal viewing
angles from a distance of not less than 39-inches (1000 mm).
3. Visible defects are evident on ceiling, soffit and other overhead surfaces when viewed at normal viewing angles.
4. When the final coat on any surface exhibits a lack of uniformity of color, sheen, texture, and hiding across full surface area.
5. Coating exhibits lack of full adhesion to surfaces, including but not limited to bubbling, peeling, chipping, and other adhesion defects.

3.11 EXTERIOR FINISH SCHEDULE

A. References used in this schedule are based on systems described in the Painting and Decorating Contractors of America, Master Painters Institute, Architectural Painting Specification Manual (MPI).

B. Steel - Unprimed:
1. W.B. Light Industrial Coating (over waterborne primer): MPI EXT 5.1B
   c. Topcoat: W.B. Light Industrial Coating (semi-gloss).

C. Steel - Primed:
1. Quick Dry Enamel System: MPI EXT 5.1A.

D. Steel - Primed:
1. Polyurethane, Pigmented (over Epoxy): MPI EXT 5.1H.
   c. Topcoats (two): Polyurethane (semi-gloss).

E. Steel Pipe Railings:
1. Latex (over Waterborne Primer): MPI EXT 5.3H

F. Plaster:
1. Latex Paint over Alkali-Resistant Primer System: MPI EXT 9.1C.
   a. Prime Coat: As recommended by manufacturer of topcoat.
   b. Intermediate Coat: As recommended by manufacturer, matching topcoat.
   c. Topcoat: Elastomeric.

3.12 INTERIOR FINISH SCHEDULE

A. References used in this schedule are based on systems described in the Painting and Decorating Contractors of America, Master Painters Institute, Architectural Painting Specification Manual (MPI).

B. Steel – Primed:
1. Latex (over alkyd primer): MPI INT 5.1Q
   c. Topcoat: Interior latex (semi-gloss).

C. Concrete (Vertical Conditions):
   1. Latex (over sealer): MPI INT 3.1A; factory-formulated alkali-resistant acrylic-latex
      interior primer.
      c. Topcoat: Interior latex (flat).

D. Gypsum Board Walls:
   1. Latex System: MPI INT 9.2A.
      c. Topcoat: Interior latex (low sheen).

E. Gypsum Board Ceilings:
   1. Latex (over latex sealer): MPI INT 9.2A.
      c. Topcoat: Interior latex (flat).

F. Stained Wood Chair Rails, Wood Caps, and Wood Base:
   1. Polyurethane Varnish (over stain): MPI INT 6.3E
      a. Primer: Wood stain to match existing.
      c. Topcoat: Two coats polyurethane varnish (sheen to match existing

END OF SECTION 099100
SECTION 26 05 00 - COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 SUMMARY

A. This Section covers general work of all Sections under Division 26.

B. Provide a complete working electrical installation with all equipment called for in proper operating condition. Documents do not undertake to show or list every item to be provided. When an item not shown or listed is clearly necessary for proper operation of equipment which is shown or listed, provide the item which will allow the system to function properly at no increase in Contract Price.

1.2 REFERENCES

A. The General Conditions, Supplementary Conditions, and applicable portions of Divisions 01 and 26 apply to the work of this Section as if printed herein.

1.3 SUBMITTALS

A. Forward all submittals in related groups. Individual or incomplete submittals are not acceptable.

B. Identify each item by manufacturer, brand, trade name, number, size, rating, or whatever other data is necessary to properly identify and check materials and equipment.

C. Identify each submittal item by reference to Specification Section paragraph in which item is specified or Drawing and Detail number.

D. Organize submittals in same sequence as they appear in Specification Sections, articles or paragraphs.

E. Shop Drawings shall show physical arrangement, construction details and finishes.
   1. Drawings shall be drawn to scale and dimensioned where applicable.
   2. Catalog cuts and published material may be included to supplement scale drawings.

F. Internal wiring diagrams of equipment shall show wiring as actually furnished for this project with all optional items clearly identified as included or excluded. Clearly identify external wiring connections. Identify and obliterate superfluous material.

G. Binders: Prepare submittal material in accordance with the following:
   1. Insert all literature in standard 3-ring binders for 8-1/2 inch by 11 inch pages with individual tabs. Do not staple literature on different products together.
   2. Number all binders on the outside of the cover and indicate the Specification Section. Mark Binder No. 1 Architect's copy and No. 2 Engineer's copy. Both of these binders shall contain original manufacturer's literature.
   3. Provide an index with binder. This index shall follow the same sequence as the Specifications.
H. Submittal literature, drawings and wiring diagrams shall be specifically applicable to this Project and shall not contain extraneous material or optional choices. Clearly mark literature to indicate the proposed item. Submittals shall include, but not be limited to those items listed in individual Sections.

1. Include all physical and performance data, including materials, manufacturer's names, model numbers, weights, sizes, capacities, performance curves, finishes, colors, accessories and all other data required to completely describe equipment and to indicate complete compliance with Specifications and Drawings.

2. Include with complete submittals above, complete, large scale, dimensioned Shop Drawings, certified by manufacturer, of all major equipment and other equipment as directed by Architect.

I. Resubmittals will be reviewed for compliance with comment made on the original submittal only and should be marked with a resubmittal number and dated.

J. Operating & Maintenance Instructions and Manuals:

1. Subsequent to final completions and testing operations, this Division is responsible for instructing the Owner's authorized representatives in operation, adjustment and maintenance of electrical plant.

2. Submit three (3) copies of certificate, signed by Owner's Representatives, attesting to their having been instructed.

3. Before Owner's personnel assume operation of systems, submit three (3) sets of operating maintenance manuals. Bind data in vinyl covered loose-leaf binders with title index tabs identifying items therein to include:
   a. Fire Alarm and Smoke Detection System
   b. Miscellaneous Signal Systems.

4. Provide two (2) full size prints of Record Drawing One-Line Diagram, in metal frame with glass front. Obtain record drawing prints from Architect at Contractor's cost and have prints framed in location as directed.

K. Submit as-built drawings showing actual constructed conditions, in accordance with the provisions of Section 01720.

1.4 QUALITY ASSURANCE

A. Materials and Systems:

1. Labels: Provide materials listed and labeled by Underwriters' Laboratories or testing firm acceptable to authority having jurisdiction, where listing service is normally provided for product.

2. Materials: Provide new and ship to jobsite in original manufacturer's containers or bundles.

B. Workmanship: Arrange work to obtain coordinated installation.

C. Code Compliance: Comply with applicable codes, laws, rules, regulations, and standards of applicable code-enforcing authorities.
D. References and Standards: All materials and equipment shall comply with all applicable standards and requirements of the standards listed below. Nothing in the Drawings or Specifications shall be construed to permit Work not conforming to applicable laws, ordinances, rules and regulations. It is not the intent of Drawings or Specifications to repeat requirements of codes except where necessary for completeness or clarity.

2. Association of Edison Illuminating Companies (AEIC).
3. Insulated Cable Engineers Association (ICEA).
4. Institute of Electrical and Electronics Engineers (IEEE).
5. National Electrical Manufacturer's Association (NEMA).
6. Underwriters' Laboratories, Inc. (UL).

E. Codes and regulations noted in other Sections in Division 26, applicable State and Local Codes and Ordinances. If any of the requirements of the above are in conflict with one another, or with the requirements of these specifications, the most stringent requirement shall govern.

1.5 DELIVERY, STORAGE AND HANDLING

A. Protect from loss or damage. Replace lost or damaged materials and equipment with new at no increase in Contract Sum.

1.6 DRAWINGS AND COORDINATION WITH OTHER WORK

A. Drawings:
1. For purposes of clarity, legibility, Drawings are essentially diagrammatic.
2. Exact routing of wiring and locations of outlets, panels, etc., shall be governed by structural conditions, obstructions and existing conditions. Architect reserves right, at no in- crease in price, to make any reasonable change in locations of electrical items, exposed at ceiling and/or on walls, to group them into orderly relationships and/or increase their utility. Contractor shall verify Architect's requirements in this regard prior to roughing-in.
3. Dimensions, location of doors, partitions, and similar physical features shall be taken from Architectural Drawings for exact location of outlets to center with Architectural features, panels, etc., at the approximate location shown on Electrical Drawings.
4. Mounting heights of brackets, outlets, etc., shall be as required to suit equipment served.
5. Drawings indicate, generally, routes of all branch circuits. All runs to panels are indicated as starting from nearest outlet, pointing in direction of panel. Continue all such circuits to panel as though routes were indicated in their entirety.
B. Coordination:
1. Work out all "tight" conditions involving Work under this Division and Work in other Divisions in advance of installation. If necessary, and before Work proceeds in these areas, prepare supplementary Drawings under this Division for review, showing all Work in "tight" area. Provide supplementary Drawings and additional Work necessary to overcome "tight" conditions.
2. Differences or disputes concerning coordination, interference or extent of Work between Divisions shall be decided by Contractor. His decision, if consistent with Contract Documents requirements, shall be final.
3. Coordinate electrical power and control wiring requirements of mechanical equipment with Division 23.
4. Where conflict exists between rough-in shown on drawings and that shown or required by equipment to be installed, obtain clarification from Architect and provide rough-in as directed.
5. Provide templates, information and instructions to other Divisions to properly locate holes and openings to be cut or provided for Electrical Work.
6. Coordinate chases, slots, inserts, sleeves, and openings for electrical supports, raceways, and cable with general construction work.
7. Sequence, coordinate, and integrate installing electrical materials and equipment for efficient flow of the Work. Coordinate installing large equipment that requires positioning before closing in the building.
8. Coordinate location of access panels and doors for electrical items that are concealed by finished surfaces.
9. Where electrical identification devices are applied to field-finished surfaces, coordinate installation of identification devices with completion of finished surface.

C. Equipment Rough-In:
1. Rough-in locations shown on Electrical Drawings for equipment furnished by Owner and for equipment furnished under other Divisions are approximate only.
   a. Obtain exact rough-in locations from following sources:
      1) From shop drawings for Contractor-furnished and installed equipment.
      2) From Architect for Owner-furnished Contractor-installed equipment.
2. Verify electrical characteristics of equipment before starting rough-in. Where conflict exists between equipment and rough-in shown on Drawings obtain clarification from Architect and provide as directed.
3. Unless otherwise shown or specified, provide direct raceway and conductor connections from building wiring system to equipment terminals for direct connected equipment which is Contractor furnished and Contractor installed, Owner furnished and Contractor installed.
4. Provide plug-in receptacle cap for cord connected equipment which is Contractor furnished and Contractor installed, Owner furnished and Contractor installed. Provide new cord and cap if required on Owner furnished and Contractor installed equipment.
5. Provide disconnect switches, flush type in finished spaces, where shown or required by code for direct connected equipment.
PART 2 - PRODUCTS

2.1 MATERIALS FURNISHED

A. New, bearing label of Underwriter's Laboratories, or other testing laboratory acceptable to authority having jurisdiction, where labeling exists for the class of equipment.

B. Provide equipment of one manufacturer, alike in appearance and function.

C. For equipment specified by manufacturer's number, include all accessories, controls, etc., listed in catalogue as standard with equipment. Furnish optional or additional accessories as specified.

D. Where no specific make of material or equipment is mentioned, use any product of reputable manufacturer which conforms to requirements of system and other applicable specification sections.

E. Equipment and material damaged during transportation, installation, or operation is considered as totally damaged. Replace with new. Variance from this permitted only with written approval.

F. Provide an authorized representative to constantly supervise Work of this Division, check all materials prior to installation for conformance with Drawings, Specifications, and reviewed Shop Drawings.

2.2 SUPPORTING DEVICES

A. Material: Cold-formed steel, with corrosion-resistant coating.

B. Metal Items for Use Outdoors or in Damp Locations: Hot-dip galvanized steel.

C. Slotted-Steel Channel: Flange edges turned toward web, and 9/16-inch-diameter slotted holes at a maximum of 2 inches o.c., in webs. Strength rating to suit structural loading.

D. Slotted Channel Fittings and Accessories: Recommended by the manufacturer for use with the type and size of channel with which used.
   1. Materials: Same as channels and angles, except metal items may be stainless steel.

E. Raceway and Cable Supports: Manufactured clevis hangers, riser clamps, straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets, and spring-steel clamps or click-type hangers.

F. Pipe Sleeves: ASTM A 53, Type E, Grade A, Schedule 40, galvanized steel, plain ends.

G. Cable Supports for Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug for non-armored electrical cables in riser conduits. Plugs have number and size of conductor gripping holes as required to suit individual risers. Body constructed of malleable-iron casting with hot-dip galvanized finish.
H. Expansion Anchors: Carbon-steel wedge or sleeve type.
I. Toggle Bolts: All-steel springhead type.

2.3 ELECTRICAL IDENTIFICATION

A. Colored Adhesive Marking Tape for Raceways, Wires, and Cables: Self-adhesive vinyl tape, not less than 1 inch wide by 3 mils thick.
B. Tape Markers for Conductors: Vinyl or vinyl-cloth, self-adhesive, wraparound type with pre-printed numbers and letters.
C. Color-Coding Cable Ties: Type 6/6 nylon, self-locking type. Colors to suit coding scheme.
D. Underground Warning Tape: Permanent, bright-colored, continuous-printed, vinyl tape compounded for permanent direct-burial service, and with the following features:
   1. Not less than 6 inches wide by 4 mils thick.
   2. Embedded continuous metallic strip or core.
   3. Printed legend that indicates type of underground line.
E. Engraved-Plastic Labels, Signs, and Instruction Plates: Engraving stock, melamine plastic laminate punched or drilled for mechanical fasteners 1/16-inch minimum thickness for signs up to 20 sq. in. and 1/8-inch minimum thickness for larger sizes. Engraved legend in black letters on white background.
F. Warning and Caution Signs: Preprinted; comply with 29 CFR 1910.145, Chapter XVII. Colors, legend, and size appropriate to each application.
   1. Interior Units: Aluminum, baked-enamel-finish, punched or drilled for mechanical fasteners.
   2. Exterior Units: Weather-resistant, non-fading, preprinted, cellulose-acetate butyrate with 0.0396-inch, galvanized-steel backing. 1/4-inch grommets in corners for mounting.
G. Fasteners for Nameplates and Signs: Self-tapping, stainless-steel screws or No. 10/32 stainless-steel machine screws with nuts and flat and lock washers.
H. Electrical Outlets: Dymo labels, self-adhesive.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Manufacturer’s Directions: Follow in all cases where manufacturers of articles used furnish directions covering points not specified or shown.
B. Equipment: Accurately set and leveled with supports neatly placed and properly fastened as shown and specified. Provide means of bringing in and installing equipment into position in side building. Install to facilitate service, maintenance and
repair or replacement of components. Connect for ease of disconnecting with minimum interference with other installations.

C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom.

D. Materials and Components: Install level, plumb, and parallel and perpendicular to other building systems and components, unless otherwise indicated.

E. Right of Way: Give to raceways and piping systems installed at a required slope.

F. Conduit Systems:
   1. Worked into complete, integrated arrangement with like elements to make Work neat appearing, finished.
   2. Run concealed, except as shown or noted otherwise. Where exposed, install parallel with walls or structural elements: vertical runs plumb; horizontal runs level or parallel with structure as appropriate; groups racked together neatly with straight runs and bends both parallel and uniformly spaced.
   3. Install as high as practicable to maintain adequate head room shown or required. Coordinate with Work of other Divisions to achieve proper headroom.
   4. Flash and counter-flash all conduits through roof.
   5. Clearance: Do not obstruct spaces required by code in front of electrical equipment, access doors, etc.

G. Penetrations:
   1. Pack space between conduit, sleeve in walls with non-combustible materials.
   2. Make penetrations through floors water-tight with non-hardening sealant even though concealed within wall or furred space.
   3. Make penetrations through any damp-proofed/water-proofed surfaces damp-proof/waterproof by appropriate means to maintain integrity of system penetrated.
   4. Seal around penetrations with fireproofing material to maintain integrity of fire rating where occurs.

H. Provide shrouds at light fixtures, electrical panel-boards and like items to maintain integrity of rated wall or ceiling construction.

I. Hangers, Supports, Anchors and Chases:
   1. Provide complete as required for installation of Electrical Work.
   2. Equipment to be of metal only: no wood or combustible material will be permitted including supports for outlet boxes.
   3. Hangers, anchors and supports for conduit runs: As specified.
   4. Provide concrete insets for attachment of hangers; subject to structural engineer's review.
   5. Provide anchors for floor and wall mounted equipment.
   6. Provide supports for wall mounted equipment.

3.2 ELECTRICAL SUPPORTING DEVICE APPLICATION

A. Damp Locations and Outdoors: Hot-dip galvanized materials or nonmetallic, slotted channel system components.
B. Dry Locations: Steel materials.
   1. Strength of Supports: Adequate to carry present and future loads, times a safety factor of at least four with, 200-lb minimum design load for each support element.

3.3 SUPPORT INSTALLATION

A. Support parallel runs of horizontal raceways together on trapeze- or bracket-type hangers.

B. Size supports for multiple raceway or cable runs so capacity can be increased by a 25 percent minimum in the future.

C. Support individual horizontal single raceways with separate, malleable-iron pipe hangers or clamps except use spring-steel fasteners for 1-1/2-inch and smaller single raceways above suspended ceilings and for fastening raceways to slotted channel and angle supports.

D. Install sleeves for cable and raceway penetrations of concrete slabs and walls unless core-drilled holes are used. Install sleeves for cable and raceway penetrations of masonry and fire-rated gypsum walls and of all other fire-rated floor and wall assemblies. Install sleeves during erection of concrete and masonry walls.

E. Secure electrical items and their supports to building structure, using the following methods unless other fastening methods are indicated:
   1. Wood: Wood screws or screw-type nails.
   2. Gypsum Board: Toggle bolts. Seal around sleeves with joint compound, both sides of wall.
   3. Masonry: Toggle bolts on hollow block and expansion bolts on solid block. Seal around sleeves with mortar, both sides of wall.
   4. New Concrete: Concrete inserts with machine screws and bolts.
   5. Existing Concrete: Expansion bolts.
      a. Comply with AWS D1.1 for field welding.
   7. Light Steel Framing: Sheet metal screws.
  10. Fasteners: Select so load applied to each fastener does not exceed 25 percent of its proof-test load.

3.4 IDENTIFICATION MATERIALS AND DEVICES

A. Install at locations for most convenient viewing without interference with operation and maintenance of equipment.

B. Coordinate names, abbreviations, colors, and other designations used for electrical identification with corresponding designations indicated in the Contract Documents or required by codes and standards. Use consistent designations throughout Project.

C. Self-Adhesive Identification Products: Clean surfaces before applying.

D. Tag and label circuits designated to be extended in the future. Identify source and circuit numbers in each cabinet, pull and junction box, and outlet box. Color-coding may be used for voltage and phase identification.
E. Install continuous underground plastic markers during trench backfilling, for exterior underground power, control, signal, and communication lines located directly above power and communication lines. Locate 6 to 8 inches below finished grade. If width of multiple lines installed in a common trench or concrete envelope does not exceed 16 inches, overall, use a single line marker.

F. Install warning, caution, and instruction signs where required to comply with 29 CFR 1910.145, Chapter XVII, and where needed to ensure safe operation and maintenance of electrical systems and of items to which they connect. Indoors install engraved plastic-laminated instruction signs with approved legend where instructions are needed for system or equipment operation. Install metal-backed butylate signs for outdoor items.

G. Install engraved-laminated emergency-operating signs with white letters on red background with minimum 3/8-inch-high lettering for emergency instructions on power transfer, load shedding, and other emergency operations.

3.5 FIRESTOPPING

A. Apply firestopping to cable and raceway sleeves and other penetrations of fire-rated floor and wall assemblies to restore original undisturbed fire-resistance ratings of assemblies.

3.6 CONCRETE BASES

A. Construct concrete bases of dimensions indicated, but not less than 4 inches larger, in both directions, than supported unit. Follow supported equipment manufacturer's anchorage recommendations and setting templates for anchor-bolt and tie locations, unless otherwise indicated.

3.7 DEMOLITION

A. Protect existing electrical equipment and installations indicated to remain. If damaged or disturbed in the course of the Work, remove damaged portions and install new products of equal capacity, quality, and functionality.

B. Accessible Work: Remove exposed electrical equipment and installations, indicated to be demolished, in their entirety.

C. Abandoned Work: Cut and remove buried raceway and wiring, indicated to be abandoned in place, 2 inches below the surface of adjacent construction. Cap raceways and patch surface to match existing finish.

D. Remove, store, clean, reinstall, reconnect, and make operational components indicated for relocation.

3.8 CUTTING AND PATCHING

A. Do all cutting, repairing, including structural reinforcing, necessary for Work under this Division. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces required to permit electrical installations. Perform cutting by skilled mechanics of trades involved.
B. Do not do any cutting or patching without approval. Repair, refinish and touch up disturbed finish materials and other surfaces to match adjacent undisturbed surfaces equal to original condition in Architect’s opinion.

3.9 TESTING AND ADJUSTING

A. Furnish all labor and test equipment required under this Division.

B. Test panels and branch circuits for grounds or shorts. Repair defective wiring as required.

C. Test each individual circuit at panel for proper operation.

D. Upon completion of Work, make final inspection; operate equipment under normal conditions, to satisfaction of Architect.

E. At completion of Work, provide written certification that all systems are functioning properly without defects.

F. Test all feeders for line-to-ground and line-to-line resistance with a 500 VDC motor driven "Megger". Minimum acceptable resistance is 100 meg-ohms. Schedule all feeders and indicate line-to-ground and line-to-line resistances. Have all tests witnessed by Architect or his authorized representative.

G. Perform testing at a time suitable to the Architect and Owner. Advise the Architect a minimum of two weeks prior to testing so that he can arrange to be present if he desires.

H. Provide for Grounding System: Test for ground currents with all equipment energized. Include ground impedance test by 2 or 3 point fall-of-potential method.

I. Submit six (6) sets of test reports for review.

3.10 CLEANING AND PAINTING

A. Properly prepare Work under this Division to be finish painted under Section 099113.

B. Refinish Work supplied with final finish under this Division if damaged under this Division to satisfaction of Architect.

C. After other Work is accomplished, clean exposed conduit, panels (interiors and exteriors), fixtures, equipment and leave in satisfactory condition.

3.11 VOLTAGE CHECK

A. At completion of job, check voltage at several points of utilization on the system which has been installed under this Contract. During test, energize all installed loads.

B. Adjust taps on transformers to give proper voltage, which is 118 to 122 volts for 120-volt nominal systems and proportionately equivalent for higher voltage systems. If proper voltage cannot be obtained, inform the Architect and the Owner.

END OF SECTION
SECTION 26 05 03 - EQUIPMENT WIRING CONNECTIONS

PART 1 - GENERAL

1.1 SUMMARY
A. Section includes electrical connections to equipment.
B. Related Sections:
   1. Section 260519 - Low-Voltage Electrical Power Conductors and Cable.

1.2 REFERENCES
A. National Electrical Manufacturers Association:
   1. NEMA WD 1 - General Requirements for Wiring Devices.
   2. NEMA WD 6 - Wiring Devices-Dimensional Requirements.

1.3 SUBMITTALS
A. Section 00800 - Submittal Procedures.
B. Product Data: Submit wiring device manufacturer’s catalog information showing dimensions, configurations, and construction.
C. Manufacturer's installation instructions.

1.4 CLOSEOUT SUBMITTALS
A. Section 00800 - Execution and Closeout Procedures.

1.5 COORDINATION
A. Obtain and review shop drawings, product data, manufacturer’s wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.
B. Determine connection locations and requirements.
C. Sequence rough-in of electrical connections to coordinate with installation of equipment.
D. Sequence electrical connections to coordinate with start-up of equipment.

PART 2 - PRODUCTS

2.1 CORD AND PLUGS
A. Manufacturers:
   1. Leviton.
   2. Arrow Hart.
   4. Eagle.
B. Attachment Plug Construction: Conform to NEMA WD 1.
C. Configuration: NEMA WD 6; match receptacle configuration at outlet furnished for equipment.

D. Cord Construction: Type SO multi-conductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.

E. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify equipment is ready for electrical connection, for wiring, and to be energized.

3.2 EXISTING WORK

A. Remove exposed abandoned equipment wiring connections, including abandoned connections above accessible ceiling finishes.

B. Disconnect abandoned utilization equipment and remove wiring connections. Remove abandoned components when connected raceway is abandoned and removed. Install blank cover for abandoned boxes and enclosures not removed.

C. Extend existing equipment connections using materials and methods compatible with existing electrical installations.

3.3 INSTALLATION

A. Make electrical connections.

B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.

C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.

D. Install receptacle outlet to accommodate connection with attachment plug.

E. Install cord and cap for field-supplied attachment plug.

F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.

G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.

H. Install terminal block jumpers to complete equipment wiring requirements.

I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.
J. Coolers and Freezers: Cut and seal conduit openings in freezer and cooler walls, floor, and ceilings.

3.4 ADJUSTING

A. Section 00800 - Execution and Closeout Procedures.

B. Cooperate with utilization equipment installers and field service personnel during checkout and starting of equipment to allow testing and balancing and other startup operations. Provide personnel to operate electrical system and checkout wiring connection components and configurations.
SECTION 26 05 19- LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes building wire and cable; nonmetallic-sheathed cable; direct burial cable; service entrance cable; armored cable; metal clad cable; and wiring connectors and connections.

1.2 REFERENCES

A. International Electrical Testing Association:

B. National Fire Protection Association:
   2. NFPA 262 – Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air Handling Spaces.

C. Underwriters Laboratories, Inc.:
   1. UL 1277 – Standard for Safety for Electrical Power and Control Tray Cables with Optional Optical-Fiber Members.

1.3 SYSTEM DESCRIPTION

A. Product Requirements: Provide products as follows:
   1. Solid conductor for feeders and branch circuits 10 AWG and smaller.
   2. Stranded conductor for feeders and branch circuits #8 AWG and larger.
   3. Stranded conductors for control circuits.
   4. Conductor not smaller than 12 AWG for power and lighting circuits.
   5. Conductor not smaller than 16 AWG for control circuits.
   6. 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.
   7. 10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 200 feet.

B. Wiring Methods: Provide the following wiring methods:
   1. Concealed Dry Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
   2. Exposed Dry Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
   3. Above Accessible Ceilings: Use only building wire, Type THHN/THWN insulation, in raceway.
   4. Wet or Damp Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
   5. Exterior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
   6. Underground Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
   7. Cable Tray Locations: Use only tray cable Type TC.

1.4 DESIGN REQUIREMENTS

A. Conductor sizes are based on copper. Aluminum conductors are not permitted.
1.5  SUBMITTALS
   A.  Section 00800 - Submittal Procedures.
   B.  Product Data:  Submit for building wire and each cable assembly type.
   C.  Test Reports:  Indicate procedures and values obtained.

1.6  CLOSEOUT SUBMITTALS
   A.  Section 00800 - Execution and Closeout Requirements: Requirements for submittals.
   B.  Project Record Documents: Record actual locations of components and circuits.

1.7  QUALIFICATIONS
   A.  Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.8  FIELD MEASUREMENTS
   A.  Verify field measurements are as indicated on Drawings.

1.9  COORDINATION
   A.  Section 00800 - Administrative Requirements: Requirements for coordination.
   B.  Where wire and cable destination is indicated and routing is not shown, determine routing and lengths required.

PART 2 - PRODUCTS

2.1  BUILDING WIRE
   A.  Manufacturers:
      1.  Rome Cable.
      2.  Superior Essex.
      4.  General Cable.
      5.  Substitutions: Section 00800 - Product Requirements.
   B.  Product Description: Single conductor insulated wire.
   C.  Conductor: Copper.
   D.  Insulation: CEC; Type THHN/THWN 600 V insulation rated 75 degrees C for feeders and branch circuits larger than 2 AWG; Type THHN/THWN 600 V insulation rated 60 degrees C for feeders and branch circuits 1 AWG and smaller.

2.2  ARMORED CABLE
   A.  Manufacturers:
1. Diamond Wire & Cable Co.
2. Essex Group Inc.
3. General Cable Co.
4. Substitutions: Section 00800 - Product Requirements.

B. Conductor: Copper for sizes smaller than 4 AWG.

C. Insulation Voltage Rating: 600 volts.

D. Insulation Temperature Rating: 60 degrees C.

E. Insulation Material: Thermoplastic.

F. Armor Material: Steel.

G. Armor Design: Interlocked metal tape.

2.3 METAL CLAD CABLE

A. Manufacturers:
   1. Diamond Wire & Cable Co.
   2. Essex Group Inc.
   3. General Cable Co.
   4. Substitutions: Section 00800 - Product Requirements.

B. Conductor: Copper for sizes smaller than 4 AWG.

C. Insulation Voltage Rating: 600 volts.

D. Insulation Temperature Rating: 60 degrees C.

E. Insulation Material: Thermoplastic.

F. Armor Material: Steel.

G. Armor Design: Interlocked metal tape.

H. Jacket: PVC.

2.4 TRAY CABLE

A. Manufacturers:
   1. Rome Cable Company.
   2. Substitutions: Section 00800 - Product Requirements.

B. Product Description: Multiconductor power and control cable NFPA 70 Type TC.

C. Conductor: Copper.

D. Insulation: Flame-retardant cross-linked polyethylene.

E. Overall Jacket: Polyvinyl Chlorine (PVC) in accordance with UL 1277.

F. Insulation Voltage Rating: 600 volts.
G. Insulation Temperature Rating: 90 degrees C.

H. Listings: Finished cable UL listed as Type TC, and sunlight resistant.

2.5 WIRING CONNECTORS

A. Split Bolt Connectors:
   1. ILSCO Model SK.
   2. Burndy Model KSU.
   3. Blackburn Model HPS.

B. Solderless Pressure Connectors:
   1. ILSCO Model SLUH.
   2. Burndy Model KA-U.
   3. Panduit Model LAM.

C. Compression Connectors:
   1. ILSCO Model CRL.
   2. Burndy Model HYLUG/HYLINK.
   3. Blackburn Model ATL.

2.6 TERMINATIONS

A. Terminal Lugs for Wires 6 AWG and Smaller: Solderless, compression type copper.

B. Lugs for Wires 4 AWG and Larger: Color keyed, compression type copper, with insulating sealing collars.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 00800 - Administrative Requirements: Coordination and project conditions.

B. Verify interior of building has been protected from weather.

C. Verify mechanical work likely to damage wire and cable has been completed.

D. Verify raceway installation is complete and supported.

3.2 PREPARATION

A. Completely and thoroughly swab raceway before installing wire.

3.3 INSTALLATION

A. Route wire and cable to meet Project conditions.

B. Neatly train and lace wiring inside boxes, equipment, and panelboards.
C. Identify and color code wire and cable. Identify each conductor with its circuit number or other designation indicated.

D. Special Techniques--Building Wire in Raceway:

E. Pull conductors into raceway at same time.

F. Install building wire 4 AWG and larger with pulling equipment.

G. Special Techniques - Cable:
   1. Protect exposed cable from damage.
   2. Support cables above accessible ceiling, using spring metal clips or plastic cable ties to support cables from structure. Do not rest cable on ceiling panels.
   3. Use suitable cable fittings and connectors.

H. Special Techniques - Wiring Connections:
   1. Clean conductor surfaces before installing lugs and connectors.
   2. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
   3. Tape uninsulated conductors and connectors with electrical tape to 150 percent of insulation rating of conductor.
   4. Install split bolt connectors for conductor splices and taps, 6 AWG and larger.
   5. Install solderless pressure connectors with insulating covers for conductor splices and taps, 8 AWG and smaller.

I. Install solid conductor for feeders and branch circuits 10 AWG and smaller.

J. Install solid conductors for branch circuits 10 AWG and smaller. However, when stranded conductors are used in lieu of solid, then install crimp on fork terminals for device terminations. Do not place bare stranded conductors directly under screws.

K. Install terminal lugs on ends of 600 volt wires unless lugs are furnished on connected device, such as circuit breakers.

L. Size lugs in accordance with manufacturer’s recommendations terminating wire sizes. Install 2-hole type lugs to connect wires 4 AWG and larger to copper bus bars.

M. For terminal lugs fastened together such as on motors, transformers, and other apparatus, or when space between studs is small enough that lugs can turn and touch each other, insulate for dielectric strength of 2-1/2 times normal potential of circuit.

3.4 WIRE COLOR

A. General
   1. For wire sizes 10 AWG and smaller, install wire colors in accordance with the following:
      a. Black, red, and blue for circuits at 120/208 volts single or three phase.
   2. For wire sizes 8 AWG and larger, identify wire with colored tape at terminals, splices and boxes. Colors are as follows:
      a. Black, red, and blue for circuits at 120/208 volts single or three phase.

B. Neutral Conductors: White. When two or more neutrals are located in one conduit, individually identify each with proper circuit number.
C. Branch Circuit Conductors: Install three or four wire home runs with each phase uniquely color coded.

D. Feeder Circuit Conductors: Uniquely color code each phase.

E. Ground Conductors:
   1. For 6 AWG and smaller: Green.
   2. For 4 AWG and larger: Identify with green tape at both ends and visible points including junction boxes.

3.5 FIELD QUALITY CONTROL

A. Section 00800 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Perform inspections and tests listed in NETA ATS, Section 7.3.1.

END OF SECTION
SECTION 26 27 26 - WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY
A. Section includes wall switches; wall dimmers; receptacles; and device plates and decorative box covers.

1.2 REFERENCES
A. National Electrical Manufacturers Association:
   1. NEMA WD 1 - General Requirements for Wiring Devices.
   2. NEMA WD 6 - Wiring Devices-Dimensional Requirements.

1.3 SUBMITTALS
A. Section 00800 - Administrative Requirements: Submittal Procedures.
B. Product Data: Submit manufacturer's catalog information showing dimensions, colors, and configurations.
C. Samples: Submit two samples of each wiring device and wall plate illustrating materials, construction, color, and finish.

1.4 QUALIFICATIONS
A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.5 EXTRA MATERIALS
A. Section 00800 - Execution and Closeout Requirements: Spare parts and maintenance products.
B. Furnish fifty of each style, size, and finish wall plate.

PART 2 - PRODUCTS

2.1 WALL SWITCHES
A. Manufacturers:
   1. Leviton.
   2. Hubbell.
   3. Pass & Seymour,
   4. Substitutions: Section 00800 - Product Requirements.

2.2 WALL SWITCHES
A. Product Description: NEMA WD 1, General-Duty, AC only general-use snap switch.
B. Body and Handle: Ivory plastic with toggle handle.

C. Indicator Light: Lighted handle type switch.

D. Locator Light: Lighted handle type switch.

E. Ratings:
   1. Voltage: 120-277 volts, AC.

F. Ratings: Match branch circuit and load characteristics.

2.3 WALL DIMMERS

A. Manufacturers:
   1. Leviton.
   2. Hubbell.
   4. Substitutions: Section 00800 - Product Requirements.

B. Product Description: NEMA WD 1, Type 1 semiconductor dimmer for incandescent or fluorescent lamps.

C. Body and Handle: Ivory plastic with linear slide.

D. Voltage: 120-277 volts.

E. Power Rating: Match load shown on drawings; 600 watts minimum.

F. Accessory Wall Switch: Match dimmer appearance.

2.4 RECEPTACLES

A. Manufacturers:
   1. Leviton.
   2. Hubbell.
   4. Substitutions: Section 00800 - Product Requirements.

B. Product Description: NEMA WD 1, Heavy-duty general use receptacle.

C. Device Body: Ivory nylon.

D. Configuration: NEMA WD 6, type as indicated on Drawings.

E. Convenience Receptacle: Type 5-20.

F. GFCI Receptacle: Convenience receptacle with integral ground fault circuit interrupter to meet regulatory requirements.

2.5 WALL PLATES

A. Manufacturers:
   1. Leviton.
2. Hubbell.
4. Substitutions: Section 00800 - Product Requirements.

B. Coverplate: 0.035 inch thick, satin-finished stainless steel.

C. Weatherproof Cover Plate: Gasketed cast metal plate with threaded and gasketed device cover.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 00800 - Administrative Requirements: Coordination and project conditions.
B. Verify outlet boxes are installed at proper height.
C. Verify wall openings are neatly cut and completely covered by wall plates.
D. Verify branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

3.2 PREPARATION

A. Clean debris from outlet boxes.

3.3 INSTALLATION

A. Install devices plumb and level.
B. Install switches with OFF position down.
C. Install wall dimmers to achieve full rating specified and indicated after derating for ganging as instructed by manufacturer.
D. Do not share neutral conductor on load side of dimmers.
E. Install receptacles with grounding pole on bottom.
F. Connect wiring device grounding terminal to outlet box with bonding jumper and branch circuit equipment grounding conductor.
G. Connect wiring devices by wrapping solid conductor around screw terminal. Install stranded conductor for branch circuits 10 AWG and smaller. When stranded conductors are used in lieu of solid, use crimp on fork terminals for device terminations. Do not place bare stranded conductors directly under device screws.
H. Use jumbo size plates for outlets installed in masonry walls.
I. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

3.4 INTERFACE WITH OTHER PRODUCTS
A. Coordinate locations of outlet boxes provided under Section 26 05 33 to obtain mounting heights as specified and as indicated on drawings.

B. Install wall switch 48 inches above finished floor to top of device.

C. Install convenience receptacle 15 inches minimum to bottom of device.

3.5 FIELD QUALITY CONTROL

A. Section 00800 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Inspect each wiring device for defects.

C. Operate each wall switch with circuit energized and verify proper operation.

D. Verify each receptacle device is energized.

E. Test each receptacle device for proper polarity.

F. Test each GFCI receptacle device for proper operation.

3.6 ADJUSTING

A. Section 00800 - Execution and Closeout Requirements: Testing, adjusting, and balancing.

B. Adjust devices and wall plates to be flush and level.

3.7 CLEANING

A. Section 00800 - Execution and Closeout Requirements: Final cleaning.

B. Clean exposed surfaces to remove splatters and restore finish.

END OF SECTION
GENERAL NOTES

1. WHERE EXISTING WORKS AFFECTS REMOVE. EXISTING WALL SURFACE SHALL BE PATCHED & PAINTED. CONSIDER REMOVING, REUSING BUT NOTwend TO REPAIR, STAINING AS REQUIRED. POINT EN TRAIL SURFACE FROM NATURAL ENTRANCE TO NATURAL EXIT (EXAMPLE, CORNER TO CORNER OR DOOR TO CEILING FOR OPEN WALL)

DOOR HARDWARE

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REMARKS

NEW CARD ACCESS TO REMAIN AS IS ONLY. MUST PROVIDE MANUAL ENTRY.

PROPOSED SECTION

PROPOSED PARTIAL PLAN

PARTIAL DEMO PLAN

PHOTO 1 - INTERIOR VIEW
SCALE: NO SCALE

PHOTO 2 - INTERIOR VIEW
SCALE: NO SCALE

PHOTO 3 - EXTERIOR VIEW
SCALE: NO SCALE

PHOTO 4 - EXTERIOR VIEW
SCALE: NO SCALE

PROJECT: CA REG.
FILE: DD 10/16/2015
PERMIT: 02/26/2016
BACKCHECK: 06/24/2016

CONTRA COSTA COLLEGE
C637
ACCESSIBLE DOOR OPERATOR CONVERSION

2600 WHEELER BLDG
SAN PABLO, CA 94806
DOOR HARDWARE

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GENERAL NOTES

1. WHEN EXISTING WORKER A, SERIES REMOVED OR PATCHED, THE PATCHED WALL/MASONRY SHALL BE PATCHED & FINISHED TO MATCH EXISTING. BLEEDING BUT NOT LIMITED TO: PAINTING, STAINING AS REQUIRED, PAINT OUT ANY SURFACE FROM NATURAL, BREA, MULTIPLE VARYING FROM SIDE TO SIDE OF FLOOR TO CEILING FOR GREEN WALL.

2. ISSUE DATE: 10/14/2015

3. PHOTO 1: INTERIOR VIEW

4. PHOTO 2: EXTERIOR VIEW

5. PROPOSED SECTION

6. PROPOSED PARTIAL PLAN

7. PARTIAL PLAN

8. PROPOSAL

9. FLOOR PLAN - GYMNASIUM

10. FLOOR STRIPPING OF PLAYING AREA

11. BOX STICK AND SQUEEZE MAIL CENTER VIA OVERHEAD MASONRY

12. FULL ENERGY DOOR OPERATOR, CONNECT ELECTRICAL, INSTALLATION AT 24" AJAX, PROVIDE & INSTALL NEW CONDUIT & WIRE, JUMP 1 POLE FLOOR BOX, FINALIZE ROUTING CONSIDER IN EXISTING CHEMICAL STORAGE.

13. CONTRA COSTA COLLEGE DISTRICT

CONTRA COSTA COLLEGE

C637

ACCESSIBLE DOOR OPERATOR CONVERSION

FLOOR PLANS, SECTION & PHOTOS - GYMNASIUM

A2.3

SAFETY DETECTION ZONE ACTIVATING DETECTION ZONE ACTIVATING DETECTION ZONE