



THE

GODDARD SCHOOL®

FOR EARLY CHILDHOOD DEVELOPMENT

PROJECT MANUAL & SPECIFICATIONS

FOR

THE GODDARD SCHOOL

870 Veterans Drive
Kyle, TX 78610

Date

11/21/2023

Version 7.0

BUILDING OWNER

Akbar Bhaidani

THE GODDARD SCHOOL

870 Veterans Drive
Kyle, TX 78610

FRANCHISOR

GODDARD SYSTEMS, INC.

1016 West Ninth Avenue
King of Prussia, Pennsylvania 19406

ARCHITECT

CASCO Diversified

12 Sunnen Drive Ste. 100
St. Louis, MO 63143

CIVIL ENGINEER

Flake Engineering

201 Grove Lane
Buda, TX 78611

SECTION 00 01 02 - PROJECT DIRECTORY

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Mark Spalinger

State License Number: 133654

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MECHANICAL ENGINEER-OF-RECORD

Margaret Boyer

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Telephone: (314) 821-1100

ELECTRICAL ENGINEER-OF-RECORD

David Tretter

State License Number: 106884

END OF DOCUMENT

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PROJECT DIRECTORY

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00 21 13	Instructions To Bidders
00 31 32	Geotechnical Data
00 41 00	Bid Forms
00 52 00	Agreement Forms
00 61 00	Bond Forms
00 72 00	General Conditions – resend with correct year
00 72 10	A201 General Conditions of the Contract for Construction - Commentary
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01 33 00	Submittal Procedures
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03 30 00	Cast-in-Place Concrete
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Not Used

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Not Used

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Division 26 — Electrical

26 00 00 Electrical
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Division 27 — Communications

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and process)

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Not Used

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Not Used

END OF SECTION

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30	Photometric Plans	11.21.23
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END OF SECTION

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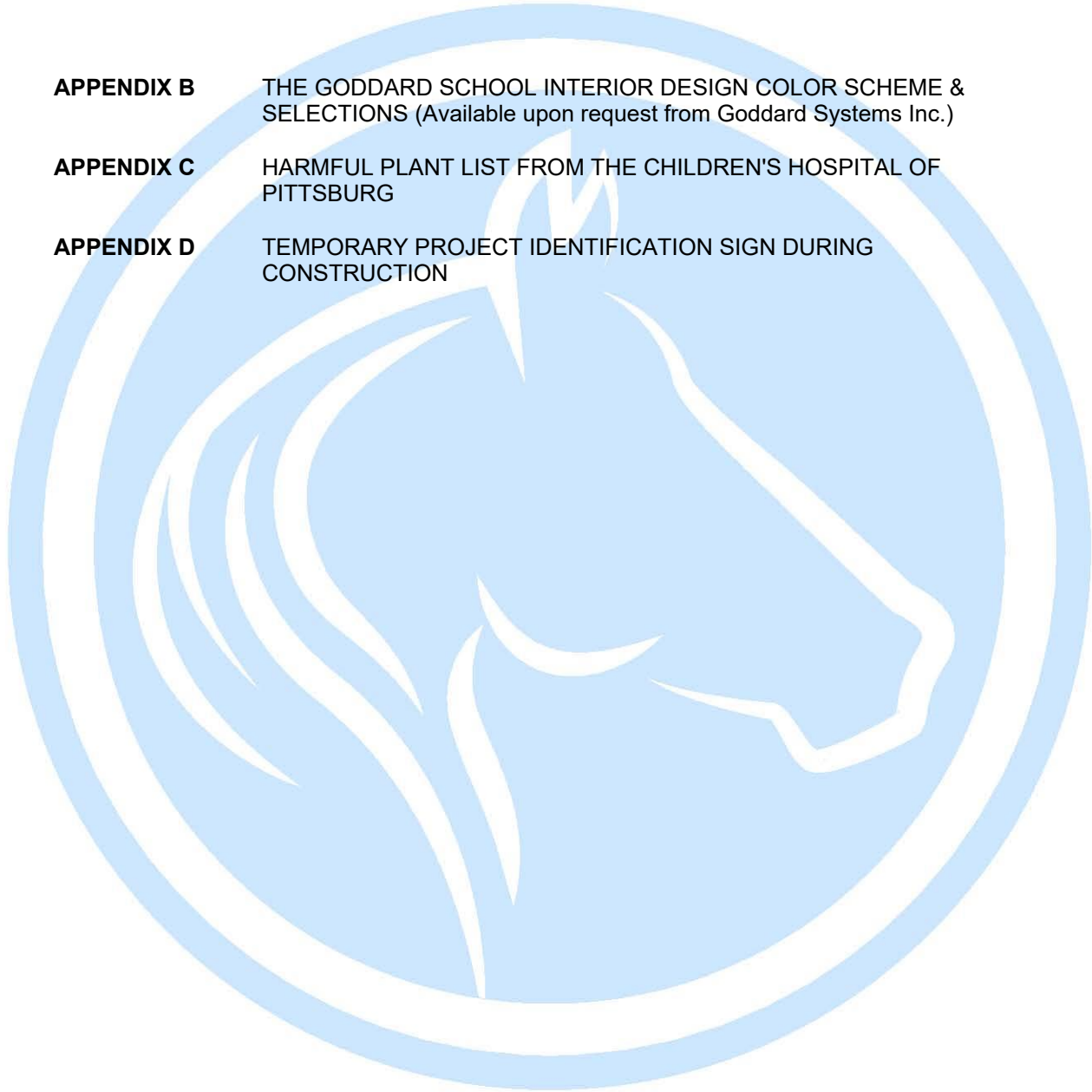
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LIST OF DRAWING SHEET

SECTION 00 01 25 – LIST OF APPENDICES

The Following APPENDICES are included at the end of this Section

- APPENDIX B** THE GODDARD SCHOOL INTERIOR DESIGN COLOR SCHEME & SELECTIONS (Available upon request from Goddard Systems Inc.)
- APPENDIX C** HARMFUL PLANT LIST FROM THE CHILDREN'S HOSPITAL OF PITTSBURG
- APPENDIX D** TEMPORARY PROJECT IDENTIFICATION SIGN DURING CONSTRUCTION



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LIST OF APPENDICES

SECTION 00 21 13 - INSTRUCTIONS TO BIDDERS

PART 1 – GENERAL

1. Project Name: **The Goddard School – KYLE, TX**
2. This document contains instructions to bidders for the project named above. This bidding document is not part of the Contract Documents, unless specifically referenced in the Owner/Contractor Agreement.
3. To obtain bidding documents contact:

Name:	Architect
Firm:	CASCO
Address:	12 Sunnen Dr. Suite 100
City, State, ZIP:	St. Louis, MO 63088
Telephone:	314-821-1100
Email:	Kristen.degreff@thecdcompanies.com
4. Submission of Bids: Submit Document 00 41 00 - Bid Form before the time and date below. Late submissions will not be considered. Submit bids in sealed and labeled envelopes with the project name and bidder's name on the outside of the envelope. Mark the envelope: "Bid Enclosed - Do Not Open". Include "Schedule of Values" for base bid proposal. Use CSI 50 division format in line with the provided project specifications.

Submit Bid To:	
Name:	Architect
Firm:	CASCO
Address:	12 Sunnen Dr. Suite 100
City, State, ZIP:	St. Louis, MO 63088

Date and Time of Day: December 12, 2023 at noon (CST).
6. A Bid Security or Bid Bond is not required.
7. A Performance Bond and Payment Bond is not required by the Owner as a condition of the award. Additional information will be distributed detailing such requirements, if any.
8. Oral, written, or telecopied modifications to bids will not be considered. Modifying or qualifying statements of any kind shall be on a separate sheet and submitted in the same envelope with the bid.
9. The Owner reserves the right to reject or accept any or all bids or to enter into negotiations with any bidder for all or part of the bid detail. The Owner reserves the right to waive any alleged breach of technicality.
10. The Owner reserves the right to modify the Contract Documents and rebid the project, if necessary, to meet Owner's budgetary requirements.
11. Technical Support: During the bidding period, submit questions to the person named below. Questions will be answered in writing and copies distributed to bidders of record. Verbal answers to such questions may be enhanced, further clarified, or modified slightly from the final answers distributed in writing. The bidder is cautioned to act only on those answers in writing and not on verbal statements. Please submit all questions using the RFI Form included in the bid package.

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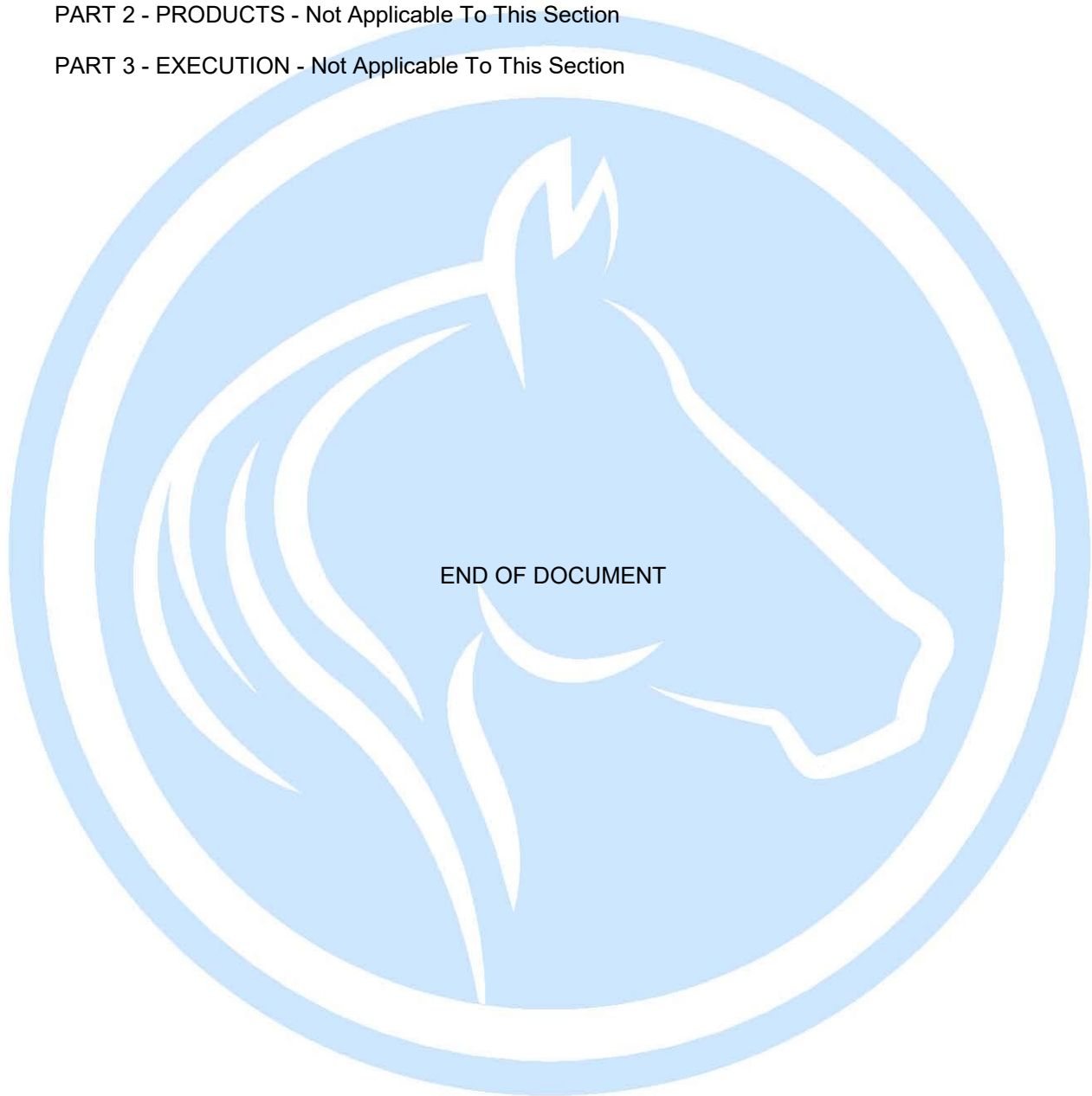
INSTRUCTIONS TO BIDDERS

SECTION 00 21 13 - INSTRUCTIONS TO BIDDERS

12. Site Visit: A site visit is recommended prior to submitting a bid. Contact the Owner named above to arrange to visit the site.

PART 2 - PRODUCTS - Not Applicable To This Section

PART 3 - EXECUTION - Not Applicable To This Section



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INSTRUCTIONS TO BIDDERS

SECTION 00 31 32 – GEOTECHNICAL DATA

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

- A. The Geotechnical Data report (Soil Report) is contained in Section 02 32 00 and is made part of these Construction Documents
 - 1. Geotechnical Investigation
 - 2. Prepared by Geoscience Engineers, LLC
 - 3. Project number 23-DG3925
 - 4. Dated August 21, 2023

- B. The Soil Report is included as an existing condition in Section 02 32 00. If it is not attached to this set of Specifications, a copy is available at the following locations:
 - 1. *Geoscience Engineers, LLC* (972) 488-3500
 - 2. *Casco* (314) 821-1100

PART 2 - PRODUCTS

- A. Not applicable

PART 3 - EXECUTION

- A. All recommendations and procedures outlined or detailed in the Soil Report shall be followed by the Contractor. Conditional recommendations shall be implemented with approval of the Architect and Soils Engineer.

- B. The services of a Soil Engineer shall be retained for the duration of the construction of this Project. Soil and Testing services shall include, but not be limited to, the following tasks:
 - 1. Field consulting of topsoil stripping
 - 2. Field consulting of soil compaction
 - 3. Field consulting of proof rolling operations
 - 4. Field testing of structural fill material
 - 5. Field testing of soil bearing capacity
 - 6. Field recommendations for dewatering operations

END OF SECTION

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GEOTECHNICAL DATA

SECTION 00 41 00 - BID FORMS

PART GENERAL

1. Submit bids in compliance with Document 00 21 13 - Instructions to Bidders. Fill in blanks. The Owner reserves the right to reject incomplete bid forms.
2. This Bidding document is not part of the Contract Documents, unless specifically referenced in the Owner/Contractor Agreement.
3. Name and Address of Bidder:

4. Base Bid: The Bidder proposes to perform all of the Work required by the Contract Documents for the amount of: (Fill in amount in words and numbers.)
\$
5. Provide "Schedule of Values" for base bid proposal. Use CSI 50 division format in line with the provided project specifications.
6. Alternates: If an Alternate is selected by the Owner, the Bidder proposes to do the Work required by the Contract Documents by increasing or decreasing the Base Bid the following amount: (Fill in amounts in words and numbers)
 - A. Alternate No. 1 - (TBD):
Increase/decrease (circle one) Base Bid by:
\$
 - B. Alternate No. 2 - (TBD):
Increase/decrease (circle one) Base Bid by:
\$
7. Time: The Bidder proposes to the following dates (Fill in):
 - A. Proposed Starting Date:
 - B. Proposed Date of Substantial Completion:
8. By submitting this Bid Form, the Bidder certifies that he is familiar with the project site, is aware of existing conditions which affect the work, and has reviewed the Contract Documents, including the following Addenda: (List Addenda received)

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BID FORMS

9. Bid Qualifications: Submit bid qualifications and reasons for qualifications with this Bid Form. Include impact of bid qualifications on time, cost or quality. Bid qualifications may include: A list of proposed subcontractors, cash flow requirements, assumptions for access to the work, assumptions for staging the work, assumptions for protecting existing and abutting work, and proposed modifications to General and Supplementary Conditions.

10. Signed and sealed (Enter date, Bidder's signature and legal business address.)

11. List of Bid Qualifications by Bidder (if any):

PART 2 - PRODUCTS - Not Applicable To This Section

PART 3 - EXECUTION - Not Applicable To This Section

END OF DOCUMENT

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BID FORMS

SECTION 00 52 00 - AGREEMENT FORMS

PART 1 - GENERAL

- A. The form of agreement between the Owner and the Contractor shall be the *AIA Document A201 - 2007 Standard Form of Agreement Between Owner and Contractor where the basis of payment is a STIPULATED SUM*
- B. The Agreement document *AIA Document A101 - 2007 Standard Form of Agreement Between owner and Contractor where the basis of payment is a STIPULATED SUM* is attached for reference purposes only in these specifications. Completion of this agreement and its execution is subject to review by the parties and their legal counsel.
- C. Complete versions of the Agreement are available at the following sources:
 - 1. American Institute of Architects, Washington, D.C., 800.242.3837; Extension 4
 - 2. *Insert Architects Name and Address*
 - 3. Local AIA Offices, bookstores, or architectural printing service shops.

PART 2 - PRODUCTS - Not Applicable To This Section

PART 3 - EXECUTION - Not Applicable To This Section

END OF DOCUMENT

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AGREEMENT FORMS

SECTION 00 61 00 – BOND FORMS

PART 1 - GENERAL

- A. A Performance Bond and Payment Bond may be required by the Owner as a condition of award. Additional information will be distributed detailing such requirements, if any by the Owner and prior to bid due date.
- B. A Bid Security or Bid Bond is not required.
- C. Bond forms are available from the American Institute of Architects, Washington, D.C., 800.242.3837; Extension 4:
 - 1. *AIA A312-2010, Performance Bond and Payment Bond.*

PART 2 - PRODUCTS - Not Applicable To This Section

PART 3 - EXECUTION - Not Applicable To This Section

END OF DOCUMENT

00 61 00 - 1

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BOND FORMS

SECTION 00 72 00 - GENERAL CONDITIONS

PART 1 – GENERAL

- A. The General Conditions are the terms and conditions for this construction contract. All materials and labor supplied therein are detailed in Section 00 72 10; *AIA Document A201-2007 General Conditions of the Contract for Construction*. All contractors, suppliers, vendors and subcontractors and others contractually obligated to provide materials or labor on this Project are hereby advised that their work shall conform with the requirements of this Document, whether or not included in this Project Manual,
- B. The General Conditions contained in Section 00 72 10; *AIA Document A201-2007 General Conditions of the Contract for Construction* shall be considered the minimum acceptable standard used by the Architect to judge the responsibilities of the parties and their performance, compliance, quality and acceptability of all Work provided therein.
- C. The Architect is the sole judge of all Work related to this Project
- D. These specifications and the accompanying drawings shall be subject of all requirements stated in these General Conditions and shall form the body of documents, consisting of drawings, specifications, and forms of agreements, to be known collectively as the Contract Documents.

PART 2 - PRODUCTS - Not Applicable To This Section

PART 3 - EXECUTION - Not Applicable To This Section

END OF DOCUMENT

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GENERAL CONDITIONS

SECTION 00 72 00 - GENERAL CONDITIONS

PART 1 – GENERAL

- A. The General Conditions are the terms and conditions for this construction contract. All materials and labor supplied therein are detailed in Section 00 72 10; *AIA Document A201-2007 General Conditions of the Contract for Construction Commentary document*. All contractors, suppliers, vendors and subcontractors and others contractually obligated to provide materials or labor on this Project are hereby advised that their work shall conform with the requirements of this Document, whether or not included in this Project Manual,
- B. The General Conditions contained in Section 00 72 10; *AIA Document A201-2007 General Conditions of the Contract for Construction* shall be considered the minimum acceptable standard used by the Architect to judge the responsibilities of the parties and their performance, compliance, quality and acceptability of all Work provided therein.
- C. The Architect is the sole judge of all Work related to this Project
- D. These specifications and the accompanying drawings shall be subject of all requirements stated in these General Conditions and shall form the body of documents, consisting of drawings, specifications, and forms of agreements, to be known collectively as the Contract Documents.

PART 2 - PRODUCTS - Not Applicable To This Section

PART 3 - EXECUTION - Not Applicable To This Section

END OF DOCUMENT

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GENERAL CONDITIONS

SECTION 28 13 00 – ACCESS CONTROL

PART 1 - GENERAL

1.01 SUMMARY

- A. Scope of Work: Materials required under this Section are supplied by the door and hardware supplier. The Scope of Work for this Section is limited only to the installation, testing, and closeout of this system
- B. Contractor shall install electric strike, power supply, push buttons, transmitter and receiver, wiring, conduit, and other components for the access security system.
 - 1. Wiring diagrams are shown on the Drawings
 - 2. Access control system must be wired so that door opens when alarm is activated
- C. Related Work: See Section 08 70 00 Hardware and Section 28 31 00 Fire Detection and Alarm
- D. See APPENDIX for Responsibility Chart

1.02 SUBMITTALS

- A. Submit for review samples, shop drawings, product data, warranty, maintenance data.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. General Description: Remotely operated electric door strike consisting of a door strike, strike-release push buttons, power supply, wiring, conduit, receiver and hand-held remote transmitters. Products are specified in Section 08 70 00.
- B. Coordinate sequence of operation with Goddard Systems, Inc. and as shown on the Drawings
- C. Installation to conform to NFPA 70 and regulations of local and state codes.

PART 3 - EXECUTION

3.01 INSTALLATION

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ACCESS CONTROL

SECTION 28 13 00 – ACCESS CONTROL

- A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.
- B. Contractor shall provide complete system installation and testing. Contractor is responsible for wiring, testing, and operation of the electric strike, entrance push buttons, power supply, interface to alarm and sprinkler system, and overall system operation in accordance with these Specifications, NFPA 70, and related rules and regulations.
- C. Label all communication wiring as outlined in Section 27 15 00.
- D. It is recommended that Access Control System to be installed by same contractor installing fire alarm system.

END OF SECTION

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ACCESS CONTROL

SECTION 00 91 13 –ADDENDA

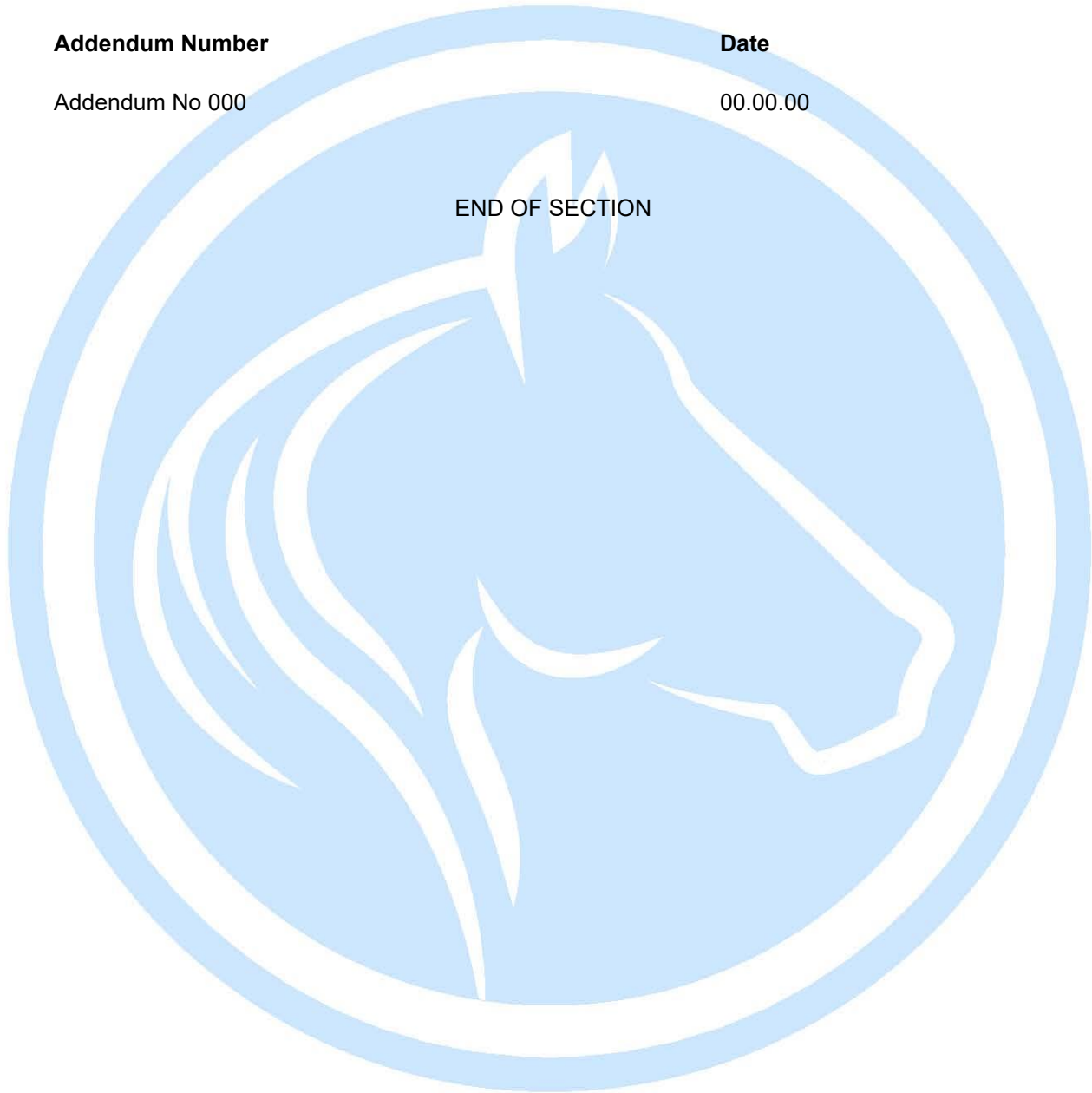
Addendum Number

Date

Addendum No 000

00.00.00

END OF SECTION



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ADDENDA

SECTION 01 00 00 - GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 COMPLIANCE

- A. All construction shall comply with applicable local, state and federal codes, rules, and regulations, and other entities having jurisdiction. Any discrepancy between local, state or federal building codes, rules and regulations and work built, or work delineated in these Contract Documents shall be corrected to full compliance with such rules, regulations, or codes.
- B. All clearances, door sizes, hardware locations knob types, restroom equipment, mounting heights, and all other dimensions, heights, locations, and clearances shall comply with Title III of the *Americans With Disabilities Act of 1991 (ADA)*; and *Americans With Disabilities Act Accessibility Guidelines for Buildings and Facilities: Building Elements Designed for Children's Use: Final Rule; July 01, 2015 (36 CFR Part 1191)*; and *ICC/ANSI A117.1 - 2009 Accessible & Usable Buildings And Facilities*; and all local or state adopted handicapped accessibility codes.
- C. Utility connections and services shall be coordinated with the utility companies having jurisdiction, and shall comply with the rules, regulations, and codes of the utility companies or the prevailing authority having jurisdiction.
- D. Contractor is responsible for obtaining and paying for all building permits and related permits, fees, and approvals required by state, or local building authorities; utilities; or other regulatory agencies..
- E. Contractors, Suppliers, and Subcontractors shall build the work described in these Contract Documents exactly as shown herein. If any inconsistency, error, or omission in the Contract Documents is discovered, such information shall be documented and submitted to the Architect as a notification in writing within 10 days of its discovery. The Architect's reply in writing to this notification of inconsistency, error, or omission is a prerequisite to any action concerning the claimed inconsistency, error or omission and any subsequent action taken to deviate from the work shown in the Contract Documents.
- F. If Changes are required in the work that differ from the conditions shown in these Contract Documents, such changes shall be submitted as a written Proposal to the Architect and Goddard Systems, Inc. for written approval in the form of a Change Order. Any Changes made without the specific written consent of the Architect shall be considered as unauthorized changes, not in compliance with the Contract Documents , and excluded from any responsibility of the Architect either during construction or after occupancy.
- G. Changes in the Work, not approved in writing by the Architect, shall be removed and replaced with correct Work at the sole expense of the Contractor, Subcontractor, and Supplier, but in no case shall the full cost, any portion of the cost, or any consequential cost, of removal and replacement of such non-conforming work be at the expense of the Architect or Owner.

PART 2 - PRODUCTS - Not Applicable To This Section

PART 3 - EXECUTION - Not Applicable To This Section

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GENERAL REQUIREMENTS

END OF SECTION



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GENERAL REQUIREMENTS

[SECTION 01 21 00 – ALLOWANCES]

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements governing the following:
 - 1. Lump-sum allowances.
 - 2. Unit-cost allowances.
 - 3. Quantity allowances.
 - 4. Contingency allowances.
 - 5. Testing and inspecting allowances.
- B. See Division 01 Section "Quality Requirements" for procedures governing the use of allowances for testing and inspecting.

1.2 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Architect from the designated supplier.

1.3 SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.
- B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.4 COORDINATION

- A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

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1.5 LUMP-SUM, UNIT-COST AND QUANTITY ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes, freight, and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

1.6 CONTINGENCY ALLOWANCES

- A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.
- B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.
- C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit margins.
- D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.7 TESTING AND INSPECTING ALLOWANCES

- A. Testing and inspecting allowances include the cost of engaging testing agencies, actual tests and inspections, and reporting results.
- B. The allowance does not include incidental labor required to assist the testing agency or costs for retesting if previous tests and inspections result in failure. The cost for incidental labor to assist the testing agency shall be included in the Contract Sum.
- C. Costs of services not required by the Contract Documents are not included in the allowance.
- D. At Project closeout, credit unused amounts remaining in the testing and inspecting allowance to Owner by Change Order.

1.8 UNUSED MATERIALS

- A. Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.

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1. If requested by Architect, prepare unused material for storage by Owner when it is not economically practical to return the material for credit. If directed by Architect, deliver unused material to Owner's storage space. Otherwise, disposal of unused material is Contractor's responsibility.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

- A. See project documents for any allowances.

END OF SECTION

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SECTION 01 23 00 - ALTERNATES

PART 1 - GENERAL

1.01 SUMMARY

- A. List price for each alternate identified below. Include cost of modifications to other work to accommodate alternate, including both credits and adds. Include related costs such as overhead and profit.
- B. Owner will determine which alternates are selected for inclusion in the Contract.
- C. Alternates are described briefly in this section. The Contract Documents define the requirements for all Alternates.
- D. Coordinate alternates with related work to ensure that work affected by each selected alternate is properly accomplished.

PART 2 - PRODUCTS - Not Applicable To This Section

PART 3 - EXECUTION

3.01 SCHEDULE

- A. List of Alternates:
 - 1. **ALTERNATE NO. 1+** - Insert additional Alternative Items.

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ALTERNATES

SECTION 01 26 00 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.
- B. See Division 01 Section "Allowances" for procedural requirements for handling and processing allowances.
- C. See Division 01 Section "Unit Prices" for administrative requirements for using unit prices.

1.2 MINOR CHANGES IN THE WORK

1.3 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Proposal Requests issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
 - 2. Within **time specified in Proposal Request 20 days** after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
- B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to Architect.
 - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

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2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 4. Include costs of labor and supervision directly attributable to the change.
 5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 6. Comply with requirements in Division 01 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.
- C. Proposal Request Form: Use **AIA Document G709 for Proposal Requests** or **forms provided by Owner. Sample copies are included at end of this Section.**

1.4 ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, base each Change Order proposal on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
1. Include installation costs in purchase amount only where indicated as part of the allowance.
 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
 3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
 4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.
- B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the Purchase Order amount or Contractor's handling, labor, installation, overhead, and profit. Submit claims within **21 <Insert number>** days of receipt of the Change Order or Construction Change Directive authorizing work to proceed. Owner will reject claims submitted later than **21 <Insert number>** days after such authorization.
1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
 2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

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1.5 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on **AIA Document G701** or **form included at end of Part 3**.

1.6 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction or Work Change Directive: Architect may issue a Construction or Work Change Directive on **AIA Document G714**, **EJCDC Document 1910-8-F** or **form included at end of Part 3**. Construction or Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. Construction or Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction or Work Change Directive.
 - 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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CONTRACT MODIFICATION
PROCEDURES

SECTION 01 29 00 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.2 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule. Cost-loaded CPM Schedule may serve to satisfy requirements for the Schedule of Values.
1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including Application for Payment forms with Continuation Sheets, Submittals Schedule and Contractor's Construction Schedule.
 2. Submit the Schedule of Values to Architect at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
 3. Subschedules: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values correlated with each phase of payment.
- B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
1. Identification: Include the following Project identification on the Schedule of Values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Architect's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 2. Submit draft of **AIA Document G703 Continuation Sheets** or **EJCDC Document 1910-8-E**.
 3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate. Include separate line items under required principal subcontracts for operation and maintenance manuals, punch list activities, Project Record Documents, and demonstration and training in the amount of 5 percent of the Contract Sum.
 4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
 5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

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PAYMENT PROCEDURES

6. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
7. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
8. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
9. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.3 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Times: Progress payments shall be submitted to Architect by the <TBD> of the month. The period covered by each Application for Payment is one month, ending on the **last day of the month.**
- D. Payment Application Forms: Use **AIA Document G702 and AIA Document G703 Continuation Sheets, AIA Document G702/CMA and AIA Document G703 Continuation Sheets, EJCDC Document 1910-8-E or forms provided by Owner, sample copy included at end of this Section,** as form for Applications for Payment.
- E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
 2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

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PAYMENT PROCEDURES

- F. Transmittal: Submit **3** signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from every entity who is lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.
- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of Values.
 3. Contractor's Construction Schedule (preliminary if not final).
 4. Schedule of unit prices.
 5. Submittals Schedule (preliminary if not final).
 6. List of Contractor's staff assignments.
 7. List of Contractor's principal consultants.
 8. Copies of building permits.
 9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 10. Initial progress report.
 11. Report of preconstruction conference.
 12. Certificates of insurance and insurance policies.
- I. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- J. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.

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2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final, liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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PAYMENT PROCEDURES

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
1. Administrative and supervisory personnel.
 2. Submittals.
 3. Subcontractor quality control.
 4. Coordination.
 5. Project coordination.
 6. Preconstruction meeting.
 7. Progress meetings.
 8. Progress reports.
 9. Pre-installation meetings.
 10. Architect's inspections

1.02 ADMINISTRATIVE AND SUPERVISORY PERSONNEL FOR EACH TRADE

- A. Project Coordination Administrator: Subcontractor Representative experienced in administration, supervision, and quality control of building construction, similar to Work of this Project, including mechanical and electrical work.
- B. Project Field Superintendent:
- 1 Subcontractor Representative experienced in general field supervision of building construction, similar to Work of this Project, including mechanical and electrical work, to supervise, direct, inspect and coordinate Work of Subcontractor, suppliers and installers, and expedite Work to assure compliance with Construction Schedules.

1.03 SUBMITTALS

- A. Submit list of Subcontractor principal staff assignments, including Project Coordination Administrator, Project Field Superintendent, Quality Control Representative, and other personnel in attendance at site; identify their duties and responsibilities.
- B. Submit shop drawings, product data, and other required submittals, in accordance with Section 01330 - Submittal Procedures, for review and compliance with Contract Documents, for field dimensions and clearances, for relation to available space, and for relation to Work by Others.
- C. Submit Requests for Information and interpretation of Contract Documents in a timely manner and obtain replies from Architect in accordance with the Contract.

1.04 SUBCONTRACTOR QUALITY CONTROL FOR EACH TRADE

- A. Perform project quality control in accordance with requirements in the Contract.
- B. Coordinate schedule for testing to be performed by Subcontractor and under separate contract.

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COORDINATION

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

1.05 COORDINATION DRAWINGS FOR EACH TRADE

- A. Prepare and distribute coordination drawings where close coordination is required for installation of Products and materials fabricated off-site by separate entities, and where limited space availability requires maximum utilization of space for efficient installation of different components. Show interrelationship of components shown on separate shop drawings. Indicate required installation sequences.

1.06 PROJECT COORDINATION FOR EACH TRADE

- A. Coordinate construction activities and work of other trades under various Sections of these Specifications and Work of Contract to facilitate orderly installation of each part of Work. Coordinate construction operations included under different Sections of Specifications and Contract that are dependent upon each other for proper installation, connection, and operation.
- B. Where installation of one part of Work is dependent on installation of other components, either before or after that part of Work, schedule construction activities in sequence required to obtain uninterrupted installation.
- C. Obtain drawings, manufacturer's product data, instructions, and other data to provide a complete and proper installation.
 - 1. Check field dimensions prior to installing products. Verify necessary clearances and means of access from equipment storage to final position.
 - 2. Make data and information available to trades involved.
- D. Ensure that utility requirements of operating equipment are compatible with building utilities. Coordinate Work of various specification Sections for installation and final connection of equipment.
 - 1. Assure that mechanical, plumbing, and electrical rough-ins have been properly located.
- E. Coordinate space requirements and installation of mechanical, plumbing, and electrical Work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, conduits, and wiring, as closely as possible; make runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- F. Where availability of space is limited, coordinate installation of different components to ensure maximum accessibility for required maintenance, service, and repair.
- G. Provide for installation of items scheduled for future installation.
- H. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Prepare memoranda for Architect and separate Subcontractors where coordination of their work is required.

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- I. In finished areas, conceal pipes, ducts, conduits, and wiring in the construction. Coordinate locations of fixtures and outlets with finish elements.
 - J. Coordinate completion and clean up of Work of separate Sections in preparation for completion of work per the Contract. Each Subcontractor shall leave work area in clean condition and ready for next Subcontractor trade.
 - K. After occupancy of Project, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of occupant activities.
- 1.07 PRECONSTRUCTION MEETING
- A. Architect and Construction Manager will schedule a meeting after issuance of Notice To Proceed.
 - B. Attendance: Architect, Developer, GSI Project Manager, Franchisee, Construction Manager, Each Subcontractor, and Project Superintendents.
 - C. Agenda:
 - 1. Designation of personnel representing the parties in Contract.
 - 2. Procedures and processing of Requests for Information, field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and contract closeout procedures.
 - 3. Scheduling of Work
 - 4. Submittal of Critical Path Schedule or other graphic work progress Schedule
 - 5. Construction facilities and temporary controls.
 - 6. Environmental procedures.
 - D. Record minutes and distribute copies to participants, and those affected by decisions made.
- 1.08 CONSTRUCTION SCHEDULE
- A. Prior to start of construction, CM shall submit a construction progress schedule for the entire construction process from start to final occupancy. Schedule can be in any standard format such as Gantt chart, bar-chart, CPM flow charts, or other acceptable format. Contractor shall review and update this schedule weekly. The project schedule should be forwarded to the GSI project manager upon revision.
- 1.09 PROGRESS MEETINGS
- A. Schedule and administer meetings throughout progress of Work at intervals as determined by Construction Manager.
 - B. Construction Manager will make arrangements for meetings, prepare agenda with copies for participants and preside at meetings.
 - C. Attendance: Job Superintendent, Construction Manager Subcontractors, Suppliers, and Architect as appropriate to agenda topics for each meeting.

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- D. Agenda:
1. Review minutes of previous meetings.
 2. Review of Work progress.
 3. Field observations, problems, and decisions.
 4. Identification of problems which impede planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Review of off-site fabrication and delivery schedules.
 7. Maintenance of progress schedule.
 8. Corrective measures to regain projected schedules.
 9. Planned progress during succeeding work period.
 10. Coordination of projected progress.
 11. Other business relating to Work.

1.10 PRE-INSTALLATION MEETING

- A. When required in individual specification sections or as determined necessary by Architect, convene a pre-installation meeting at work site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Architect or authorized representative seven days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
1. Review conditions of installation, preparation and installation procedures.
 2. Review coordination with related work.
 3. Agenda items listed in individual specification Sections.
 4. Installation schedule.
 5. Review environmental procedures.

1.11 ARCHITECT'S INSPECTIONS

- A. The Architect will have access to the Project at all times for purposes of inspecting and observing the Work in progress, and reporting on the adequacy, quality, compliance, and completeness of the work.
- B. The Architect will prepare a written field report, summarizing each inspection and noting Site Conditions; Work in Progress; Information or Action Required; Non-Compliance Items; and other communication relative to the Work.
- C. The Architect will inspect the work at the following minimum milestone points. The Contractor is responsible for contacting the Architect to advise of the dates for arriving at the following milestones in the Work.
1. Foundation: Foundation walls and footings ready for concrete placement.
 2. Structural: Structural steel in place and ready for precast plank placement.
 3. Pre-Drywall: Rough framing complete and MP&E rough-in complete
 4. Finish: Finish work in progress; MP&E final, fixtures

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SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

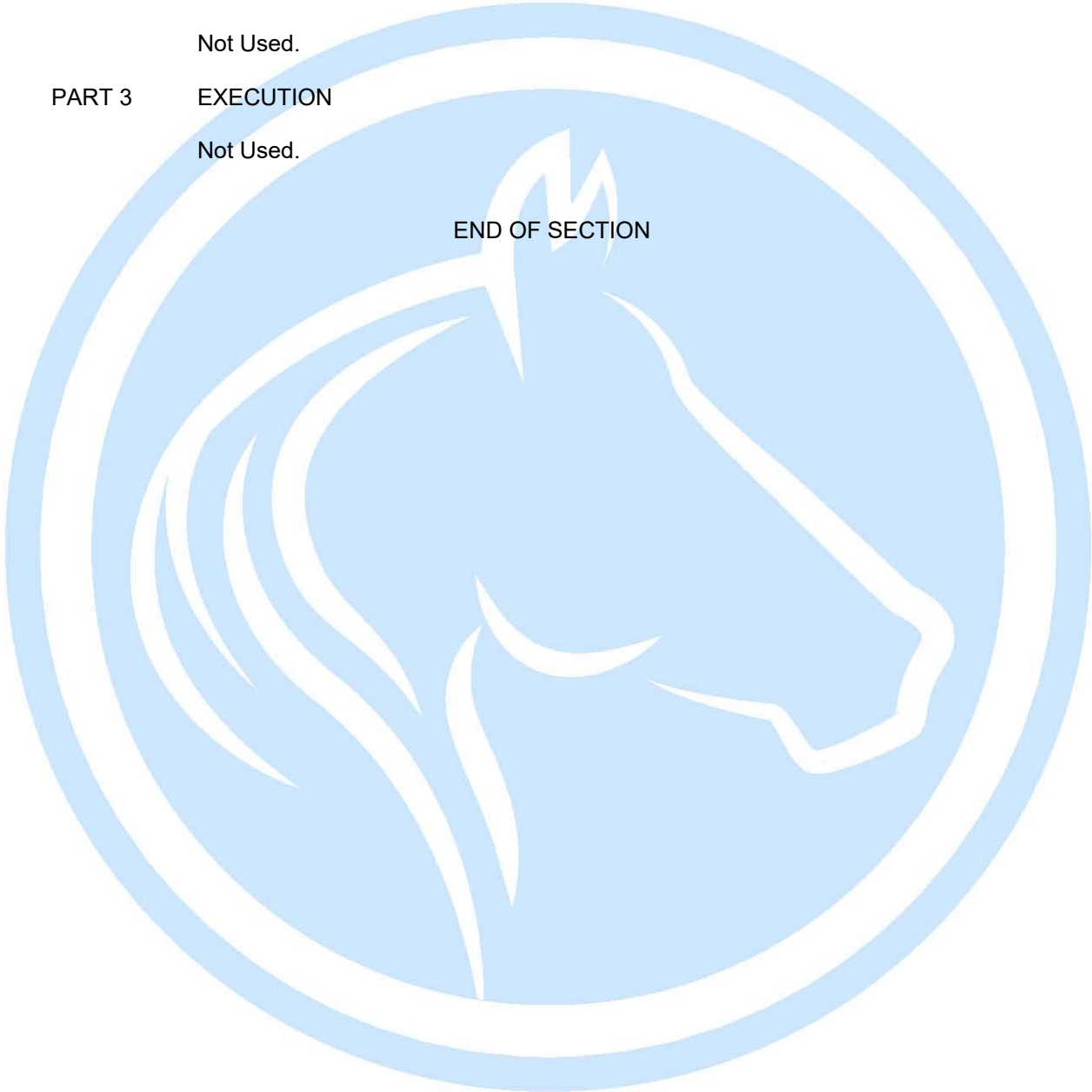
5. Occupancy: Final inspection; punch-list; Certificate of Occupancy

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.



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SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Contractor's Construction Schedule.
 - 2. Submittals Schedule.
 - 3. Daily construction reports.
 - 4. Field condition reports.
- B. See Division 01 Section "Multiple Contract Summary" for preparing a combined Contractor's Construction Schedule.
- C. See Division 01 Section "Payment Procedures" for submitting the Schedule of Values.
- D. See Division 01 Section "Photographic Documentation" for submitting construction photographs.

1.2 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- D. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time **belongs to Owner, is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.**

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DOCUMENTATION

- E. Fagnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.
- F. Major Area: A story of construction, a separate building, or a similar significant construction element.

1.3 SUBMITTALS

- A. Submittals Schedule: Submit three copies of schedule. Arrange the following information in a tabular format:
 - 1. Scheduled date for first submittal.
 - 2. Specification Section number and title.
 - 3. Submittal category (action or informational).
 - 4. Name of subcontractor.
 - 5. Description of the Work covered.
 - 6. Scheduled date for Architect's final release or approval.
- B. Preliminary Network Diagram: Submit **two** <Insert number> opaque copies, large enough to show entire network for entire construction period. Show logic ties for activities.
- C. Contractor's Construction Schedule: Submit **two** <Insert number> opaque copies of initial schedule, large enough to show entire schedule for entire construction period.
 - 1. Submit an electronic copy of schedule, using software indicated, on CD-R, and labeled to comply with requirements for submittals. Include type of schedule (Initial or Updated) and date on label.
- D. CPM Reports: Concurrent with CPM schedule, submit three of each of the following computer-generated reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
 - 1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
 - 2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
 - 3. Total Float Report: List of all activities sorted in ascending order of total float.
- E. Daily Construction Reports: Submit two copies at weekly intervals.
- F. Field Condition Reports: Submit two copies at time of discovery of differing conditions.

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1.4 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from parties involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

- A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
 - 1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
 - 2. Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion.
 - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
 - 1. Activity Duration: Define activities so no activity is longer than **20** days, unless specifically allowed by Architect.
 - 2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 - a. **<Insert list of major items or pieces of equipment.>**

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3. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
 4. Startup and Testing Time: Include not less than **<Insert number>** days for startup and testing.
 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Phasing: Arrange list of activities on schedule by phase.
 2. Work under More Than One Contract: Include a separate activity for each contract.
 3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 4. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use of premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
 5. Work Stages: Indicate important stages of construction for each major portion of the Work.
 6. Other Constraints: **<Insert additional constraints not indicated elsewhere.>**
- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion. , **and the following interim milestones:**
1. **<Insert additional milestones not indicated elsewhere.>**
- E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.
- 2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)
- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within **30** days of date established for the Notice to Proceed. Base schedule on the Preliminary Construction Schedule and whatever updating and feedback was received since the start of Project.

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- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

- 1. For construction activities that require 3 months or longer to complete, indicate an estimated completion percentage in **10** percent increments within time bar.

2.4 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

- A. General: Prepare network diagrams using AON (activity-on-node) format.
- B. Preliminary Network Diagram: Submit diagram within **14** days of date established for the Notice to Proceed. Outline significant construction activities for the first **60** days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.
- C. CPM Schedule: Prepare Contractor's Construction Schedule using a computerized, cost- and resource-loaded, time-scaled CPM network analysis diagram for the Work.
 - 1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than **30** days after date established for the Notice to Proceed.
 - a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.
 - 2. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
 - 3. Use "one workday" as the unit of time. Include list of nonworking days and holidays incorporated into the schedule.
- D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the preliminary network diagram, prepare a skeleton network to identify probable critical paths.
 - 1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
 - a. Preparation and processing of submittals.
 - b. Mobilization and demobilization.
 - c. Purchase of materials.
 - d. Delivery.
 - e. Fabrication.
 - f. Utility interruptions.
 - g. Installation.
 - h. Work by Owner that may affect or be affected by Contractor's activities.
 - i. Testing **and commissioning**.
 - 2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.

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3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
 4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
 - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
- E. Initial Issue of Schedule: Prepare initial network diagram from a list of straight "early start-total float" sort. Identify critical activities. Prepare tabulated reports showing the following:
1. Contractor or subcontractor and the Work or activity.
 2. Description of activity.
 3. Principal events of activity.
 4. Immediate preceding and succeeding activities.
 5. Early and late start dates.
 6. Early and late finish dates.
 7. Activity duration in workdays.
 8. Total float or slack time.
 9. Average size of workforce.
- F. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
 2. Changes in early and late start dates.
 3. Changes in early and late finish dates.
 4. Changes in activity durations in workdays.
 5. Changes in the critical path.
 6. Changes in total float or slack time.
 7. Changes in the Contract Time.

2.5 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
1. List of subcontractors at Project site.
 2. Equipment at Project site.
 3. Material deliveries.
 4. High and low temperatures and general weather conditions.
 5. Accidents.
 6. Stoppages, delays, shortages, and losses.
 7. Meter readings and similar recordings.
 8. Orders and requests of authorities having jurisdiction.
 9. Services connected and disconnected.
 10. Equipment or system tests and startups.

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- B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a request for interpretation on CSI Form 13.2A. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At **monthly** intervals, update schedule to reflect actual construction progress and activities. Issue schedule **one week** before each regularly scheduled progress meeting.
1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 3. As the Work progresses, indicate Actual Completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Architect Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

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CONSTRUCTION PROGRESS
DOCUMENTATION

SECTION 01 33 00 – SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

- A. Comply with project format for submittals.
- B. Provide Architect with types of submittals listed in individual sections and number of copies required. Architect will retain one (1) of each for records.
 - 1. Shop drawings, prior review by Contractor - minimum 3 copies. (Digital submittal is acceptable)
 - 2. Product data - minimum 3 copies. (Digital submittal is acceptable)
 - 3. Samples – 3 each, plus extra samples as required indicating range of color, finish, and texture to be expected.
 - 4. Mock-ups - when required in the individual sections.
 - 5. Inspection and test reports - minimum 3 copies. (Digital submittal is acceptable)
 - 6. Warranties - minimum 3 copies + 1 digital
 - 7. Survey data - minimum 3 copies. (Digital submittal is acceptable)
 - 8. Closeout submittals - minimum 3 copies. (Digital submittal is acceptable)
- C. Provide warranties as specified; warranties shall not limit length of time for remedy of damages Owner may have by legal statute. Warranties shall be signed by contractor, supplier or installer responsible for performance of warranty. A preliminary or sample warranty shall be included with all items requiring warranty submittals for review under this Section. Warranty documents shall be submitted for review for the following minimum items:
 - 1. Termite Treatment.
 - 2. Shingles
 - 3. Modified Bitumen Roofing
 - 4. Windows
 - 5. Doors
 - 6. Water Heater, Mixing Valves, Recirculation Pumps
 - 7. Heating and Cooling Equipment
 - 8. Fans and Ventilation Equipment

PART 2 - PRODUCTS - Not Applicable To This Section

PART 3 – EXECUTION

- 3.01. Schedule of Submittals : Within 30 days after receiving a notice to proceed, the contractor must complete the Schedule of Submittals, included in Paragraph 1.01 in this Section, in duplicate, listing all items that must be furnished for review and approval by the Architect. The schedule must indicate the type of items (such as sample, shop drawings, catalog cut, etc.) and include the scheduled dates of submittal. In preparing the schedule, adequate time must be allowed for Architect's review and approval and possible resubmittal. Also, the schedule must be coordinated with the approved construction progress chart. The contractor must revise and/or update the schedule as directed. Such revised schedules must be made available to the Architect, Owner, and Goddard School Project Representative for monitoring.

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- 3.02. Shop Drawings and Related Data : Submittal of shop drawings and related data must conform to the requirements specified in this Section. If approved by the Architect, the shop drawing will be identified as having received approval by being so stamped and dated. The contractor must make any corrections required by the Architect. If the contractor considers any correction indicated on the submittal drawings to constitute a change to the contract drawings or specifications, notice must be given to the Architect in writing. Unless otherwise noted or discussed and agreed, the minimum number of prints (see above) of all approved shop drawings must be given to the Architect. The approval of the submittals and shop drawings by the Architect shall not be construed as a complete checking of the fit, finish, and integration of the product, but instead indicates only that the general method of construction, design concepts, and detailing are satisfactory. Approval of the shop drawings does not relieve the contractor of responsibility for any error that may exist because the contractor is responsible for the dimensions and design of adequate connections and details and for satisfactory construction of all work. The submission by the contractor must be accompanied by a transmittal letter or other specific letter indicate the contents of the submittal, and the name, address and phone number of the supplier or subcontractor.
- 3.03. Mechanical Room, Mechanical Mezzanine, and Roof Equipment Area Layout Requirements: The contractor must prepare and submit Mechanical room, Mechanical Mezzanine, and Roof equipment area layout drawings for areas where equipment proposed for use could present interface or space difficulties. Such layout drawings must be submitted not less than 30 days in advance of actual installation of such equipment, and must conform to the specified requirements for shop drawings. Submittals describing the various mechanical and electrical equipment items that are to be installed in the areas represented by the layout drawings must be assembled and submitted concurrently and must be accompanied by the room or area layout drawings. All mechanical and electrical equipment and accessories must be shown to scale in the plan and also in elevation or section in their installation positions. Ductwork and piping must be shown
- 3.04. Material, Equipment, and Fixture Lists: Lists of equipment, and fixtures must be submitted by the contractor in accordance with the requirements specified for shop drawings. The lists must be supported by sufficient descriptive material, such as catalogs, cuts, diagrams, and other data published by the manufacturer, as well as by evidence of compliance with safety and performance standards, to demonstrate conformance to the specification requirements. Catalog numbers alone are not acceptable. The data must include the name and address of the nearest service and maintenance organization that regularly stocks repair parts.
- 3.05. Certificates of Compliance: Any certificates required for demonstrating proof of compliance of materials with specification requirements, including mill certificates, statements of application, and extended guarantees, must be signed and submitted to the Architect at least 10 days before delivery. The contractor must review all certificates before submissions are made to the Architect, to ensure compliance with the specification requirements and to ensure that the affidavit is properly signed. Each certificate must be signed by an official authorized to certify on behalf of the manufacturing company and must contain the name and address of the contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with

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certificates must contain the name and address of the testing laboratory and the dates of tests to which the report applies. Certification must not be construed as relieving the contractor from furnishing satisfactory material if, after tests are performed on selected samples, the material is found not to meet the specific requirements

3.06 Architect's Review of Submittal

- A. When submittals are reviewed by the Architect each submittal shall be returned to the contractor stamped or otherwise indicated by the Architect in one of the following ways:
1. APPROVED: The contractor is advised that fabrication, manufacture, or construction of the submitted work may proceed, provided the work complies with the contract documents.
 2. APPROVED AS NOTED: The contractor is advised that fabrication, manufacture, or construction may proceed, provided the work complies with the Architect's notations on the submittal and that the work complies with the contract documents..
 3. REVISE & RESUBMIT: The contractor is advised that no work may be fabricated, manufactured, or constructed and that the contractor must make a new submittal to the Architect. Any submission marked "REVISE & RESUBMIT" is not permitted on the site
 4. NOT APPROVED: The contractor is advised that the submittal does not meet the requirements of the specification, the drawings, or other requirements of the Contract Documents and will not be reviewed or commented upon further.
- B. The Architect will return marked-up reproduces if included in the submittal. The contractor is responsible for obtaining prints and for distributing such marked-up drawings to the field and to subcontractors
- C. In the case of shop drawings in the form of manufacturers' descriptive literature, catalog cuts, and brochures the Architect shall return APPROVED or APPROVED AS NOTED copies to the contractor, who is responsible for distributing them to the field and to the subcontractors. If the shop drawings are stamped REVISE & RESUBMIT the Architect will return stamped copies to the contractor, who shall submit new shop drawings to the Architect
- D. In the case of samples stamped APPROVED or APPROVED AS NOTED the Architect shall return one of the samples to the contractor. In the case of samples stamped REVISE & RESUBMIT the Architect shall return all of the submitted samples

3.07 Parts Data: Spare parts data shall be submitted to the Goddard School Project Representative for review and comments. If acceptable to Goddard School, the Spare Parts Data shall be included in the O & M Manuals

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3.08 Sample of Architect's Shop Drawing Stamp

Shop Dwg File No.	Shop Dwg Submittal No.
<input type="checkbox"/> APPROVED <input type="checkbox"/> APPROVED AS NOTED	
<p>If checked above, fabrication MAY be undertaken. Approval does not authorize changes to Contract Sum of Scope of Work unless stated in separate letter or Change Order.</p>	
<input type="checkbox"/> REVISE & RESUBMIT <input type="checkbox"/> NOT APPROVED	
<p>Checking is only for general conformance with the design concept of the Project and general compliance with the information given in the Contract Documents. The Contractor is solely responsible for: dimensions which shall be confirmed and correlated at the job site; fabrication, processes and techniques of the construction; coordination of his work with that of other trades; and the satisfactory performance of his work. Contractor is responsible for all corrections noted hereupon.</p>	
ARCHITECT Address City, State ZIP	
By _____	Date _____

3.09 Sample Schedule For Submittals

Project _____	Submittal Type:
Contract No. _____	C – Certificate
Project Description _____	S – Sample
_____	SD – Shop Drawing
	CD – Catalog Data
	PL – Spare Parts List
	MM – Maintenance Manual

Spec. Section	Spec. Description	Paragraph Number	Submittal Type	Date		Action Taken	Assigned Number
				Submittal	Returned		

END OF SECTION

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SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 2. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. See Divisions 02 through 49 Sections for specific test and inspection requirements.

1.2 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. **Approved mockups establish the standard by which the Work will be judged.**
- D. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.
- E. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

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QUALITY REQUIREMENTS

- F. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
- G. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- H. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- I. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- J. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.
- K. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of **five** previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.3 CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.4 SUBMITTALS

- A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Reports: Prepare and submit certified written reports that include the following:

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1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

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

1.5 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.
- F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

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1. Requirement for specialists shall not supersede building codes and regulations governing the Work.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
2. Notify Architect **seven** days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed, unless otherwise indicated.

J. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Sections in Divisions 02 through 49.

1.6 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, **and the Contract Sum will be adjusted by Change Order.**

B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities

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having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 2. Notify testing agencies at least **24** hours in advance of time when Work that requires testing or inspecting will be performed.
 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. **Manufacturer's Field Services:** Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."
- D. **Retesting/Reinspecting:** Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- E. **Testing Agency Responsibilities:** Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- F. **Associated Services:** Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.

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QUALITY REQUIREMENTS

3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

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

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

1.7 SPECIAL TESTS AND INSPECTIONS

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

B. Special Tests and Inspections: Conducted by a qualified **testing agency special inspector** as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

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1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
 2. Comply with the Contract Document requirements for Division 01 Section "Cutting and Patching."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

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QUALITY REQUIREMENTS

SECTION 01 50 13 - TEMPORARY FACILITIES & PROJECT SIGN

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide temporary services and utilities, including utility costs:
1. Water (potable and non-potable).
 2. Lighting and power & metering.
 3. Telephone.
 4. Toilet facilities.
 5. Materials storage.
 6. Dumpster and approved debris removal.
- B. Provide temporary site management items for the following areas :
1. Silt and sediment control and cleanup
 2. Material Storage Enclosures
 3. Daily mud, silt, and dirt cleanup of public streets, sidewalks, and offsite grounds
 4. Work area cleanup and placement of debris in authorized dumpster, or carry-off site for legal disposal
 5. Dewatering
 6. Temporary roofing for weather protection of building interior.
- C. Provide for Project security and protection:
1. Fire extinguishers.
 2. Site enclosure fence, barricades, warning signs, and lights.
 3. Building enclosure and lock-up.
 4. Environmental protection.
 5. Pest control.
 6. Snow and ice removal.
- D. Provide personnel support facilities:
1. Field office for Contractor's and Architect's use.
 2. Sanitary facilities.
 3. Drinking water.
 4. Cleaning and trash removal.
- E. Project Identification Sign: The Contractor shall provide, install and maintain the Project Identification Sign shown in the APPENDIX. Locate sign where directed by the Architect or the Goddard School Representative, or as otherwise required for maximum exposure to vehicular traffic for each direction.
1. The sign design is shown in the APPENDIX and subject to approval by local ordinances and permits for temporary signage.
 2. The Project Identification Sign shall be erected within 15 days after receiving notice to proceed.
 3. No other signs are permitted on the project site.

PART 2 - PRODUCTS - Not Applicable To This Section

PART 3 - EXECUTION - Not Applicable To This Section

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TEMPORARY FACILITIES &
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END OF SECTION



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TEMPORARY FACILITIES &
PROJECT SIGN

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SECTION 01 60 00 – PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide primary products from one manufacturer for each type or kind as applicable. When secondary materials or products are required, provide only those recommended by the primary product manufacturers. Do not “mix and match” without specific recommendations.
- B. Provide only those products selected and listed in these specifications. If an ‘or equal’ phrase is included in product specifications, it shall be understood that this means an ‘approved equal’ with such approval being obtained from the Architect prior to the award of a contract. Such request for approval shall be in writing, and the Architect’s response shall be in writing. No other form or method of approval of ‘or equal’ is acceptable.
- C. An ‘or equal’ phrase in these Specifications is not to be construed as permitting a substitution. A Substitution represents a deviation from these Specifications and will not be acceptable, except as specifically stated herein.
- D. On rare occasions, substitutions may become necessary. Products submitted for substitution shall be submitted to the Architect with full documentation, and include costs of substitution including related labor, staging, general conditions, or other costs. Only four (4) conditions for a Product substitution will be considered. Any request for substitution must document one or more of these conditions. These are:
 - 1. Specified material or product is no longer in production or otherwise unavailable..
 - 2. Specified material or product cannot be coordinated in a timely manner with the other work.
 - 3. Specified material or product is not acceptable to authorities having jurisdiction.
 - 4. Substantial advantage to the Owner can be documented in terms of cost, time savings, or other valuable consideration.
- E. Products permitted by an ‘or equal’ phrase shall be submitted to the Architect prior to award of contract.
- F. Products specified as being available by specific National Account Venders shall not be substituted.
- G. Architect’s approval of shop drawings, product data, submittals, or samples shall only be for specified Products, unless an ‘or equal’ phrase allows equals, and such products have been previously submitted and approved by the Architect before contract award. Shop drawings, submittals, product data or samples of products or materials that are considered as a substitution will be rejected and disposed of without review or comment.
- H. Substitution made without written consent of the Architect shall be considered non-complying Work and subject to removal and replacement at the Contractor's expense, and, if warranted, disclosure to building authorities having jurisdiction.
- I. Products identified in these specifications as being supplied by National Accounts are not subject to alternatives, substitutions, or ‘or equal’ status. Only the exact products

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PRODUCT REQUIREMENTS

and the exact source shall be used. If the contractor supplies products from other sources when designated as products from National Accounts, such products will be rejected and returned at no cost to the Owner/Developer, Franchisee, or Goddard Systems, Inc.

PART 2 - PRODUCTS - Not Applicable To This Section

PART 3 - EXECUTION - Not Applicable To This Section

END OF SECTION



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PRODUCT REQUIREMENTS

SECTION 01 73 00 – EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
1. Construction layout.
 2. Field engineering and surveying.
 3. General installation of products.
 4. Progress cleaning.
 5. Starting and adjusting.
 6. Protection of installed construction.
 7. Correction of the Work.
- B. See Division 01 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.2 SUBMITTALS

- A. Certificates: Submit certificate signed by **land surveyor** or **professional engineer** certifying that location and elevation of improvements comply with requirements.
- B. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.
- C. Certified Surveys: Submit **two** copies signed by **land surveyor** or **professional engineer**.
- D. Final Property Survey: Submit **10** copies showing the Work performed and record survey data.

1.3 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

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PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
1. Before construction, verify the location and points of connection of utility services.
- B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to **local utility Owner** that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to

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other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. **Submit requests on CSI Form 13.2A, "Request for Interpretation."**

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. General: Engage a **land surveyor** or **professional engineer** to lay out the Work using accepted surveying practices.
 - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 - 2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 3. Inform installers of lines and levels to which they must comply.
 - 4. Check the location, level and plumb, of every major element as the Work progresses.
 - 5. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
 - 6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

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3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
- B. Benchmarks: Establish and maintain a minimum of **two** permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
 - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
- C. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.
- D. Final Property Survey: Prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by **land surveyor professional engineer**, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
 - 1. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

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- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. 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.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
 - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 - 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
 - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning

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materials that are not hazardous to health or property and that will not damage exposed surfaces.

- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 01 Section "Quality Requirements."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

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3.9 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 01 Section "Cutting and Patching."
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION

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SECTION 01 73 29 - CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide cutting and patching work to properly complete the Work of the Project, complying with requirements for:
 - 1. Structural work.
 - 2. Mechanical/electrical systems.
 - 3. Visual requirements, including detailing and tolerances.
 - 4. Operational and safety limitations.
 - 5. Fire resistance ratings.
 - 6. Inspection, preparation, and performance.
 - 7. Cleaning.
- B. Do not cut and patch in a manner that would result in a failure of the work to perform as intended, decreased energy performance, increased maintenance, decreased operational life, or decreased safety.

1.02 APPROVAL

- A. Cutting, boring, notching, or any other modification to any structural, mechanical, or electrical component, not specifically permitted by these Specifications, shall have the written and certified approval of a licensed Professional Engineer, and subject to the approval of the Architect.:

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Match existing materials for cutting and patching work with new materials conforming to project requirements.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Inspect conditions prior to work to identify scope and type of work required. Protect adjacent work. Notify Owner of work requiring interruption to building services or Owner's operations.
- B. Perform work with workmen skilled in the trades involved. Prepare sample area of each type of work for approval.
- C. Cutting: Use cutting tools, not chopping tools. Make neat holes. Minimize damage to adjacent work. Check for concealed utilities and structure before cutting.
- D. Patching: Make patches, seams, and joints durable and inconspicuous. Comply with tolerances for new work.
- E. Clean work area and areas affected by cutting and patching operations.

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CUTTING & PATCHING

END OF SECTION



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CUTTING & PATCHING

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SECTION 01 77 00 – CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide the following as prerequisites to Substantial Completion:
1. Punch List
 2. Supporting documentation
 3. Warranties
 4. Certifications and testing reports for alarm and sprinkler systems
 5. HVAC testing and air-balance report
 6. Occupancy permit, or release by municipality
 7. Start-up and testing of building systems
 8. Installation of permanent lock cores
 9. Architect's Certification of as-built Classroom Square Footage
 10. Contractor's Record Drawing showing as-built Classroom Square Footage
- B. Provide the following prerequisites to Final Acceptance of building:
1. Complete all items on Punch List
 2. Resolve all outstanding discrepancies
- C. Provide one (1) marked-up set of drawings including changes which occurred during construction, with updated and certified as-built site survey.
- D. Provide the following closeout procedures:
1. Submission of record documents listed above
 2. Submission of operations and maintenance manuals
 3. Training and turnover to Franchisee's personnel
 4. Removal of temporary facilities
- E. Final Cleaning: The following final cleaning shall be completed as a prerequisite to Final Acceptance of the building:
1. Use cleaning materials and agents recommended by manufacturer or fabricator of surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property, or that might damage finished surfaces.
 2. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of Work to condition expected from a commercial building cleaning and maintenance program. Comply with manufacturer's published instructions.
 3. Complete following cleaning operations before requesting an inspection for Substantial Completion.
 - a. Clean Project Site, yard and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste materials, litter and foreign substances. Sweep paved areas broom clean. Remove petro-chemical spills, stains and other foreign deposits. Rake grounds that are neither planted nor paved, to a smooth even-textured surface.
 - b. Remove tools, construction equipment, machinery and surplus material from Project Site.
 - c. Remove snow and ice to provide safe access to building.

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- d. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
- e. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics and similar spaces.
- f. Broom clean concrete floors in unoccupied spaces.
- g. Vacuum clean carpet and similar soft surfaces, removing debris and excess nap. Shampoo if required for thorough cleaning.
- h. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
- j. Remove labels that are not permanent labels.
- k. Touch-up and otherwise repair and restore marred exposed finishes and surfaces. Replace finishes and surfaces that can not be satisfactorily repaired or restored, or that show evidence of repair or restoration. Do not paint over "UL" and similar labels, including mechanical and electrical name plates.
- l. Wipe surfaces of mechanical and electrical equipment, and other similar equipment. Remove excess lubrication, paint and mortar droppings and other foreign substances.
- m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
- n. Replace air disposable filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills. Clean ducts, blowers, and coils if units were operated without filters during construction.
- o. Clean light fixtures, lamps, globes and reflectors to function with full efficiency. Replace burned out lamps, and defective or noisy ballasts in fluorescent and/or metal halide fixtures.
- p. Leave Project clean and ready for occupancy.
- 4. Remove temporary protection and facilities installed during construction to protect previously completed installations during remainder of construction.
- 5. Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from Project Site and dispose of in accordance with requirements of local authorities having jurisdiction.
 - a. Where extra materials of value remain after completion of construction, store these materials as directed by Goddard Project Manager.

PART 2 - PRODUCTS - Not Applicable To This Section

PART 3 - EXECUTION - Not Applicable To This Section

END OF SECTION

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CLOSEOUT PROCEDURES

SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
1. Emergency manuals.
 2. Operation manuals for systems, subsystems, and equipment.
 3. Maintenance manuals for the care and maintenance of **products, materials, and finishes and systems and equipment.**
- B. See Divisions 02 through 49 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.2 SUBMITTALS

- A. Manual: Submit **one copy** of each manual in final form at least **15** days before final inspection. Architect will return copy with comments within **15** days after final inspection.
1. Correct or modify each manual to comply with Architect's comments. Submit **3** copies of each corrected manual within **15** days of receipt of Architect's comments.

PART 2 - PRODUCTS

2.1 MANUALS, GENERAL

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain a title page, table of contents, and manual contents.
- B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
1. Subject matter included in manual.
 2. Name and address of Project.
 3. Name and address of Owner.
 4. Date of submittal.
 5. Name, address, and telephone number of Contractor.
 6. Name and address of Architect.
 7. Cross-reference to related systems in other operation and maintenance manuals.

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- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
 - 1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
 - 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
 - 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
 - 4. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for type of emergency, emergency instructions, and emergency procedures.
- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component for **fire flood gas leak water leak power failure water outage equipment failure and chemical release or spill**.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

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- D. Emergency Procedures: Include instructions on stopping, shutdown instructions for each type of emergency, operating instructions for conditions outside normal operating limits, and required sequences for electric or electronic systems.

2.3 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and equipment descriptions, operating standards, operating procedures, operating logs, wiring and control diagrams, and license requirements.
- B. Descriptions: Include the following:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Equipment identification with serial number of each component.
 - 4. Equipment function.
 - 5. Operating characteristics.
 - 6. Limiting conditions.
 - 7. Performance curves.
 - 8. Engineering data and tests.
 - 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include start-up, break-in, and control procedures; stopping and normal shutdown instructions; routine, normal, seasonal, and weekend operating instructions; and required sequences for electric or electronic systems.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.4 PRODUCT MAINTENANCE MANUAL

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Product Information: Include the following, as applicable:
 - 1. Product name and model number.
 - 2. Manufacturer's name.

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3. Color, pattern, and texture.
 4. Material and chemical composition.
 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and inspection procedures, types of cleaning agents, methods of cleaning, schedule for cleaning and maintenance, and repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including maintenance instructions, drawings and diagrams for maintenance, nomenclature of parts and components, and recommended spare parts for each component part or piece of equipment:
- D. Maintenance Procedures: Include test and inspection instructions, troubleshooting guide, disassembly instructions, and adjusting instructions, **and demonstration and training videotape if available**, that detail essential maintenance procedures:
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

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PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
- D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
- E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original Project Record Documents as part of operation and maintenance manuals.
- F. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION

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SECTION 01 78 39 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
- B. See Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
- C. See Divisions 02 through 49 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.2 SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit **one** <Insert number> set(s) of marked-up Record Prints.
 - 2. Number of Copies: Submit copies of Record Drawings as follows:
 - a. Initial Submittal: Submit **one** set(s) of **corrected Record Transparencies** or **plots from corrected Record CAD Drawings** and **one** set(s) of marked-up Record Prints. Architect will initial and date each **transparency** or **plot** and mark whether general scope of changes, additional information recorded, and quality of drafting are acceptable. Architect will return **transparencies** or **plots** and prints for organizing into sets, printing, binding, and final submittal.
 - b. Final Submittal: Submit **one** set(s) of marked-up Record Prints, and the following:
 - 1) Record Transparencies: **One** set(s).
 - 2) Record CAD Drawing Files and Plots: **One** set(s).
 - 3) Copies printed from Record **Transparencies CAD Drawing Plots: Three Print Plot and print** each Drawing, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit **one copy** of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit **one copy** of each Product Data submittal.

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PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.
1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 2. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
 3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Transparencies: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Architect. When authorized, prepare a full set of corrected transparencies of the Contract Drawings and Shop Drawings.
1. Incorporate changes and additional information previously marked on Record Prints. Erase, redraw, and add details and notations where applicable.
 2. Refer instances of uncertainty to Architect for resolution.
 3. Owner will furnish Contractor one set of transparencies of the Contract Drawings for use in recording information.
 4. Print the Contract Drawings and Shop Drawings for use as Record Transparencies. Architect will make the Contract Drawings available to Contractor's print shop.
- C. Record CAD Drawings: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Architect. When authorized, prepare a full set of corrected CAD Drawings of the Contract Drawings, as follows:
1. Format: **Same CAD program, version, and operating system as the original Contract Drawings.**
 2. Incorporate changes and additional information previously marked on Record Prints. Delete, redraw, and add details and notations where applicable.
 3. Refer instances of uncertainty to Architect for resolution.
 4. Architect will furnish Contractor one set of CAD Drawings of the Contract Drawings for use in recording information.

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- a. Architect makes no representations as to the accuracy or completeness of CAD Drawings as they relate to the Contract Drawings.
 - b. CAD Software Program: The Contract Drawings are available in **<Insert name and version of CAD program and operating system>**.
- D. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Record Transparencies: Organize into unbound sets matching Record Prints. Place transparencies in durable tube-type drawing containers with end caps. Mark end cap of each container with identification. If container does not include a complete set, identify Drawings included.
 3. Record CAD Drawings: Organize CAD information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each CAD file.
 4. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect.
 - e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. Note related Change Orders, **Record Product Data**, and Record Drawings where applicable.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

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2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, **Record Specifications**, and Record Drawings where applicable.

2.4 RECORD AREA CALCULATIONS

- A. Preparation: Note on the Drawings' *Square Foot Analysis Plan* the actual field-measured square footages of each Classroom using the following criteria to determine individual Net Classroom Areas
 1. All measurements shall be to face of finished drywall.
 2. Exclude the floor area below lavatories, diaper changing sinks, hand-wash sinks, and other permanently mounted wall accessories.
 3. Exclude the floor area below all cubbies.
 4. Exclude the floor area occupied by the Corridor-Classroom door swing.

2.5 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

END OF SECTION

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SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.01 SUMMARY

- A. Provide cast-in-place concrete for general building construction, including, without limitation:
 - 1. Footings, foundations, piers, and pads
 - 2. Floor slab on grade
 - 3. Exterior concrete slabs, walks, stoops, pads, lamp post piers

1.02 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Testing: Employ an independent testing agency acceptable to the Structural Engineer to design concrete mixes and to perform material evaluation tests. Provide 7, 14 and 28 day cylinder tests. Comply with ASTM C143, C173, C31 and C39.
 - 1. Contractor shall make four (4), 6"x12" test cylinders for each 50 cubic yards of concrete poured for each day's operation. Break 1 at 7 days, 2 at 28 days and retain spare.
- C. Comply with Structural Engineering notes on Drawings and the following specifications. In the event of contradictory information in these Specifications, the Structural Engineering notes on the Drawings shall prevail.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Formwork: APA rated B-B Plyform forms sufficient for structural and visual requirements or approved equal.
- B. Reinforcement:
 - 1. All reinforcing steel shall be detailed, supplied and placed in accordance with ACI 315-99, ACI 318-99 and CRSI MSP-1-01 on Drawings
 - 2. All reinforcing steel shall be shop fabricated and, where applicable, shall be wired together and conform to ASTM A-615, Grade 60
 - 3. All welded wire fabric shall conform to ASTM A185, Fy (min) of 65 ksi. All welded wire fabric laps shall be 8".
- C. Concrete materials:

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1. All finished concrete, concrete formwork and falsework shall be in accordance with ACI 301-99. Contractor is solely responsible for the design and construction of all formwork, falsework and shoring drawings
 2. Cement: Portland cement, ASTM C 150, Type 1.
 3. Aggregate: Normal weight aggregates, ASTM C 33.
- D. Admixtures, all with less than 1% chloride ions:
1. Comply with Structural Engineering notes on Drawings
- E. Miscellaneous Materials:
1. Vapor barrier under slab on grade: Stego wrap 15 mil (see 07 21 00).
 2. Liquid Sealer/Hardener: Compatible with vinyl floor tile adhesives. Non-metallic, quartz-silica, interior/exterior type; Euclid Surfex or approved equal.
 3. Grout: Non-metallic, non-shrink type.
- F. Concrete Mixes: All concrete shall have the following 28 day compressive strengths
- | 1. LOCATION | STRENGTH | AIR ENTRAIN. |
|--|----------|--------------|
| a. All other concrete: | 3000 psi | 6% |
| b. All concrete below frost line, exterior slabs, piers, walls, columns, grade beams, concrete exposed to freeze/thaw: | 4000 psi | 6% |
| c. Interior slabs on grade: | 4000 psi | Non AE |
2. Max. Allowable Slump for consolidation by vibration or other: 4 inches
 3. Max. Allowable Slump for flowable concrete: 8 inches (3 inch before admix)

PART 3 - EXECUTION

3.00 GENERAL

- A. Comply with Structural Engineering notes on Drawings and the following specifications. If standards are contradictory, the Structural Engineering notes shall prevail.

3.01 INSTALLATION

- A. Comply with ACI 301, 304, 311, 318, 347, CRSI "Manual of Standard Practice", and ASTM C94. Do not change mix design without approval. Calcium chloride admixtures are not permitted.
- B. Comply with ACI 305 "Hot Weather Concreting". Use a wet cure method when temperatures are above 90 degrees F. for initial curing days.
- C. Comply with ACI 306 "Cold Weather Concreting".
- D. Chamfer edges of exposed concrete 3/4", unless noted otherwise..
- E. Tolerance: Plus 1/8" in 10' for grade, alignment, and straightness.
- F. Construction Joints: Use keyways, continue reinforcement through joint.

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- G. Expansion Joints: For sidewalks locate joints at 20 feet o.c., at all intersections, and as otherwise shown on Civil Engineering Drawings. Provide smooth dowels across joint which permit 1" horizontal movement and no vertical shear movement.
- H. Isolation Joints: Provide at perimeter of all slabs and slab intersection with other vertical elements such as columns and structural walls, changes in direction, and adjacent to a change in materials. Isolate all interior columns with diamond-shaped isolation joint section. Run control joints from points of diamond.
- I. Control Joints: Provide sawn joints; depth equal to 1/4 to 1/2 slab thickness. Locate where shown on Drawings. Fill level with latex floor filler.
- J. Vertical Finishes: As-cast and patched for concealed work; rubbed smooth, filled and cement paste coated for exposed work.
- K. Interior Slab Finishes: Trowel: Hard, smooth, uniform surface for areas to receive resilient flooring, carpet, or other thin finish material.
- L. Exterior Exposed Finishes: Broom: After trowel finishing, roughen surface by medium brooming perpendicular to traffic direction for exposed exterior walks, steps and ramps.
- M. Cure and protect work in accordance with ACI recommendations.
- N. Provide the following coverage over reinforcing:
 - 1. Footings:
 - a. Bottom and Unformed edges 3"
 - b. Formed edges and top 2"
 - 2. Slab on grade:
 - a. Welded wire fabric Upper Third
 - b. Reinforcing Steel 2"

3.02 BLOCKOUTS FOR DOWNSPOUTS

- A. Coordinate locations of all downspouts and provide suitable foundations blockouts to accommodate the PVC downspout tile adaptor and the subgrade downspout leader. See drawings for details of tile adaptor and leader configuration.
- B. Provide adequate clearance to permit a flush installation of the PVC downspout tile adaptor with the finished face of the brick veneer, and set at an elevation flush with the finished sidewalk.
- C. Downspout tile adaptors that are not installed flush with the face of brick and set at an elevation flush with the finished sidewalk will be excavated and removed. Foundation will be chipped away to form a flush finish, and the sidewalk will be re-poured at the expense of the concrete contractor.

3.03 TESTING

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- A. Provide concrete cylinder testing as noted in these specifications or as otherwise required by the structural engineer..

END OF SECTION



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SECTION 04 73 00 – MANUFACTURED STONE VENEER

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes: Manufactured stone veneer, thin brick and architectural trim products.

1.02 SUBMITTALS

- A. Submit following in accordance with Section 01300
- B. Product Data: Manufacturer's specification and data sheets for each product used, including:
 - a. Preparation instructions.
 - b. Storage and handling requirements and recommendations.
 - c. Installation guidelines.
 - d. Cleaning and maintenance methods.
- C. Shop Drawings: Submit elevations and cross-section details showing proper installation methods.
- D. Sample Selection
 - a. Standard sample board with selected stone profile and color should be submitted for each product specification.
 - b. Selection of approved grout colors and styles (if applicable).
- E. Sample Verification: A field panel sample with the minimum size of 3' x 3' should be installed for every product selection showing: styles, colors, textures and grout colors.
- F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- G. Closeout Submittals: Provide manufacturer's warranty and maintenance recommendations.

1.03 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Coronado Stone Products
- B. Installer Qualifications: Minimum 5 years experience with similar scope of work and must be able to finish list of previous jobs and references if requested by Architect.
- C. Certifications: Products approved by ICC-ES Evaluation Service.
- D. Mock-Up: Provide field panel sample to evaluate preparation and application techniques.
- E. Pre-Installation Conference: Conduct a pre-installation meeting to verify all products, application methods, site conditions and warranty terms no less than thirty days prior to stone veneer installation.

SECTION 04 73 00 – MANUFACTURED STONE VENEER

1.04 DELIVERY, STORAGE & HANDLING

- A. Coordination of on-site delivery and storage be arranged in advance to avoid work delays.
- B. Store and handle stone products in accordance with the manufacturer's recommendations.
- C. All material stored on-site should be protected from the elements before and during the installation process. Stone materials under cover and in a dry location.
- D. Store mortar, sealant and other installation material in compliance with the manufacturer's recommendations.

1.05 PROJECT CONDITIONS

- A. Maintain manufacturer's recommended environmental conditions to ensure optimum results.
- B. Cold Weather Requirements: Installations should be performed in temperatures exceeding 40 degrees Fahrenheit prior to, during and for 48 hours after completion of work. If temperatures are below 40 degrees Fahrenheit, masons should use heaters and tents during the installation process to regulate temperature.
- C. Hot Weather Requirements: If temperatures exceed 90 degrees Fahrenheit during the installation, additional moisture will need to be added to the backs of the stone veneer and scratch coated surface. Shade and/or frequent misting of the wall and stone may be required.

1.06 WARRANTY

- A. Provide manufacturer's 50 year limited warranty.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Acceptable Manufacturer: Coronado Stone Products (Corporate Office), which is located at: 11191 Calabash Ave, Fontana, CA 92337; Toll Free Tel: 800-847-8663; Fax: 909-357-7362; email: sales@coronado.com; web: www.coronado.com
- B. Substitutions: Not permitted.

2.02 MATERIALS

- A. Manufactured Stone Veneer: Freedom Building Stone, Texas Cream
- B. Stone Accessories: Chiseled Stone Sill, Cream
- C. Mortar: Manufacturer recommended
 - 1. Color: To be selected by Architect.

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SECTION 04 73 00 – MANUFACTURED STONE VENEER

- D. Reinforcing:
 - 1. Ties and reinforcing: Hot-dipped galvanized, ASTM A 153.

2.03 TIES, ANCHORS, AND REINFORCING GENERAL

- A. General: Provide ties and anchors, specified in subsequent articles, made from materials that comply with this Article, and *Specification for Masonry Structures* ACI 530.1-02/ASCE 6-02/ TMS 602-02.
- B. Wire Anchors: Hot-Dip Galvanized Carbon-Steel Wire: ASTM A 82; with ASTM A 153, Class B-2 coating. Minimum wire size W1.7 (9 gage)

2.04 MASONRY VENEER ANCHORS

- A. General: Provide two-piece assemblies that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment to structural concrete walls, or to sheathing over wood or metal studs, and as follows:
 - 1. Structural Performance Characteristics: Capable of withstanding a 100-lbf (445-N) load in both tension and compression without deforming or developing play in excess of 0.05 inch
 - 2. Width and depth of tie to be sized in accordance with air space provided, but in no case shall the tie be embedded closer than 5/8 inch from the outside face of masonry.
 - 3. Maximum dimension of air space shall be 4-1/2 inches. Minimum dimension of air space shall be greater than 1 inch.
- B. Over Sheathing with Wall Studs: 2-Piece Veneer Anchors: Screw-On Anchor Plates: 12 gauge hot dipped galvanized; Triangular-Shape Ties: W1.7 (9 gage) 3/16" diameter
 - 1. DW-10; Hohmann & Barnard, Inc.
 - 2. D/A 210 Plates with D/A 700-708 Ties; Dur-O-Wal, Inc.
 - 3. 315-D with 316; Heckman Building Products, Inc.

2.05 MISCELLANEOUS ANCHORS

- A. Unit Type Inserts in Concrete: Cast-iron or malleable-iron inserts of type and size indicated.
- B. Anchor Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153, Class C; of diameter and length indicated and in the following configurations:
 - 1. Headed bolts.
 - 2. Non-headed bolts, bent in manner indicated.
- C. Post-installed Anchors: Anchors as described below, with capability to sustain, without failure, load imposed within factors of safety indicated, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.
 - 1. Type: Chemical anchors.
 - 2. Type: Expansion anchors.
 - 3. Type: Undercut anchors.

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SECTION 04 73 00 – MANUFACTURED STONE VENEER

4. Corrosion Protection: Stainless-steel components complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2 (ASTM F 738M and ASTM F 836M, Alloy Group 1 or 4) for bolts and nuts; ASTM A 666 or ASTM A 276, Type 304 or 316, for anchors.
 5. For Post-installed Anchors in Concrete: Capability to sustain, without failure, a load equal to four times the loads imposed.
 6. For Post-installed Anchors in Grouted Masonry Units: Capability to sustain, without failure, a load equal to six times the loads imposed.
- E. Inserts, sleeves, and anchors as required for Hydraulic Elevator installation. Coordinate with Elevator submittals.
- 2.08 EMBEDDED FLASHING MATERIALS
- A. Visible Masonry Flashing: For flashing partly exposed to the exterior, used at intersections between masonry and shingles, roofing, siding or other differing material; with or without counterflashing, such as chimney brick meeting shingled roofs using step flashing and counterflashing; at intersecting plaza paver deck meeting brick walls, where a turned-up flashing-counterflashing arrangement is detailed; and similar situations at intersecting materials use metal flashing specified herein:
1. Copper Counterflashing, Step Flashing, and Other Architectural Flashing: 16-oz./sq. ft. weight or 0.0216 inch thick elsewhere.
 2. Fabricate counterflashing, step flashing, and other architectural flashing in accordance with SMACNA "Architectural Sheet Metal Manual".
- B. Embedded Masonry Flashing: For flashing not exposed to the exterior, such as window and door heads, window and door sills and base course flashing, use one of the following, unless otherwise indicated on Drawings
1. Copper: 10-oz./sq. ft. weight or 0.0135 inch thick; ASTM B 370 16-oz./sq. ft. weight or 0.0216 inch thick elsewhere.
 2. Copper-Laminated Flashing: Manufacturer's standard laminated flashing consisting of 5-oz./sq. ft. sheet copper bonded with asphalt or proprietary mastic between 2 layers of glass-fiber cloth. Use only where flashing is fully concealed in masonry.
 3. Asphalt-Coated Copper Flashing: Manufacturer's standard product consisting of 5-oz./sq. ft. sheet copper coated with flexible asphalt. Use only where flashing is fully concealed in masonry.
 4. Rubberized-Asphalt Flashing: Manufacturer's standard composite flashing product consisting of a pliable and highly adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of 0.040 inch
 5. EPDM Flashing: Manufacturer's standard flashing product formed from a terpolymer of ethylene-propylene diene, complying with ASTM D 4637, 0.040 inch thick.
- C. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
1. Copper-Laminated Flashing:
 - a. Copper Fabric Flashing; 5 oz. Advanced Building Products, Inc.
 - b. Copper Fabric; AFCO Products, Inc.
 - c. York Copper Fabric Flashing; Multi-Flash 500, 5 oz (Red Label) York Manufacturing, Inc.

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SECTION 04 73 00 – MANUFACTURED STONE VENEER

2. Asphalt-Coated Copper Flashing:
 - a. Cop-R-Cote; Advanced Building Products, Inc.
 - b. Cop-A-Cote; AFCO Products, Inc.
 - c. Copperseal; York Manufacturing, Inc.
 3. Rubberized-Asphalt Flashing:
 - a. Dur-O-Barrier; Dur-O-Wal, Inc.
 - b. Perm-A-Barrier Wall Flashing; W. R. Grace & Co., Construction Products Division.
 - c. Polyguard 300; Polyguard Products, Inc.
 4. EPDM Flashing:
 - a. FlashGuard; Firestone Building Products.
- D. Copper Corners and End Dams: Use at all end dams and on inside and outside brick corners at base course, watertable course, and any other flashing course that would continue through corners.
1. Copper Corners and End Dams:
 - a. Prefabricated Cop-R-Corner; Advanced Building Products, Inc.
 - b. Site Fabricated York Copper Fabric Flashing; Multi-Flash 500, 5 oz (Red Label) York Manufacturing, Inc., fabricated in strict accordance with York Manufacturing, Inc's published instructions.

2.09 WATER-RESISTIVE BARRIER

- A. A water-resistive barrier shall be applied to the exterior face of all building wall sheathing behind veneer forming a continuous barrier between the veneer air space and the wall sheathing:
1. Water-Resistive Barrier Material:
 - a. Type II No. 30 asphalt impregnated organic roofing felt paper meeting ASTM D 226-97a, non-perforated.:
 - b. Dupont Tyvek, with certified permeance of not less than 50, measured in accordance with ASTM E 96, and water resistance rating not less than 10, measured in accordance with ASTM D 779. Substitutions for Tyvek brand are not permitted
 - c. Fasten to all wall sheathing surfaces with plastic cap nails.. Apply in overlapping shingle fashion. Do not tape overlaps..
 2. Apply horizontally in shingle fashion, lapping all base flashings to form a continuous water shedding membrane directed to bottom course weep vents.

2.10 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Expansion Joint Filler: Pre-compressed filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent of width and thickness indicated; formulated from polyurethane. Compriband (AS) by Advanced Building Products, Inc. 800.252.2306
1. Size for uncompressed dimensions of 4x width and 2x depth of joint
- B. Bond-Breaker Strips: Asphalt impregnated, organic roofing felt complying with ASTM D 226, Type I; No. 15 asphalt felt
- C. Base Course Weep Vents: Polypropylene cellular vents system, Color to match surrounding mortar 3/8" x 2 1/2" x 3 3/8", or as otherwise required for full head height of brick

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SECTION 04 73 00 – MANUFACTURED STONE VENEER

1. Mortar Maze Cell Vents; Advanced Building Products, Inc. 800.252.2306
 2. Weep Vents; York Manufacturing, Inc.; 888.819.2592
- D. Lintel, Sill, and Upper Course Wicking Material: Cotton or polyester rope, 1/4 to 3/8 inch in diameter, in length required to produce 2-inch exposure on exterior and 18 inches in cavity between wythes.
- E. Cavity Drainage Material: Mortar deflection fabric consisting of a nylon polymer geomatrix mesh; 0,80 inches thick by 13 inches high, in 50-foot rolls .(Mortar Break) or polyethylene mesh 1 inch thick by 10 inches high, in 5 foot panel lengths. (Mortar Net)
1. Mortar Break; Advanced Building Products, Inc. 800.252.2306
 2. Mortar Net; Mortar Net USA, Ltd. 800.664.6638
- F. Foundation Drainage Board: subgrade foundation drainage board consisting of a basalt mineral fiber board; 1 inch thick cut to strips 6 inches high.
1. FX Drainage Media; Type 1; FibreX Insulations, Inc.. 800.265.7514
 2. Enkadrain Type P3; Colbond Geosynthetics 800.365.7391

2.11 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: (Vanitrol or equal) Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

2.12 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, without specific writing approval of the architect and/or engineer.
1. Do not use calcium chloride in mortar or grout.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Do not begin the installation process until substrates have been properly prepared.
- B. Notify architect of any unsatisfactory preparation of substrate before proceeding.
- C. Correct all unsatisfactory substrate conditions before installation begins.
- D. Verify roofs use proper water displacement methods to direct moisture away from the installed stone veneer.
- E. If substrate surface is questionable, bonding tests should be performed before installation to assess adhesion and confirm proper bonding strength.

SECTION 04 73 00 – MANUFACTURED STONE VENEER

- F. Flashing must be installed at wall penetrations and terminations of the stone veneer. Assure that all flashing and kickouts are corrosion resistant, integrated with the WRB properly, and installed in accordance with the local building code requirements.

3.02 PREPARATION

- A. Clean all surfaces thoroughly prior to installation.
- B. Use manufacturer surface preparation recommendations to achieve best result.

3.03 INSTALLATION

- A. Product should be pulled from a variety of boxes and blended on site during installation to ensure a consistent overall project color on the wall.
- B. Install in accordance with manufacturer's installation instructions. Visit this page for detailed installation instructions – <https://www.coronado.com/installationguide>
- C. Application details and mortar recommendations may vary depending on the stone style. Consult manufacturer for proper installation instructions.
- D. All dry-stacked and large format standard stones should be installed using a polymer-modified mortar meeting ANSI A118.4 or ANSI118.15
- E. All applications in freeze-thaw environments require a polymer-modified mortar.

3.04 CLEANING AND PROTECTION

- A. Installed manufactured stone veneer can be cleaned with a mild soap and water solution.
- B. Cleaning efflorescence can be done by lightly scrubbing the face of the stone with a soft bristle brush and water. In some cases, a 25% vinegar 75% water solution may need to be used. Do not use any harsh cleaning methods to remove efflorescence.
- C. Touch-up, repair or replace damaged stone before completion of project.
- D. Water repellents and enhancers can be used to further protect a finished project. Only breathable, penetrating water-based silane water repellants should be used.

END OF SECTION

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SECTION 05 12 00 - STRUCTURAL STEEL FRAMING

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:
 - 1. Structural steel.
 - 2. Grout.
- B. Related Sections include the following:
 - 1. Division 1 Section "Quality Requirements" for independent testing agency procedures and administrative requirements.
 - 2. Division 5 Section "Steel Deck" for field installation of shear connectors.
 - 3. Division 5 Section "Metal Fabrications" for steel lintels or shelf angles not attached to structural-steel frame miscellaneous steel fabrications and other metal items not defined as structural steel.

1.3 DEFINITIONS

- A. Structural Steel: Elements of structural-steel frame, as classified by AISC's "Code of Standard Practice for Steel Buildings and Bridges," that support design loads.

1.4 PERFORMANCE REQUIREMENTS

- A. Connections: Provide details of simple shear connections required by the Contract Documents to be selected or completed by structural-steel fabricator to withstand ASD-service loads indicated and comply with other information and restrictions indicated.
 - 1. Select and complete connections using schematic details indicated and AISC's "Manual of Steel Construction, Load and Resistance Factor Design," Volume 2, Part 9.
 - 2. Engineering Responsibility: Fabricator's responsibilities include using a qualified professional engineer to prepare structural analysis data for structural-steel connections.
- B. Construction: Type PR, partially restrained.

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STRUCTURAL STEEL FRAMING

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication of structural-steel components.
 - 1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
 - 2. Include embedment drawings.
 - 3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.
 - 4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections.
 - 5. For structural-steel connections indicated to comply with design loads, include structural analysis data prepared by the qualified professional engineer responsible for their preparation.
- C. Welding certificates.
- D. Mill Test Reports: Signed by manufacturers certifying that the following products comply with requirements:
 - 1. Structural steel including chemical and physical properties.
 - 2. Bolts, nuts, and washers including mechanical properties and chemical analysis.
 - 3. Direct-tension indicators.
 - 4. Tension-control, high-strength bolt-nut-washer assemblies.
 - 5. Shop primers.
 - 6. Nonshrink grout.
- E. Source quality-control test reports.

1.6 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel."
- B. Comply with applicable provisions of the following specifications and documents:
 - 1. AISC's "Code of Standard Practice for Steel Buildings and Bridges."
 - 2. AISC's "Seismic Provisions for Structural Steel Buildings" and "Supplement No. 2."
 - 3. AISC's "Load and Resistance Factor Design Specification for Structural Steel Buildings."
 - 4. AISC's "Specification for the Design of Steel Hollow Structural Sections."
 - 5. AISC's "Specification for Load and Resistance Factor Design of Single-Angle Members."
 - 6. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

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STRUCTURAL STEEL FRAMING

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from erosion and deterioration.
 - 1. Store fasteners in a protected place. Clean and relubricate bolts and nuts that become dry or rusty before use.
 - 2. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

1.8 COORDINATION

- A. Furnish anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

- A. W-Shapes: ASTM A 572/A 572M, Grade 50(345).
- B. Channels, Angles-Shapes: ASTM A 36/A 36M.
- C. Plate and Bar: ASTM A 36/A 36M.
- D. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.
- E. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

- A. High-Strength Bolts, Nuts, and Washers: ASTM A 325(ASTM A 325M), Type 1, heavy hex steel structural bolts or tension-control, bolt-nut-washer assemblies with splined ends; ASTM A 563(ASTM A 563M) heavy hex carbon-steel nuts; and ASTM F 436(ASTM F 436M) hardened carbon-steel washers.
 - 1. Finish: Plain.
 - 2. Direct-Tension Indicators: ASTM F 959, Type 325(ASTM F 959M, Type 8.8,) compressible-washer type.
 - a. Finish: Plain.
- B. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy hex head steel structural bolts with splined ends; ASTM A 563(ASTM A 563M)

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heavy hex carbon-steel nuts; and ASTM F 436(ASTM F 436M) hardened carbon-steel washers.

1. Finish: Plain.

C. Unheaded Anchor Rods: ASTM F 1554, Grade 36.

1. Configuration: Hooked.
2. Nuts: ASTM A 563(ASTM A 563M) heavy hex carbon steel.
3. Plate Washers: ASTM A 36/A 36M carbon steel.
4. Washers: ASTM F 436(ASTM F 436M) hardened carbon steel.
5. Finish: Plain.

2.3 PRIMER

A. Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer.

2.4 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.5 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC's " Load and Resistance Factor Design Specification for Structural Steel Buildings."

1. Camber structural-steel members where indicated.
2. Identify high-strength structural steel according to ASTM A 6/ A 6M and maintain markings until structural steel has been erected.
3. Mark and match-mark materials for field assembly.
4. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.

C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. Holes: Provide holes required for securing other work to structural steel and for passage of other work through steel framing members.

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1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
2. Base-Plate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.6 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 1. Joint Type: Snug tightened.
- B. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.

2.7 SHOP PRIMING

- A. Shop prime steel surfaces except the following:
 1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches(50 mm).
 2. Surfaces to be field welded.
 3. Galvanized surfaces.
- B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
 1. SSPC-SP 3, "Power Tool Cleaning."
- C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a dry film thickness of not less than 1.5 mils(0.038 mm). Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
 2. Apply two coats of shop paint to inaccessible surfaces after assembly or erection. Change color of second coat to distinguish it from first.

2.8 SOURCE QUALITY CONTROL

- A. Owner will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.
 1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.

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- B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- C. Bolted Connections: Shop-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- D. Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1 and the following inspection procedures, at testing agency's option:
 - 1. Liquid Penetrant Inspection: ASTM E 165.
 - 2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 - 3. Ultrasonic Inspection: ASTM E 164.
 - 4. Radiographic Inspection: ASTM E 94.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments, with steel erector present, for compliance with requirements.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place, unless otherwise indicated.

3.3 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Load and Resistance Factor Design Specification for Structural Steel Buildings."
- B. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting base and bearing plates. Clean bottom surface of base and bearing plates.
 - 1. Set base and bearing plates for structural members on wedges, shims, or setting nuts as required.

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2. Weld plate washers to top of base plate.
 3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of base or bearing plate before packing with grout.
 4. Promptly pack grout solidly between bearing surfaces and base or bearing plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
- C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."
- D. Align and adjust various members forming part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
1. Level and plumb individual members of structure.
 2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.
- E. Splice members only where indicated.
- F. Do not use thermal cutting during erection [unless approved by Architect. Finish thermally cut sections within smoothness limits in AWS D1.1].
- G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.
- 3.4 FIELD CONNECTIONS
- A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
1. Joint Type: Snug tightened.
- B. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.
1. Comply with AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Load and Resistance Factor Design Specification for Structural Steel Buildings" for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.
- 3.5 FIELD QUALITY CONTROL
- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.

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- B. Bolted Connections: Shop-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- C. Welded Connections: Field welds will be visually inspected according to AWS D1.1.
 - 1. In addition to visual inspection, field welds will be tested according to AWS D1.1 and the following inspection procedures, at testing agency's option:
 - a. Liquid Penetrant Inspection: ASTM E 165.
 - b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 - c. Ultrasonic Inspection: ASTM E 164.
 - d. Radiographic Inspection: ASTM E 94.
- D. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.6 REPAIRS AND PROTECTION

- A. Touchup Painting: After installation, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted joists and accessories, bearing plates, and abutting structural steel.
 - 1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.
 - 2. Apply a compatible primer of same type as shop primer used on adjacent surfaces.

END OF SECTION

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STRUCTURAL STEEL FRAMING

SECTION 05 50 00 - METAL FABRICATIONS

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes the following metal fabrications:
1. Loose bearing and leveling plates.
 2. Loose steel lintels.
 3. Miscellaneous framing and supports
 4. Framing and supports not specified in other sections.
 5. Miscellaneous steel trim.
 6. Steel pipe drinking fountain rails
 7. Steel Ladder

1.02 DEFINITIONS

- A. Definitions in ASTM E 985 for railing-related terms apply to this section.

1.03 SUBMITTALS

- A. Shop drawings detailing fabrication and erection of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide templates for anchors and bolts specified for installation under other sections.

1.04 PROJECT CONDITIONS

- A. Field Measurements: Check actual locations of walls and other construction to which metal fabrications must fit, by accurate field measurements before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of Work.

PART 2 - PRODUCTS

2.01 FERROUS METALS

- A. Metal Surfaces, General: For metal fabrications exposed to view upon completion of the Work, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do not use materials whose exposed surfaces exhibit pitting, seam marks, roller marks, rolled trade names, roughness, and, for steel sheet, variations in flatness exceeding those permitted by reference standards for stretcher-leveled sheet.
- B. Steel Plates, Shapes, and Bars: ASTM A 36.
- C. Steel Tubing: Product type (manufacturing method) and as follows:
1. Cold-Formed Steel Tubing: ASTM A 500, grade as indicated below:
 - a. Grade A, unless otherwise indicated or required for design loading.
 - b. For exterior installations and where indicated, provide tubing with hot-dip galvanized coating per ASTM A 53.

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METAL FABRICATIONS

SECTION 05 50 00 - METAL FABRICATIONS

- D. Steel Pipe: ASTM A 53; finish, type, and weight class as follows:
 - 1. Black finish, unless otherwise indicated.
 - 2. Type F, standard weight (schedule 40), unless otherwise indicated, or another weight, type, and grade required by structural loads.
- E. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails, unless otherwise indicated.
- F. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A 47, or cast steel, ASTM A 27. Provide bolts, washers, and shims as required, hot-dip galvanized per ASTM A 153.
- G. Welding Rods and Bare Electrodes: Select in accordance with AWS specifications for the metal alloy to be welded.

2.02 FASTENERS

- A. General: Provide zinc-coated fasteners for exterior use or where built into exterior walls. Select fasteners for the type, grade, and class required.
- B. Bolts and Nuts: Regular hexagon head type, ASTM A 307, Grade A.
- C. Lag Bolts: Square head type, FS FF-B-561.
- D. Machine Screws: Cadmium plated steel, FS FF-S-92.
- E. Wood Screws: Flat head carbon steel, FS FF-S-111.
- F. Plain Washers: Round, carbon steel, FS FF-W-92.
- G. Drilled-In Expansion Anchors: Expansion anchors complying with FS FF-S-325, Group VIII (anchors, expansion, [non-drilling]), Type I (internally threaded tubular expansion anchor); and machine bolts complying with FS FF-B-575, Grade 5.
- H. Toggle Bolts: Tumble-wing type, FS FF-B-588, type, class, and style as required.
- I. Lock Washers: Helical spring type carbon steel, FS FF-W-84.

2.03 PAINT

- A. Shop Primer for Ferrous Metal: Manufacturer's or fabricator's standard, fast-curing, lead-free, universal modified alkyd primer selected for good resistance to normal atmospheric corrosion, for compatibility with finish paint systems indicated, and for capability to provide a sound foundation for field-applied topcoats despite prolonged exposure complying with performance requirements of FS TT-P-645.

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SECTION 05 50 00 - METAL FABRICATIONS

2.04 FABRICATION, GENERAL

- A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.
- B. Allow for thermal movement resulting from the following maximum change (range) in ambient temperature in the design, fabrication, and installation of installed metal assemblies to prevent buckling, opening up of joints, and overstressing of welds and fasteners.
- C. Shear and punch metals cleanly and accurately. Remove burrs.
- D. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- E. Remove sharp or rough areas on exposed traffic surfaces.
- F. Weld corners and seams continuously to comply with AWS recommendations and the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.
- G. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.
- H. Shop Assembly: Pre-assemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for re-assembly and coordinated installation.
- I. Cut, reinforce, drill and tap miscellaneous metal work as indicated to receive finish hardware, screws, and similar items.
- J. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.

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SECTION 05 50 00 - METAL FABRICATIONS

2.05 ROUGH HARDWARE

- A. Fabricate items to sizes, shapes, and dimensions required. Furnish malleable-iron washers for heads and nuts which bear on wood structural connections; elsewhere, furnish steel washers.

2.06 LOOSE BEARING AND LEVELING PLATES

- A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction, made flat, free from warps or twists, and of required thickness and bearing area. Drill plates to receive anchor bolts and for grouting as required. Galvanize after fabrication.

2.07 LOOSE STEEL LINTELS

- A. Fabricate loose structural steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.
- B. All lintels exposed to exterior to be galvanized, primed, and painted.

2.08 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports for applications indicated or which are not a part of structural steel framework, as required to complete work.
- B. Fabricate units to sizes, shapes, and profiles indicated and required to receive adjacent other construction retained by framing and supports. Fabricate from structural steel shapes, plates, and steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware, hangers, and similar items.
 - 1. Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units must be installed after concrete is placed.
 - 2. Except as otherwise indicated, space anchors 24 inches o.c. and provide minimum anchor units in the form of steel straps 1-1/4 inches wide x 1/4 inches x 8 inches long.

2.09 MISCELLANEOUS STEEL TRIM

- A. Provide shapes and sizes indicated for profiles shown. Unless otherwise indicated, fabricate units from structural steel shapes, plates, and steel bars, with continuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings, and anchorages as required for coordination of assembly and installation with other work.

2.10 STEEL PIPE DRINKING FOUNTAIN RAILS

- A. Provide shapes and sizes indicated for profiles listed. Unless otherwise indicated, fabricate units from structural steel pipe, with continuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings, and anchorages as required for coordination of assembly and installation with other work.

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SECTION 05 50 00 - METAL FABRICATIONS

1. Form steel pipe in "L" configuration anchored to walkway and building.
2. Set top of steel pipe at 36" (inches) above adjacent sidewalk anchor to building face.
3. Set front face of pipe 18 3/4" (inches) from face of building / even with face of adjacent drinking fountain 'WB' and anchor to walkway. Coordinate depth with project specific exterior drinking fountain.

2.11 STEEL LADDERS

- A. Fabricate steel ladder for rooftop access.
- B. MATERIALS
 1. Stringers (Side rail)
 - a. Steel bar.
 - b. 3" x 1" x 3/8" .
 2. Treads
 - a. Steel bar, deformed
 - b. 3/4" diameter
 3. Mounting Bracket
 - a. 8 1/2" x 2" x 3" x 3/8" steel angles.

2.12 FINISHES, GENERAL

- A. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to application and designations of finishes.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, including concrete inserts, sleeves, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.
- B. Set sleeves in concrete with tops flush with finish surface elevations; protect sleeves from water and concrete entry.

3.02 INSTALLATION, GENERAL

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installation of miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

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SECTION 05 50 00 - METAL FABRICATIONS

- 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 the surfaces of exterior units which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.
- D. Field Welding: Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, methods used in correcting welding work, and the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.

3.03 SETTING LOOSE PLATES

- A. Clean concrete and masonry bearing surfaces of any bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of bearing plates.
- B. Set loose leveling and bearing plates on wedges, or other adjustable devices. After the bearing members have been positioned and plumbed, tighten the anchor bolts. Do not remove wedges or shims, but if protruding, cut off flush with the edge of the bearing plate before packing with grout.
 - 1. Use metallic nonshrink grout in concealed locations where not exposed to moisture; use nonmetallic nonshrink grout in exposed locations, unless otherwise indicated.

END OF SECTION

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METAL FABRICATIONS

SECTION 05 51 33 – METAL LADDERS

PART 1 - GENERAL

1.01 SUMMARY

- A. Attic Ladder: Precision Ladders LLC. super simplex disappearing stairway. Aluminum construction. Meets ANSI A14.9-2004 commercial use. test weight 500lbs, individual tread 1000lbs. clear tread area 5 3/16" x 19 1/2". specify 11ft to 12ft high ladder. Request special deep frame to accommodate dropped ceiling.
- B. Aluminum Fixed Vertical Ladder including ladder, side rail.
- C. ALTERNATE: Steel fabricated ladder is acceptable. Provide Shop Drawings for approval.

1.02 DEFINITIONS

- A. The attic ladder system is a retractable ladder to be concealed above the ceiling allowing access to the attic.
- B. The fixed ladder system is an aluminum ladder designed to be attached to a wall with walk-through side rails

1.03 SUBMITTALS

- A. Shop drawings detailing fabrication and erection of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide templates for anchors and bolts specified for installation under other sections.

1.04 PROJECT CONDITIONS

- A. Field Measurements: Check actual locations of walls and other construction to which ladder must fit, take accurate field measurements before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of Work.
- B. Coordinate installation of ladder with rough framing schedule. It will not be possible to install ladder after completion of framing and finishing operations.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Precision Ladders, LLC
P. O. Box 2279
Morristown, Tennessee 37816
Phone: (800) 225-7814
FAX: (423) 586-2091
www.precisionladders.com/flseries.htm

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SECTION 05 51 33 – METAL LADDERS

2.02 MATERIALS

A. TUBULAR FIXED LADDER

1. Stringers (Side rail)
 - a. Aluminum tube. (6005-t5)
 - b. 3" x 1" x 1/8"
 - c. 1/8" molded polyurethane safety cap provided at top.
 - d. 2 1/2" x 2" x 3" floor bracket if required.
2. Treads
 - a. Extruded aluminum (6005-t5)
 - b. 2 1/4" x 3/4" x 1/4"
 - c. Treads deeply serrated for safety.
3. Mounting Bracket
 - a. 8 1/2" x 2" x 3" x 1/4" aluminum angle.

2.03 DIMENSIONS

- A. Ladder dimension shall extend from finished floor surface of mechanical mezzanine to rooftop access hatch receiver bracket. Field verify all dimensions.
- B. Ladder dimension shall extend from finished concrete slab to finished floor surface of mechanical mezzanine. Field verify all dimensions.

2.04 FINISHES

- A. Mill finish on aluminum ladder components.

2.05 FABRICATION

- A. Ladder shall be completely fabricated ready for installation before shipment to the site.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation. Coordinate delivery of such items to project site.
- B. Confirm correct location of all solid blocking, bracing or other supports required for installation..

3.02 INSTALLATION

- A. Install per the manufacturer's installation instructions.

END OF SECTION

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METAL LADDERS

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide rough carpentry work for:
 - 1. Wood framing
 - 2. Wood sheathing
 - 3. Nailers, blocking, furring, and sleepers
 - 4. Miscellaneous carpentry work
 - 5. Exterior weather resistive barrier
- B. Carpentry subcontractor is also responsible for installation of:
 - 1. Weatherproof membrane installed on all exterior wall sheathing surfaces.
 - 2. Flashing support blocking
 - 3. Replacement sill anchors (when required) – HILTI adhesive anchorage system
 - 4. Miscellaneous blocking, furring, shimming, and other fit and finish requirements for doors, windows, cabinets, casework, running trim, PVC trim, aluminum guttering systems, and other components requiring carpentry blocking or backup.

1.02 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Grade Marking
 - 1. Lumber: Dimension and board lumber shall conform to DOC PS 20 and shall be identified by the grademark of a recognized grading inspection agency authorized to grade the species. The associate or independent agency and the grading rules under which they grade, shall be certified by the Board of Review American Lumber Standards Committee.
 - a. Factory mark each piece of lumber with grade stamp of grading agency.
 - b. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
 - c. Provide dressed lumber, S4S, unless otherwise indicated.
 - 2. Plywood: Each sheet of plywood used structurally or as underlayment or roof sheathing, shall be stamped with the appropriate American Plywood Association (APA) grade designation for APA Rated Sheathing, APA Structural I & II Rated Sheathing, APA Rated Sturd-I-Floor, APA Rated Siding, APA Medium Density Overlay, APA High Density Overlay, APA Marine, APA Plyron, APA B-B Plyform Class I, or APA Decorative, and shall conform to U.S. Product Standard for Construction and Industrial Plywood, P.S 1-83/ANSI A199.1 DOC PS1 or DOC PS2
 - 3. Pressure Treated Wood: ACQ or CBA Pressure treated wood shall be labeled in accordance with the American Wood Preservers Bureau Standard.

1.03 SUBMITTALS

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- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
- B. Fastener Patterns: Full-size templates for fasteners in exposed framing.
- C. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.
- D. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:
 - 1. Power-driven fasteners.
 - 2. Powder-actuated fasteners.
 - 3. Expansion anchors.
 - 4. Metal framing anchors.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Engineered Wood Products
 - 1. Beams, Girders & Headers over openings in loadbearing walls,: Laminated Veneer Lumber (LVL) with a minimum E = 2,000,000 psi; Fb = 2,900 psi. Sizes shown on Drawings.
- B. Dimension Lumber, finished 4 sides (S4S), Uniformly kiln dried to a 19% maximum moisture content:
 - 1. Joists & Rafters: No. 2 or better, Southern Pine SPIB, Hem-fir (north) NLGA, Douglas Fir Larch WCLIB or WWPA. See Header Schedule on Drawings.
 - 2. Headers (Non-Loadbearing Walls Only): No. 2 or better, Southern Pine SPIB, Hem-fir (north) NLGA, Douglas Fir Larch WCLIB or WWPA. See Header Schedule on Drawings.
 - 3. Exterior Wall Use 2x4 & 2x6 Studs & Plates: No. 2 or better, Southern Pine SPIB or Douglas Fir Larch WCLIB or WWPA
 - 4. Interior Wall Use Non-Loadbearing Partitions 2x4 & 2x6 Studs & Plates: No. 2 or better, Mixed Southern Pine SPIB, Hem-fir WCLIB or WWPA, Spruce-Pine-Fir NLGA, Western woods WCLIB or WWPA
 - 5. Miscellaneous Nailers, Blocking, Furring, Etc.: Construction Grade or No. 2 or better, Mixed Southern Pine SPIB, Hem-fir WCLIB or WWPA, Spruce-Pine-Fir NLGA, Western woods WCLIB or WWPA
- C. Wood Sheathing, APA rated for use and exposure as follows:

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1. Exterior Wall Sheathing: APA Structural I Performance Rated Sheathing, meeting the following minimum criteria:

Thickness	5/8 inch
Span Rating	24/16
Exposure	1
Edges	Square
Size	48"x96", 48"x108", or 48"x120"

2. Roof Sheathing for 6:12 sloped roof area: APA Rated Sheathing, meeting the following minimum criteria:

Thickness	5/8 or 3/4 inch
Span Rating	24/0 or 24/16
Exposure	1
Edges	Square
Size	48"x96"

3. Roof Sheathing for flat roof area receiving membrane roofing: APA Rated Sheathing, meeting the following minimum criteria:

Thickness	3/4 inch
Span Rating	24/0 or 24/16
Exposure	1
Edges	Square
Size	48"x96"

4. Staff Office & Mechanical Mezzanine Floor Sheathing and Attic Walkboard Sheathing: APA Rated Sturd-I-Floor, meeting the following minimum criteria:

Thickness	3/4 inch
Span Rating	24/0 or 24/16
Exposure	1
Edges	Tongue & Groove
Size	48"x96"

D. Wood treatment:

1. Sill Plates, Posts, Timber & Miscellaneous Exterior Lumber: Pressure-treated wood material with Preserve™ Ammonia Copper Quaternary (ACQ), or Natural Select™ Copper Boron Azole (CBA) waterborne preservatives meeting American Wood-Preservers' Association (AWPA) Standards: C1, C2, C22, C4, C5, C9, C15, C17, P5, ICBO ER 4981.
 - a. For Above Ground Contact use CBA or ACQ with a chemical retention of 0.25 lbs/CuFt after treatment, and a uniform maximum moisture content of 19%.
 - b. For Direct Ground Contact use CBA or ACQ with a chemical retention of 0.40 lbs/CuFt after treatment, and a uniform maximum moisture content of 19%.

E. Fasteners:

1. Fasteners: Provide fasteners of size and type indicated. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in an

area of high relative humidity, provide fasteners with hot-dipped zinc coating meeting ASTM A 153A/ A 153M and connectors meeting ASTM A 653 Class G185 or better. Aluminum shall not be used in any area that is in direct contact with pressure-treated wood.

2. Nails, Brads, and Staples: ASTM F 1667.
3. Power-Driven Fasteners: NES NER-272.
4. Wood Screws: ASME B18.6.1. E. Lag Bolts: ASME B18.2.1(ASME B18.2.3.8M).
5. Bolts: Steel bolts complying with ASTM A 307, Grade A(ASTM F 568M, Property Class 4.6); with ASTM A 563(ASTM A 563M) hex nuts and, where indicated, flat washers.
6. Sill Anchors:
 - a. Exterior Wall Sill Plates: Use 1/2 inch diameter steel anchor J-type bolt not less than 16 inches in length with not less than a 2 inch end hook. Use A1554-36 steel.. Space anchors as shown on Drawings, but in no case less than 48 inches on center. Embed anchors into concrete foundation wall or fully grouted masonry cores of foundation block leaving 2-1/2 inches of exposed threads above top of foundation for mounting and securing sill plates. Provide a 2 inch diameter washer and hex nut for each anchor bolt. Do not notch, counterbore, or otherwise alter the thickness of the sill plate at the anchor bolt fastening.
 - b. Interior Loadbearing Wall Sill Plates: Use HILTI HAS 5/8" x 12" threaded rods @ 48" oc with HILTI HIT 150 adhesive. See drawings for details. Adhesive installation to be observed by Special Testing – Structural inspectors.
 - c. Replacement Anchors: To replace originally installed sill anchor when it is misaligned, broken, or missing, or when otherwise required to meet sill anchor location and spacing after framing commences, retain the services of a Licensed Structural Engineer and an approved Testing Agency for the design, installation, and inspection of each replacement anchor. Submit a written report of such replacement activities to the Architect. All replacement sill anchor installation shall be the responsibility of the Framing Subcontractor.
7. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 - a. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
 - b. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2(ASTM F 738M and ASTM F 836M, Grade A1 or A4).

8. Metal Connectors: Use metal connectors including joist hangers, tie downs, rafter ties, angles, straps, and other metal connectors where shown on the Drawings or required by these Specifications. Connectors shall be of the size, type, and structural capacity to support all loads supported. Use connectors manufactured by Simpson Strong-Tie, Kant-Sag, Silver Metal Products, or Semco.

F. Miscellaneous Materials:

1. Weather-Resistive Barrier: Type II No. 30 asphalt impregnated organic roofing felt paper meeting ASTM D 226-97a, non-perforated. Fasten to all wall sheathing surfaces with plastic cap nails.
1. Weather-Resistive Barrier: Dupont Tyvek "Commercial Wrap" or "StuccoWrap". Provide submittals that certify the following performance specifications. Fasten to all wall sheathing surfaces with plastic cap nails.. Apply in overlapping shingle fashion. Do not tape overlaps. Substitutions are not permitted.
 - a. Performance Characteristics
 - 1) AATCC-127, Water Penetration Resistance, exceeded at not less than 210
 - 2) TAPPI T-460, Gurley Hill (sec/100cc) Air infiltration at not less than 300 seconds
 - 3) ASTM E 96 Method B(g/m²-24hr.)Water vapor transmission of not more than 400
 - 4) TAPPI T-41D, 2.1 oz/yd (StuccoWrap) 2.7 oz/yd (CommercialWrap)
 - 5) ASTM E96 Method B, Water Vapor Transmission, not less than 28 perms
 - 6) ASTM E1677, Air Retarder Material Standard Specification, Type I air barrier
2. Window Setting Gaskets and Blocking: Adhesive asphalt-rubber strip for use as a nailing flange seal on jambs and head faces of rough opening. Install in shingle fashion and install the head strip behind the weather-resistive barrier.
3. Window Sill Flashing: Framing Subcontractor shall install window sill flashing using embedded flashing material identified in Section 07600 over a piece of bevel siding fastened to the bottom of the rough opening, or otherwise sloped outward in direction of drainage.
4. Wall Sill Plate Sealer Gaskets: Closed-cell polyethylene resilient insulation fabricated in ribbed strip for use as a sill sealer; 5-1/2" width for 2x6 wall plates. Install with ribbed side down.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION

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- A. Wood framing: Comply with IBC [2000 Chapter 23], and the recommendations of NFPA Manual for House Framing, and NFPA National Design Specifications for Wood Construction.
 - 1. All nailing and fastening shall comply with the minimum requirements of Fastening Schedule IBC [2000 Table 2304.9.1]
- B. Plywood: Comply with recommendations of the current edition of the "APA Design/Construction Guide - Residential and Commercial". Comply with special nailing notes on the Drawings and/or as specified herein. Special nailing is required at specific locations which is more stringent than APA's requirements.
- C. Do not splice structural members between supports, unless otherwise indicated.
- D. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- E. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. NES NER-272 for power-driven fasteners.
 - 2. [Table 2304.9.1], "Fastening Schedule," in ICC's International Building Code.
- F. Provide nailers, blocking and grounds where required, and as needed to provide solid backing for all wall & ceiling attachments including, but not limited to, bath accessories, grab bars, wall-mounted fixtures, wall mounted cubbies, wall mounted kitchen cabinets, wall mounted handwash sinks, drinking fountains, window blinds and drapery attachments, door closers, ceiling-hung fixtures, shelving, wall mounted exit signs, lighting, and signaling fixtures, and all other similar item requiring solid mounting to walls or ceilings. Set blocking plumb, level and accurately cut.
- G. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with other work.
- H. Comply with manufacturer's requirements for cutting, handling, fastening and working treated materials.
- I. Provide fire blocking in concealed spaces of stud walls and partitions, including furred spaces, at the ceiling and floor levels and at not less than ten (10) foot intervals both vertical and horizontal. Where fire blocking is not automatically provided by the framing system used, use closely-fitted wood blocking of nominal 2" thick lumber of the same width as framing members.
- J. Restore damaged components. Protect work from damage.

3.02 FRAMING & SHEATHING

- A. Walls & Partitions:

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1. All studs to be spaced at 16" o.c. Use 2"x4" studs for 3-1/2" walls, 2"x6" studs for 5-1/2" walls, and 2"x8" studs for 7-1/4" walls. Use 2"x6" studs at 16" oc for all interior and exterior loadbearing walls. All exterior walls, load bearing walls, and other walls so identified shall have double top plates. Top plates shall be lapped at all corners and intersecting partitions. Ends of top plate lower member shall occur over studs. Joints in upper member of double top plates shall occur a minimum of 48 inches from joint in lower member. Plates shall be nailed together as required in Fastening Schedule IBC [2000 Table 2304.9.1] Provide single bottom plate on all first floor walls.
 2. Install pressure treated sill plates on all exterior walls. Drill plate to receive embedded 1/2 inch diameter J-anchor bolts. Fasten with 2 inch diameter washer and hex nut. Torque tight, but do not crush wood plate. Provide sill anchors on all exterior sill plates spaced at a distance shown on the drawings, but not greater than 48 inches on center, with not less than two anchors per sill plate section. Provide additional sill anchor bolts not more than 12 inches nor less than 4 inches from each end of each sill plate at splices and at corner intersections. Provide additional sill anchors and reduced spacing where shown on Drawings for special structural conditions.
 3. Construct all corners and intersections with not less than 3 studs for solid corner blocking. Provide miscellaneous blocking and framing as shown and as required for support of facing materials, fixtures, specialty items and trim.
 4. Provide continuous horizontal blocking row for partitions using 2" thick members of same width as wall or partitions. Locate continuous horizontal blocking row at all intermediate horizontal sheathing joints not to exceed 8 feet between blocking rows.
 5. Frame openings with multiple studs and headers. Provide nailed header members, per Fastening Schedule IBC 2000 Table 2304.9.1 of thickness equal to width of studs. Set headers on edge and support on jamb or cripple studs. See Header Schedule on drawings for member size and end bearing.
 6. For non-bearing partitions, provide dimension lumber or LVL headers sized as shown on the Schedule.
 7. For load-bearing partitions, provide LVL headers sized as shown on the Drawings. Provide end bearing in accordance with the Drawings, Schedule, and Manufacturer's data.
- B. Wall Sheathing: Wall sheathing shall be installed with long dimension horizontal and perpendicular to framing, staggered joints. Provide solid wood blocking at all intermediate panel joints if unable to span full height. Position each panel allowing 1/8 inch space at all edges to accommodate expansion and in accordance with APA Specifications.
1. Fastening Requirements: Fasteners for all wall sheathing shall be 10d cement coated common nails. See structural drawings for spacing of fasteners.
 2. Exterior face of all wall sheathing shall be protected with a continuous Water-Resistive Barrier described above.

- C. Mezzanine Floor Sheathing: Floor sheathing shall be installed staggered so that end joints in adjacent panels break over different supporting trusses. Each piece shall span a minimum of two truss spaces with bearing on at least three floor trusses. Position each panel allowing 1/8" space at all ends and 1/8" between edges after engaging tongue-and-grooves to accommodate expansion and in compliance with APA Specifications. Do not drive tongue and groove edges tighter than a 1/8 inch gap along the tongue and groove panel joint.
1. Fastening Requirements: Glue-Nail Method: Fasten plywood floor sheathing with approved glue adhesive and nail at 6 inches oc at all edges and 12" oc in field with 10d cement coated common nails, 10d screw shank nails, or approved screw fasteners.
 2. For attic walkboard construction, provide 2x4 or 2x4 stringers, perpendicular to truss framing members and sitting on top edge of bottom truss chords. Space stringers at 16 inches, but not more than 24 inches apart. Apply floor sheathing as noted above.
- C. Roof Sheathing: Roof sheathing shall be installed with the long edges of panels at right angles to trusses or rafters and be staggered so that end joints break over different trusses. Each piece shall span a minimum of two truss spaces with bearing on at least three trusses. Position each panel allowing 1/8" space at all ends and 1/8" at all edges to accommodate expansion and in accordance with APA Specifications. Place one (1) extruded aluminum "H" panel clip, or galvanized 18 ga. sheathing clip, between each truss for edge support.
1. Fasteners for all roof sheathing shall be 10d cement coated common nails spaced at 6 inches on center along all supported panel edges, and 12 inches o.c. at intermediate members in the field of the panel. Provide a double-row of 10d nails with pairs spaced 6 inches on center along all shear wall locations.
 2. Exterior face of all 6:12 sloped roof sheathing beneath shingles shall be covered with Type II No. 30 asphalt impregnated organic roofing felt paper meeting ASTM D 226-97a, non-perforated.
 3. Do not apply organic roofing felt paper to roof sheathing receiving membrane roofing. Install temporary waterproofing as described above
- D. Solid Blocking: All walls receiving drywall shall be built with solid edge blocking for full height. These walls and their points of intersection with other walls and ceilings must have full solid wood blocking to support gypsum drywall over its entire length and distance. Drywall clips, extended drywall ends, or partial corner blocking are not acceptable for intersecting drywall panels.
1. Provide additional solid blocking as described in these specifications
 2. Coordinate location of block for interior furnishings provided by others such as cubbies, furnishings, and other items
- E. Concentrated Loads : Provide solid wood blocking to support and transfer to the foundation, all concentrated load conditions (point loads) resulting from floor, roof girders or beams, including, but not limited to concentrated loads from hip girders, girders supporting chimneys, valley girders, doubled truss end bearing, and other areas where standard wall stud spacing is insufficient for transferring loads to foundation. Build-up studs to provide continuous load path from source of load to foundation.
1. LVL Headers indicated are for load-bearing wall regions supporting common trusses at 2'-0" oc maximum. The contractor is responsible for coordinating truss

- shop drawing girder locations to either avoid bearing on headers or sizing special headers for conditions with girders bearing above them.
2. At all girder locations on LVL headers provide three trimmer studs directly supporting each end of headers supporting girder loads and two continuous king studs on each side.
 3. When laying out roof trusses avoid girder members located directly over window or door openings. If unavoidable, provide transfer header at top of wall to span opening and transfer loads directly to foundation without bearing on window header.

F. Do not notch, bore, or otherwise cut any special built-up stud, column, or any rafters.

3.03 ACQ PRESSURE TREATED LUMBER

A. Fasteners: Use only hot-dipped galvanized or stainless steel fasteners

B. Do not permit electroplated or aluminum material to come into contact with any pressure treated lumber.

C. If using Western wood species, treat all cuts, bores, or holes in accordance with AWPA Standard M4 using a coating of copper naphthenate preservative solution containing a minimum of 1% metallic copper.

D. Dispose of ACQ treated lumber by burial in ordinary landfills. Do not burn ACQ lumber.

3.04 FASTENERS

A. Unless otherwise stated or shown on the Drawings, all fasteners shall conform in size type, and spacing to the Fastening Schedule: Table 2304.9.1. International Building Code –2000 or current edition.

3.05 NOTCHING

A. Cutting and Notching: In exterior walls and bearing partitions, any wood stud may be cut or notched to a depth not exceeded 25 percent of its width, except for built-up studs supporting special loads as identified on the Drawings.. Cutting or notching of studs is permitted in nonbearing partitions supporting no loads other than the weight of the finished partition.

B. Bored Holes: A hole not greater in diameter than 40 percent of the stud width may be bored in any wood stud, except for built-up studs supporting special loads as identified on the Drawings. Studs may be bored a maximum of 2 inches for vent and drain lines. Bored holes not greater than 60 percent of the width of the stud are permitted in nonbearing partitions or in any wall where each bored stud is doubled, provided not more than two such successive doubled studs are so bored.

C. In no case shall the edge of the bored hole be nearer than 5/8" to the edge of the stud. Bored holes shall not be located at the same section of stud as a cut or notch.

END OF SECTION

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ROUGH CARPENTRY

SECTION 06 17 53 – SHOP-FABRICATED WOOD TRUSSES

PART 1 – GENERAL

1.01 SUMMARY:

- A. Types of prefabricated wood trusses include:
 1. Gable-shaped trusses.
 2. Girder trusses .
 3. Monopitch trusses.
 4. Gable end trusses

1.02 DEFINITIONS:

- A. Prefabricated wood trusses include planar structural units consisting of metal plate connected members which are fabricated from dimension lumber and which have been cut and assembled prior to delivery to the project site.

1.03 SUBMITTALS:

- A. Product Data: Submit fabricator's technical data covering lumber, metal plates, hardware, fabrication process, treatment, temporary and permanent bracing, storage, handling and erection.
- B. Submit certificate, signed and sealed by a registered Professional Engineer, indicating that trusses to be supplied for project comply with indicated requirements.
- C. Shop Drawings: Submit shop drawings showing species, sizes and stress grades of lumber to be used; pitch, span, camber configuration and spacing for each type of truss required; type, size, material, finish, design values, location of metal connector plates; and bearing and anchorage details. Also provide detailed instructions for erection of trusses including storage, handling, lifting, stacking, temporary and permanent bracing, erection sequence, and other related instructions.
- D. Provide shop drawings which have been signed and stamped by a structural engineer licensed to practice in the jurisdiction where trusses will be installed. Such shop drawings shall include all design criterion, and a key plan showing roof framing layout by truss types. Architect's receipt, review, and return of these shop drawings is a prerequisite to truss fabrication.

1.04 QUALITY ASSURANCE:

- A. TPI Standards: Comply with applicable requirements and recommendations of the following Truss Plate Institute (TPI) publications:
 1. "Design Specification for Metal Plate Connected Wood Trusses".
 2. "Design Specification for Metal Plate Connected Parallel Chord Wood Trusses".
 3. "Commentary and Recommendations for Handling and Erecting Wood Trusses".
 4. "Commentary and Recommendations for Bracing Wood Trusses".
 5. "Quality Standard for Metal Plate Connected Wood Trusses".

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SHOP-FABRICATED WOOD
TRUSSES

- B. Design by Manufacturer: Trusses shall be designed to meet the Connector plate manufacturer's requirements to support all superimposed dead and live loads indicated, with design approved and certified by a structural engineer licensed to practice in the jurisdiction where trusses will be installed.
- C. Connector Plate Manufacturer's Qualifications: Provide truss connector plates manufactured by a firm which is a member of TPI and which complies with TPI quality control procedures for manufacture of connector plates published in TPI "Quality Standard for Metal Plate Connected Wood Trusses".
- D. Single Source Responsibility for Connector Plates: Provide metal connector plates from a single manufacturer.

1.05 DELIVERY, STORAGE, HANDLING:

- A. Handle and store trusses with care, and in accordance with manufacturer's instructions and TPI recommendations to avoid damage from bending, overturning or other cause for which truss is not designed to resist or endure.
- B. Time delivery and erection of trusses to avoid extended on-site storage and to avoid delaying work of other trades whose work must follow erection of trusses.
- C. Repairs: If damage occurs or is observed in any truss member, all such damage shall be investigated by a licensed structural engineer. Repairs shall be made in accordance with the structural engineer's recommendations, or shall be replaced. The cost of such repairs, replacement, engineering, and related expenses shall be paid for by the Contractor. All such repairs must be fully documented in writing, and signed and stamped by the structural engineer.

PART 2 - PRODUCTS

2.01 PERFORMANCE:

- A. Design: All manufactured trusses shall be designed to support the loads imposed and listed on the Drawings. In addition, special trusses shall be provided where indicated or otherwise required to support additional live loads on bottom chord.
- B. Manufactured truss minimum design loading shall be as follows:
 - 1. Top Chord Live Load (Attic Truss): 20 psf.
 - 2. Bottom Chord Live Load (Attic Truss): 10 psf.
 - 3. A live, movable 300 pound load applied at any point on any attic truss bottom chord.
 - 4. Erection stresses.
 - 5. Accumulated weight of all dead loads for the materials indicated in the drawings and specifications, including mechanical equipment, and mechanical mezzanine areas.
 - 6. Accumulated weight of all dead and live loads of fully filled automatic wet-pipe sprinkler systems.
 - 7. Trusses shall be designed for a maximum allowable deflection of L/360.

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8. In-place truss assembly shall be adequately shored and braced to resist lateral live and wind loading based on Chapter 16 IBC 2015.
- C. Gable End Trusses: Trusses at gable and dormer ends of buildings shall be not less than 3-1/2 inches in thickness, and consist of plumb studs spaced at 16 inches on center. Such trusses may be a combination of sloped wall panels and/or structural trusses, or multiple structural truss assemblies with let-in vertical studs. Such trusses shall be part of the engineered structural roofing system and included in the truss submittals with engineer's certification.
- D. Special Bearing Heel: Provide a special bearing heel (energy heel) at all trusses when shown on schematic truss drawings to support fascia and cove molding system
- E. Special Truss Tail Assembly: Provide a special tail assembly at all trusses to support manufactured cornice-gutter system and wood blocking. Truss tail assembly 'E' is shown on schematic truss drawings and must be included in the truss submittals.
1. A diagonal truss tail assembly 'E' is required at each building corner.
 2. The gutter, downspout & cornice system described in Section 07600 has zero tolerance for dimensional errors, out-of-plumb or out-of-square framing of rafter tails, corners, and running eave blocking. The Contractor shall be responsible for accuracy, plumb, square, and perfectly aligned framing. Any remedial adjustments needed to accommodate the cornice-gutter system shall be made by the framing contractor at no additional expense to the Owner.

2.02 MANUFACTURERS:

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering metal connector plates which may be incorporated in the work include, but are not limited to, the following:
1. Alpine Engineered Products, Inc.
 2. Gang Nail Systems, Inc.
 3. Hydro-Air Engineering, Inc.

2.03 LUMBER:

- A. Graded in accordance with truss manufacturer's specifications.

2.04 METAL CONNECTOR PLATES, FASTENERS AND ANCHORAGES:

- A. Connector Plates: Fabricator connector plates from metal complying with one or both of the following requirements:
1. Hot-Dip Galvanized Steel Sheet: Structural (physical) quality steel sheet complying with ASTM A 446, Grade A; zinc coated by hot-dip process to comply with ASTM A 525, Designation G60; minimum coated metal thickness indicated but not less than 0.036".
 2. Electrolytic Zinc-Coated Steel Sheet: Structural (physical) quality steel sheet complying with ASTM A 591, Coating Class C, and, for structural properties, with ASTM A 446, Grade A; zinc-coated by electro-deposition; with minimum coated metal thickness indicated but not less than 0.047".

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TRUSSES

- B. Fasteners and Anchorages: Provide size, type, material and finish indicated for nails, screws, bolts, nuts, washers and anchoring devices.
 - 1. All trusses shall be anchored to the top plates of walls with a manufactured metal connector designed for vertical and lateral resistance of live loading, and fastened in accordance with manufacturer's recommendations. See structural drawings for truss connection to walls.

2.05 FABRICATION:

- A. Cut truss members to accurate lengths, angles and sizes to produce close fitting joints with wood-to-wood bearing in assembled units.
- B. Fabricate metal connector plates to size, configuration, thickness and anchorage details required for types of joint designs indicated.
- C. Assemble truss members in design configuration indicated using jigs or other means to ensure uniformity and accuracy of assembly with close fitting joints. Position members to produce design camber indicated.
- D. Connect truss members by means of metal connector plates accurately located and securely fastened to each side of wood members by means indicated or approved.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. General: Erect and brace trusses to comply with recommendations of manufacturer and the Truss Plate Institute.
- B. Erect trusses with plane of truss webs vertical (plumb) and parallel to each other, located accurately at design spacing indicated.
- C. Hoist units in place by means of lifting equipment suited to sizes and types of trusses required, applied at designated lift points as recommended by fabricator. Exercise care not to damage truss members or joints by out-of-plane bending, impact loading, or other causes.
- D. Provide temporary bracing as required to maintain trusses plumb, parallel and in location indicated, until permanent bracing is installed.
- E. Anchor trusses securely at all bearing points to comply with methods and details indicated, and as described in this Section of these Specifications.
- F. Install permanent bracing and related components to enable trusses to maintain design spacing, withstand live and dead loads including lateral loads, and to comply with other indicated requirements.

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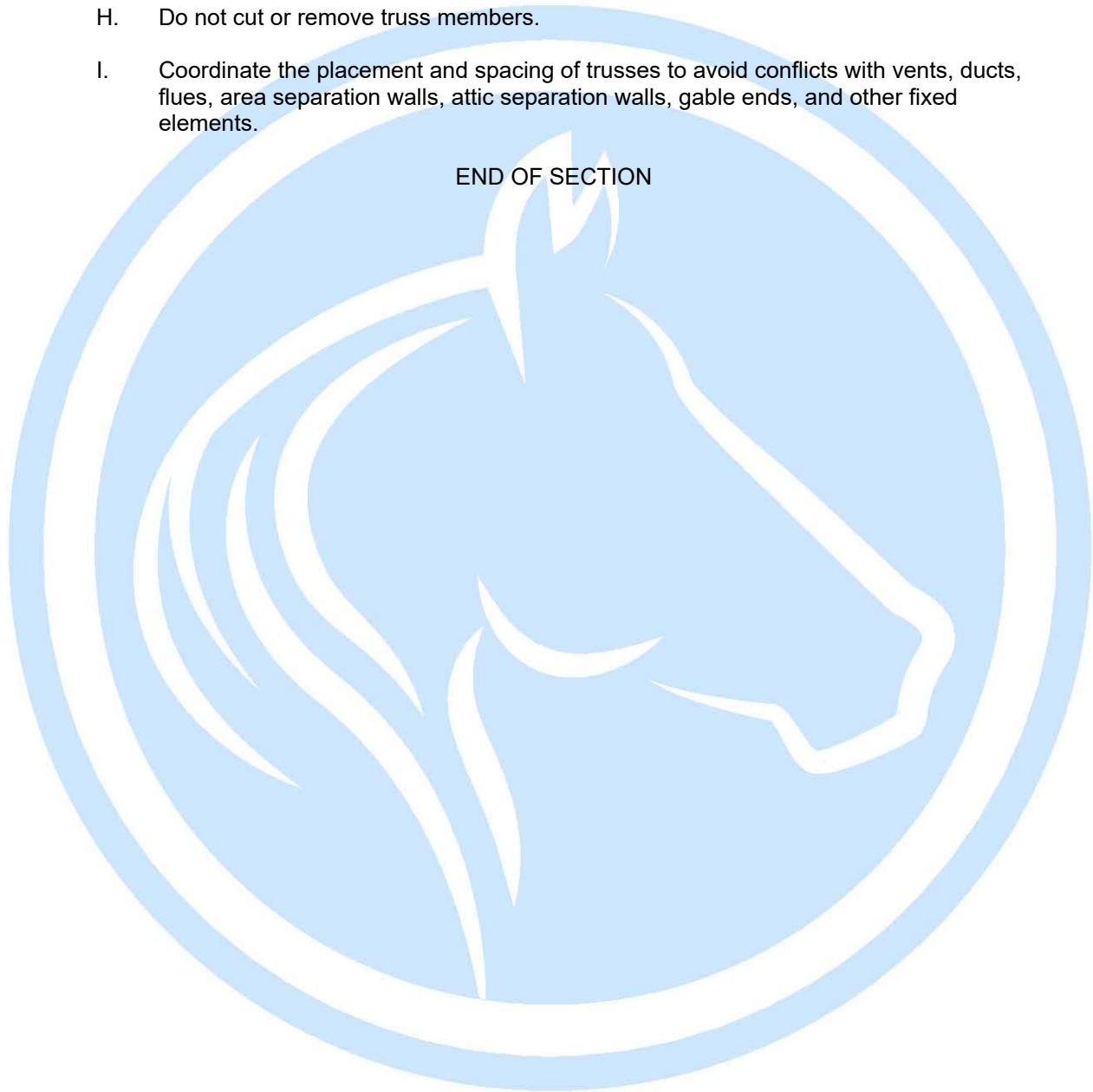
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- G. Reject all trusses with imperfections, excessive camber, damaged connector plates, damaged or defective wood members, or other imperfection that would affect structural or aesthetic performance.
- H. Do not cut or remove truss members.
- I. Coordinate the placement and spacing of trusses to avoid conflicts with vents, ducts, flues, area separation walls, attic separation walls, gable ends, and other fixed elements.

END OF SECTION



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SHOP-FABRICATED WOOD
TRUSSES

SECTION 06 20 23 – INTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide finish carpentry for interior items exposed to view:
 - 1. Interior standing and running trim and moldings.
 - 2. Door and window casings and frames.
 - 3. Interior stair and balustrade railings.
 - 5. Decorative elements.
- B. Cubbies and Mail center units are provided and installed by Others (NIC).

1.02 SUBMITTALS

- A. Submit for approval samples, shop drawings, product data, and mock-ups of typical trim and moldings.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

1.04 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install interior finish carpentry materials until building is enclosed and weatherproof, wet work in space is completed and nominally dry, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Do not install finish carpentry materials that are wet, moisture damaged, or mold damaged.
 - 1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Quality standard for fabrication and products: Architectural Woodwork Institute Quality Standards, Premium grade unless noted otherwise.
- B. Lumber Trim for Opaque Finish (Painted):
 - 1. Species and Grade: Eastern white pine, Premium or 2 Common; NeLMA or NLGA.
 - 2. Species and Grade: Idaho white, lodgepole, ponderosa, radiata, or sugar pine; D Select (Quality); NLGA or WWPA.

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3. Maximum Moisture Content: 15 percent with at least 85 percent of shipment at 12 percent or less.
 4. Finger Jointing: Allowed.
 5. Face Surface: Surfaced (smooth).
 6. Optional Material: Primed MDF of same actual dimensions as lumber indicated may be used in lieu of lumber.
- C. Hardwood Lumber Trim for Transparent Finish (Stain or Clear Finish):
1. Species and Grade: Red oak, White maple, white maple, or yellow poplar Clear; NHLA.
 2. Maximum Moisture Content: 10 percent.
 3. Finger Jointing: Not allowed.
 4. Face Surface: Surfaced (smooth).
 5. Matching: Selected for compatible grain and color.
- D. Moldings for Opaque Finish (Painted): Made to patterns included in WMMPA WM 12.
1. Softwood Moldings: WMMPA WM 4, P-grade.
 - a. Species: Eastern white, Idaho white, lodgepole, ponderosa, radiata, or sugar pine.
 - b. Maximum Moisture Content: 15 percent with at least 85 percent of shipment at 12 percent or less.
 2. Hardwood Moldings: WMMPA HWM 2, P-grade.
 - a. Species: Aspen, basswood, cottonwood, gum, magnolia, soft maple, tupelo, or yellow poplar.
 - b. Maximum Moisture Content: 9 percent.
 3. Optional Material: Primed MDF.
 4. Finger Jointing: Not allowed.
- E. Hardwood Moldings for Transparent Finish (Stain or Clear Finish): WMMPA HWM 2, N-grade wood moldings made to patterns included in WMMPA HWM 1.
1. Species: Red oak, White maple, white maple, or yellow poplar.
 2. Kiln-dried softwood or MDF, with exposed surfaces veneered with species indicated, may be used in lieu of solid wood.
 3. Maximum Moisture Content: 9 percent.
 4. Finger Jointing: Not allowed.
 5. Matching: Selected for compatible grain and color.
- F. Service and Closet Shelving:
1. Shelving material: Countertop-grade, high-density 3/4 inch thick particleboard with white Melamine laminate material on all surfaces,
 2. Fully Adjustable Shelving System. Knappe, Stanley, or Vogt
- G. Millwork finishes:
1. Wood for opaque finish: AWI custom grade, AWI finish system No. 11, premium grade opaque catalyzed polyurethane.

PART 3 - EXECUTION

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3.01 INSTALLATION

- A. Provide work to sizes, shapes, and profiles indicated. Install work to comply with quality standards referenced. Back prime work and install plumb, level and straight with tight joints; scribe work to fit. Caulk around all intersecting surfaces
- B. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Use non-corrosive fasteners for exterior work. Coordinate with work of other sections.
- C. Provide eased horizontal edges, and radius corners on all countertops, shelving, trim, stools, and other casework or millwork exposed to pedestrian traffic.
- D. Comply with manufacturer's requirements for cutting, handling, fastening and working treated materials.
- E. Repair minor damage, clean and protect.

END OF SECTION

SECTION 06 82 00 – GLASS FIBER REINFORCED PLASTIC

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
1. Fiberglass Reinforced Plastic (FRP) wall panels.
 2. Adhesives.
 3. Fasteners.
 4. Accessories
 5. Finishing

1.02 SUBMITTALS:

- A. Submit product data, samples, manufacturer's installation guide

PART 2: PRODUCTS

2.01 FIBER REINFORCED PANELS

- A. Class A, with pebbled surface texture.
- B. Accessories: Provide matching brand, pre-finished inside corners, outside corners, edging, division strips as required for project conditions. Color to match panels. Provide PVC accessories for panels.
- C. Color: panel and trim color to be selected by Architect from manufacturer's full range of color selection.

2.02 MATERIALS

- A. *Other Areas* - Provide FRP panels with the following minimum characteristics:
- | | |
|------------------------|---|
| 1. Color: | Bright White |
| 2. Thickness: | 0.09 inches (2.3 mm) |
| 3. Surface: | embossed |
| 4. Backing: | bondable surface |
| 5. Fire Rating: | Class A surface material, U.L. Listed; ASTM E84 |
| 6. Flame Spread: | ASTM E84; less than 25 |
| 7. Smoke Development: | ASTM E84; less than 450 |
| 8. Scratch Resistance: | Barcol Hardness rating 12 (ASTM D2583) |
| 9. Impact Strength: | ASTM D3029; 22 in-lb |
- B. Provide moldings and fasteners as recommended and supplied by manufacturer.

PART 3 EXECUTION

3.01 PREPARATION

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- A. Installation of materials shall be conditioned at room temperature for 48 hours prior to installation.
- B. Substrate shall be clean, dry, smooth and free from any loose debris, cracks, holes or depressions. Such imperfections shall be filled, sanded or otherwise made smooth before installation.

3.02 INSTALLATION

- A. Install panels where designated on the Drawings and in the Finish Schedule.
- B. Panels shall be installed following manufacturers instructions, including preparation, handling, joint and seam treatment, protection and cleaning.
- C. Panels shall be fully adhered to wall surface, without warps, bows, or other loose or distorted areas.
- D. Moldings shall be installed with smooth joints, without warping, twisting, or otherwise damaged.

END OF SECTION

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PLASTIC

SECTION 07 21 00 – THERMAL INSULATION

PART 1 – GENERAL

1.01 SUMMARY

- A. Provide building insulation board, blanket, and loose-fill types as applicable, including the following types and accessories:
1. Exterior and Interior walls: fiberglass batt
 3. Foundation and Slab perimeter, rigid extruded polystyrene board
 4. Slab subgrade area: Polyolefin vapor barrier
 5. Exterior walls – Interior Surface: Polyethylene vapor barrier
 6. Exterior walls – Exterior Substrate: weatherproof backing behind all finishes
 7. Perimeter sill: continuous sealer gasket
 8. Flat roof: rigid polyisocyanurate insulation (See Section 07530)

1.02 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Wall Insulation: fiberglass friction-fit or kraft-backed, batt-type insulation.
1. Exterior wall insulation: 6" thick batts, minimum R-value 19.
 2. Interior wall insulation: 3-1/2" thick batts, minimum R-value 11 or equivalent sound attenuation insulation.
 3. All insulation shall be concealed in wall cavities or attics. If kraft-backed insulation is used, a polyethylene vapor barrier will still be required.
- B. Board type insulation: Extruded polystyrene board at perimeter of slab and face of foundation wall; 2 inches thick; compressive strength 60 psi; aged R-Value of at least R-10; Styrofoam by Dow Chemical or Foamular by UC Industries.
- C. Vapor Barrier For Exterior Walls: 4 mil polyethylene vapor barrier, transparent. Conform with ASTM E 154. Kraft and foil backed batt insulation is not an acceptable substitution for a polyethylene film vapor barrier.
- D. Vapor Barrier For Concrete Slab: 15 mil polyolefin vapor barrier. Performance as tested before and after mandatory conditioning (ASTM E 1745 Section 7.1 and subparagraphs 7.1.1 – 7.1.5): less than 0.01 Perms $/(ft^2 \cdot hr \cdot inHg)$. ASTM E 1745 Class A.
1. Materials
 - a. Stego Wrap Vapor Barrier (15-mil) by Stego Industries, contact Bret Houck at (877) 464-7834 www.stegoindustries.com
 - b. Stego Tape and Stego Mastic.

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- E. Sill Sealer Gasket: Specified in Section 06100

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with work of other sections. Provide full thickness in one layer over entire area, tightly fitting around penetrations.
- B. For all wall insulation, place insulation into all cavities; take great care to provide uniform coverage at correct density and thickness to obtain specified R-Value.
- C. Lightly stuff batt insulation, without compressing the material, into small gaps in wall, roof, and other framing; around window and exterior door frames; into concealed cavities on exterior walls, and behind all pre-drywall areas on exterior surfaces.
- D. Vapor Barrier- Walls: Place 4-mil polyethylene vapor barrier on each wall exposed to the exterior, or otherwise noted on the drawings as receiving insulation with an R-Value of 19 or greater. Vapor barrier to be applied to the interior face of such walls, and shall be lapped not less than 12 inches with each lap occurring over a stud. Repair all tears, gaps, holes, or other imperfections prior to application of wall finish.
- E. Vapor Barrier- Slabs: Install vapor barrier in accordance with manufacturer's instructions and ASTM E 1643. Lap vapor barrier over footings and/or seal to foundation walls. Overlap joints 6 inches and seal with manufacturer's tape. Seal all penetrations (including pipes) per manufacturer's instructions. No penetration of the vapor barrier is allowed except for the reinforcing steel and permanent utilities. Repair damaged areas by cutting patches of vapor barrier, overlapping damaged area 6 inches and taping all sides with tape.
- F. Masonry Veneer Backing: Install weatherproof backing on the exterior face of all wall sheathing behind masonry veneer.
 - 1. Install barrier in shingle fashion with overlapping vertical and horizontal joints. Backing shall be installed to counterflash all embedded masonry flashing, base course flashing, membrane flashing, and all other ledge or lintel flashing to provide a complete moisture barrier and directed moisture route from top of wall outward to all weep holes.
 - 2. See Section 04 20 00 for material specifications
- G. Sill Sealer Gasket: Install continuous sill sealer gasket, without breaks, tears, or gaps on all exterior walls between bottom wall plate and foundation. Use sill gasket width to match wall thickness. Place ribbed side down.

END OF SECTION

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THERMAL INSULATION

SECTION 07 22 00 – FOAMED IN PLACE INSULATION

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. Section Includes: Light density, open celled, flexible, 100 percent water blown polyurethane foam insulation.
- B. Coordinate mechanical ventilation and fresh air supply with Mechanical sections and ASHRAE Guidelines for optimum indoor air quality.

1.03 REFERENCES

- A. American Society for Testing and Materials International (ASTM)
 1. ASTM C 518: Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
 2. ASTM C 1338: Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings
 3. ASTM E 84: Test Method for Surface Burning Characteristics of Building Materials
 4. ASTM E 96: Standard Test Methods for Water Vapor Transmission of Materials
 5. ASTM E 2178: Standard Test Method for Air Permeance of Building Materials

1.04 SUBMITTALS

- A. Product Data for each type of insulation product specified.
- B. Product test reports performed by a qualified independent testing agency evidencing compliance of insulation products with specified requirements including those for thermal resistance, fire-test-response characteristics, water-vapor transmission, water absorption, and other properties, based on comprehensive testing of current products.
- C. Evaluation Report: Evidence of compliance of foam-plastic insulations with International Building Code (IBC), International Residential Code (IRC), International Energy Conservation Code (IECC).
- D. Manufacturer's certificate certifying insulation provided meets or exceeds specified requirements.
- E. Installer's certificate showing the Icynene installation certification.

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F. Sample warranty

1.05 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Product produced in an ISO9001 registered factory.
- B. Single Source Responsibility: Single source product from one manufacturer.
- C. Installer Qualifications: Engage an Icynene Licensed Dealer (applicator) who has been trained and certified by Icynene.
- D. Fire-Test-Response Characteristics: Provide materials specified as determined by testing identical products per test method indicated below by a testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
- E. Surface-Burning Characteristics: ASTM E 84
 - 1. Toxicity/Hazardous Materials
- F. Provide products that contain no urea—formaldehyde
- G. Products and equipment requiring or using CFCs, HCFCs, or HFCs during the manufacturing or application process will not be permitted
- H. Provide products that contain no PBDEs
- I. Provide products that are "Low-emitting"

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturers written instructions for handling and protection prior to and during installation.
- B. Store both components in a temperature controlled area between 50 deg F (15 deg C) and 100 deg F (32 deg C). Do not allow product to freeze.
- C. Use only those components that are supplied by the Manufacturer.

1.07 PROJECT CONDITIONS

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

1.08 WARRANTY

- A. Manufacturer's standard limited lifetime warranty.
- B. Refer to www.Icynene.com for full warranty terms.

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FOAMED IN PLACE INSULATION

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Polyurethane Spray Foam Insulation: Icynene Classic Ultra™ by Icynene Inc., or approved equal.
- B. Intumescent paint:
 - 1. DC-315 by International Fireproof Technology Inc.
 - 2. Fireshell F10E by TPR2
 - 3. No-Burn Plus ThB by No-Burn

2.02 MATERIALS

- A. General: Provide insulating materials that comply with requirements and with referenced standards.
- B. Icynene Classic Ultra™ (LD-C-50) Spray Foam Insulation: Low-density, water-blown, conforming to the following:
 - 1. Thermal Resistance (R-Value/inch @75 deg F): ASTM C 518; 3.7 hr/sq ft/degree F/BTU
 - 2. Air Permeance (for 3 inches of material): ASTM E 2178; < 0.014 L/s.m2 @ 75 Pa
 - 3. Water Vapor Transmission (for 5.5 inches of material): ASTM E 96; 11 perms [627 ng/(Pa.s.m2)]
 - 4. Flame Spread and Smoke Developed Rating: ASTM E 84
 - a. Flame Spread: Less than 20
 - b. Smoke Development: Less than 400
 - 5. Bacterial and Fungal Growth and Food Value: ASTM C 1338: no Growth
- C. Product Description:
 - 1. ICC/ES Evaluation Report No. ESR 1826
 - 2. Collaborative for High-Performance Schools (CHPS) "Low-emitting material" per CA 01350 Criteria
- D. Intumescent Paint
 - 1. DC-315 Thermal Barrier Coating: 14 wet mils
 - 2. Fireshell F10E Thermal Barrier Coating: 21 wet mils
 - 3. No-Burn Plus ThB Thermal Barrier Coating: 18 wet mils

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2.03 SOURCE QUALITY CONTROL

- A. Product produced in an ISO 9001 registered factory.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine substrates and conditions, under which work is to be performed. Do not proceed until unsatisfactory conditions have been corrected.
- B. Review placement area to determine final location will not be within 3 inches of any heat source where the temperature will exceed 200 deg F per ASTM C 411 or in accordance with authorities having jurisdiction.

3.02 PREPARATION

- A. Clean substrates and cavities of loose materials capable of interfering with insulation placement.

3.03 APPLICATION

- A. Site mix liquid components manufactured by Icynene and supplied by Independent Icynene Licensed Dealer.
- B. Apply insulation to substrates in compliance with manufacturer's written instructions.
- C. Apply insulation to produce thickness required for indicated R Value.
- D. Extend insulation in thickness indicated to envelop entire area to be insulated.
- E. Water-Piping Coordination: If water piping is located within insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.

3.04 REPAIRS

- A. Any repairs must be effected by an Icynene Licensed Dealer.

3.05 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings where insulation is subject to abuse.

END OF SECTION

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FOAMED IN PLACE INSULATION

SECTION 07 22 01 – COMPOSITE ROOF PANELS

PART 1 – GENERAL

1.01 WORK INCLUDES

- A. The work shall consist of covering all areas shown on the drawings with nail base roof insulation.

1.02 RELATED WORK

- A. Section 07 41 00 Preformed Metal Standing Seam Roofing.

1.03 SYSTEM DESCRIPTION

- A. Description of system:

1. The insulated sheathing shall be a preassembled panel consisting of one layer of 7/16" oriented strand board top surface bonded to 6.5" thick polyisocyanurate foam.
2. The Long Term Thermal Resistance (LTTR) R-Value of the non-vented roof insulation shall be no less than R-38.
3. Wood panel edges shall be rabbeted to allow the foam edges to fit together while providing clearance between the wood sheathing on adjoining panels.
4. Foam sides and ends shall have a machined tongue and groove profile to reduce heat loss at the joints.

- B. Performance Requirements:

1. The foam insulation shall have a Flame Spread Rating of 55 (ASTM E84)

1.04 SUBMITTALS

- A. The following will be submitted to the architect for approval:
Copies of the manufacturer's product information and installation instructions.
A sample with the edge profile specified.
- B. The nail base insulation must be classified under UL as a roof covering accessory (TGDY) per ANSI/UL 790 (ASTM E180) and as a Building Unit (TIAR) per UL 1256 for Construction No. 120 and No. 123.

1.05 DELIVERY AND STORAGE

- A. The nail base insulation shall be protected in the transit by plastic covers and by truck tarps. When material is stored at the jobsite, a reasonably level, drained storage area shall be provided. The insulation shall rest on firm blocking and shall be covered with tarps.

1.06 SEQUENCING/SCHEDULING

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COMPOSITE ROOF PANELS

- A. Erection of the nail base insulation shall be coordinated with the roofing subcontractor so the roofing is applied as soon as possible after insulation is in place.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. ThermaCal Non-Ventilated Roof Insulation Panels by GAF or equal
- B. ThermaCal Fasteners as required per the appropriate fastener pattern.

PART 3 – EXECUTION

3.01 PREPARATION

- A. The Structural roof deck shown in the plans shall be smooth and level and free of water or debris before the nail base insulation is installed.

3.02 SUBSTRATE INSTALLATION

- A. Installation shall follow the manufacturer's written installation instructions
- B. Fasten with ThermaCal Fasteners to the supporting roof deck shown in the plans.
- C. Protect nail base insulation work from exposure to moisture damage and deterioration, primarily by prompt installation of the roofing, sheet metal and waterproofing work.

END OF SECTION

SECTION 07 41 00 – FACTORY MANUFACTURED PREFORMED ROOF / WALL PANELS

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes
 - a. Factory formed Standing Seam metal roof panels
 - b. Factory formed exposed fastener metal wall panels

1.02 SUBMITTALS

- A. Furnish detailed drawings showing profile and gauge of exterior sheets, location and type of fasteners, location, gauges, shape and method of attachment of all trim locations and types of sealants, and any other details as may be required for a weather-tight installation.
- B. Provide finish samples of all colors specified.
- C. Shop drawings: Show fabrication and installation layouts of metal roof panels or metal soffit panels, details of edge conditions, side-seam joints, panel profiles, corners, anchorages, trim, flashings, closures and accessories, and special details. Distinguish between factory and field-assembled work.
- D. Coordination Drawings: Roof plans, drawn to scale, on which the following are shown and coordinated with each other, based on input from installer of the items involved:
 - a. Roof panels and attachments

1.03 QUALITY ASSURANCE

- A. Petersen Aluminum Corp, Tyler, TX, 800-441-8661 products establish a minimum quality required.
- B. Manufacturer and erector shall demonstrate experience of a minimum of five (5) years in this type of project.
- C. Panels shall be factory-produced only. No portable, installer-owned or installer-rented machines will be permitted.

1.04 SUBSTITUTIONS

- A. The material, products and equipment specified in this section establish a standard for required function, dimension, appearance, and quality to be met by any proposed situation.

1.05 SYSTEM DESCRIPTION

- A. Material to comply with:
 - 1. ASTM A653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.

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1.06 ROOF SYSTEM PERFORMANCE TESTING

- A. General Performance: Metal roof panels shall comply with performance requirements without failure due to defective manufacture, fabrication, installation or other defects in construction.
- B. Roof System shall be designed to meet Standard Building Code Wind Load requirements.
- C. Panels to meet:
 - 1. Water Penetration: When tested per ASTM E-283/1680 and ASTM E-331/1646 there shall be no uncontrolled water penetration or air infiltration through the panel joints.
 - 2. Roof system shall be designed to meet a UL Class 90 wind uplift in accordance with UL standard 580 and panel system shall be ASTM 1592 tested and approved.
 - 3. UL 2218 – Impact Resistance rated.

1.07 WARRANTIES

- A. Weathertight warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace standing seam metal roof panel assemblies that fail to remain weathertight, including leaks, within specified warranty period.
 - 1. Warranty Period: 20 years from date of substantial completion
- B. Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair finish or replace standing seam metal roof panels that show evidence of deterioration of factory-applied finish within specified warranty period.
 - 1. Exposed Panels Finish – deterioration includes the following:
 - a. Color fading more than 5 hunter units when tested according to ASTM D 2244
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214
 - c. Cracking, checking, peeling or failure of a paint to adhere to a bare metal.
 - 2. Warranty Period: 20 years from the date of substantial completion
- C. Applicator shall furnish written warranty for a two (2) year period from date of substantial completion of building covering repairs required to maintain roof and flashings in watertight condition.

1.08 DELIVERY, STORAGE AND HANDLING

- A. Ordering: Comply with manufacturer's ordering instruction and lead time requirements to avoid construction delays.
- B. Deliver components, sheets, metal roof panels, and other manufactured items so as not to be damaged or deformed. Package metal roof panels for protection during transportation and handling.
- C. Unload, store and erect metal roof panels in a manner to prevent bending, warping, twisting and surface damage.

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- D. Stack metal roof panels on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal roof panels to ensure dryness. Do not store metal roof panels in contact with other materials that might cause staining, denting or other surface damage.
- E. Protect strippable protective coating on any metal coated product from exposure to sunlight and high humidity, except to the extent necessary for material installation.

1.09 PROJECT CONDITIONS

- A. Weather Limitations: proceed with installation only when existing forecasted weather conditions permit metal roof panel work to be performed.
- B. Field Measurement: Verify actual dimensions of construction contiguous with metal roof panels by field measurements before fabrication.

1.10 COORDINATION

- A. Coordinate sizes and locations of roof curbs, equipment supports and roof penetrations with actual equipment provided.
- B. Coordinate metal roof panels with rain drainage work, flashing, trim and construction of decks, parapet walls, and other adjoining work to provide a leakproof, secure and noncorrosive installation.

PART 2 - PRODUCTS

2.01 PANEL DESIGN

- A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates and accessories required for a weathertight installation.
- B. Wall panels shall be HWP metal wall panel in 12" widths with 7/8" depth.
- C. Roof panels shall be Snap Clad standing seam in 12" widths with 1 3/4" high seam.
- D. Panels to be produced with Factory supplied hot melt mastic in the seams.
- E. Panels to be produced with Smooth – Factory Standard.
- F. Panels to be designed for attachment with concealed fastener clips, spaced as required by the manufacturer to provide for both positive and negative design loads, while allowing for the expansion and contraction of the entire roof system resulting from variations in temperature.
- G. Forming: Use continuous end rolling method. No end laps on panels. No portable rollforming machines will be permitted on this project, no installer-owned or installer-rented machines will be permitted. It is the intent of the Architect to provide Factory-Manufactured panel systems only for this project.

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2.02 ACCEPTABLE MANUFACTURERS

- A. This project is detailed around the roofing product of Petersen Aluminum Corporation
Petersen Aluminum Corp, Tyler, TX, 800-441-8661

2.03 MATERIALS AND FINISHES

- A. Preformed roofing panels shall be fabricated of 24 GA Steel
- B. Refer to Exterior Finish Schedule for color
- C. Finish shall be Kynar 500 or Hylar 5000 Fluorocarbon coating with a top side film thickness of 0.70 to 0.90 mil over a 0.25 to 0.3 mil prime coat to provide a total dry film thickness of 0.95 to 1.25 mil, to meet AAMA 621. Bottom side shall be coated with a primer with a dry film thickness of 0.25 mil. Finish shall conform to all tests for adhesions, flexibility and longevity as specified by Kynar 500 or Hylar 5000 finish supplier.
- D. If strippable coating to be applied on the pre-finished panels to the top side to protect the finish during fabrication, shipping and handling, film shall be removed before installation.
- E. Trim: Trim shall be fabricated of the same material and finish to match the profile, and will be press broken in lengths of 10 to 12 feet. Trim shall be formed only by the manufacturer of their approved dealer. Trim to be erected in overlapped condition. Use lap strips only as indicated on drawings. Miter conditions shall be factory welded material to match the sheeting.
- F. Closures: use composition or metal profiled closures at the top of each elevation to close ends of the panels. Metal closures to be made in the same material and finish as face sheet.
- G. Fasteners: Fasteners shall be of type, material, size, corrosion resistance, holding power and other properties required to fasten miscellaneous framing members to substrates.
- H. Substrate shall be plywood
- I. Cold Applied Roofing Underlayment
 - 1. On all surfaces to be covered with roofing material, furnish and install a 40 mil Peel & Stick membrane, required as outlined by metal panel manufacturer. Membrane to be a minimum of 40 mil thickness, smooth, non-granular, high temperature. Basis of design: Carlisle WIP 300 HT High Temperature Protection Self Adhering Roofing Underlayment. Other acceptable manufacturers include:
 - a. WR Grace "Ice & Water Shield"
 - b. Interwrap Titanium PSU-30
 - c. Tamko TW Tile and Metal Underlayment
 - 2. Underlayment shall be laid in horizontal layers with joints lapped toward the eaves a minimum of 6, and well secured along laps and at ends as necessary to

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properly hold the felt in place. All underlayment shall be preserved unbroken and whole.

3. Peel and Stick Underlayment shall lap all hips and ridges at least 12 to form double thickness and shall be lapped 6 over the metal of any valley or built-in gutters and shall be installed as required by the standing seam panel manufacturer to attain the desired 20 year weathertightness warranty.

J. Sealants

1. Provide two-part polysulfide class B non-sag type for vertical and horizontal joints or
2. one part polysulfide not containing pitch or phenolic extenders or
3. exterior grade silicone sealant recommended by roofing manufacturer or
4. one part non-sag, gun grade type polyurethane recommended by the roofing manufacturer

2.04 FABRICATION

- A. Comply with dimensions, profile limitations, gauges and fabrication details shown and if not shown, provide manufacturer's standard product fabrication.
- B. Fabricate components of the system in factory, ready for field assembly
- C. Fabricate components and assemble units to comply with fire performance requirements specified.
- D. Apply specified finishes in conformance with manufacturer's standard, and according to manufacturer's instructions.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine alignment of structural steel and related supports, primary and secondary roof framing, solid roof sheathing, prior to installation.
- B. For the record, prepare written report, endorsed by installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 FASTENERS

- A. Secure units to supports.
- B. Place fasteners as indicated in manufacturer's standards.

3.03 INSTALLATION

- A. Panels shall be installed plumb and true in a proper alignment and in relation to the structural framing. The erector must have at least five years successful experience with similar applications.

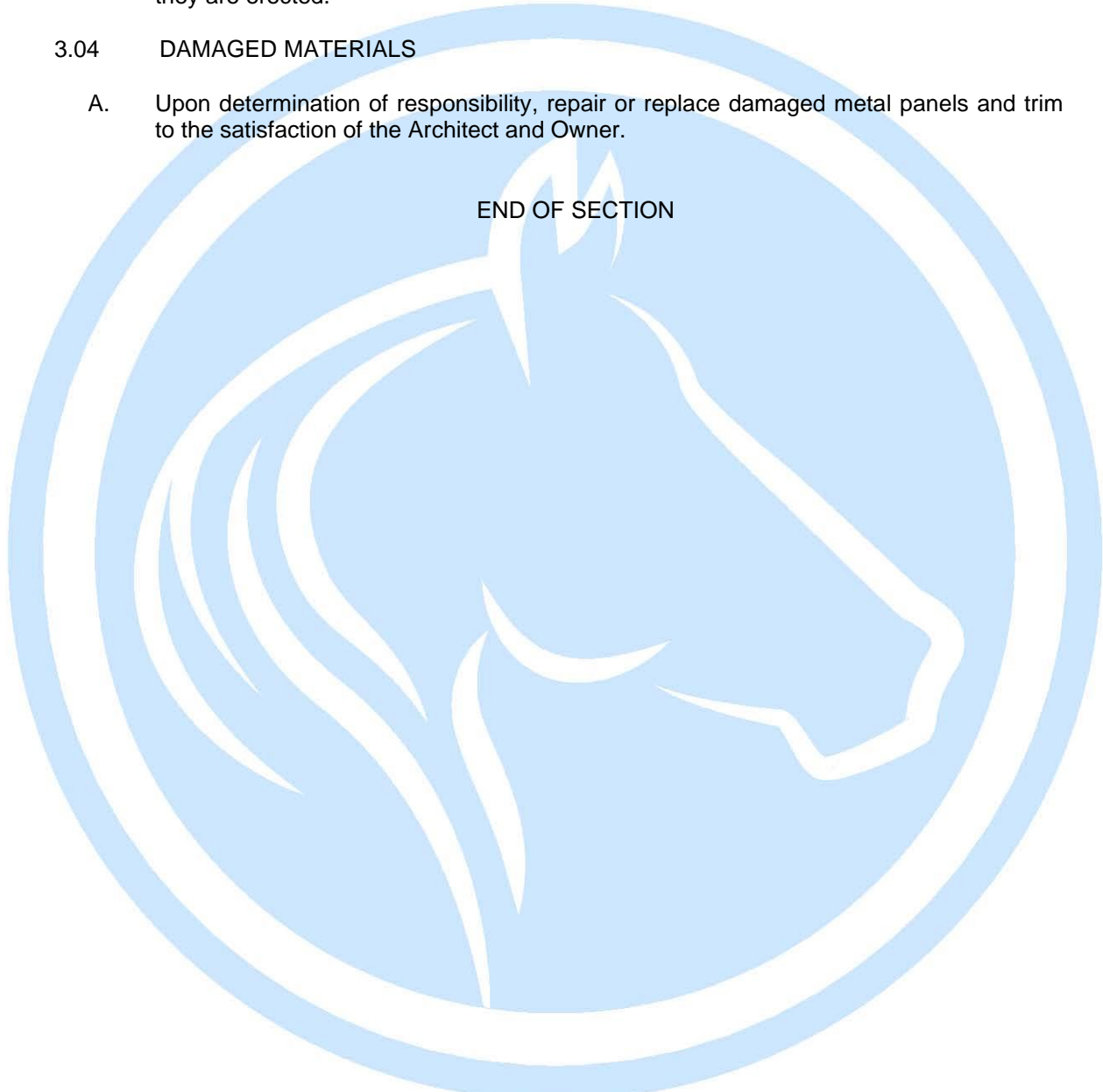
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- B. Install metal panels, fasteners, trim and related sealants in accordance with approved shop drawings and as may be required for a weather-tight installation.
- C. Remove all strippable coating and provide a dry-wipe down cleaning of the panels as they are erected.

3.04 DAMAGED MATERIALS

- A. Upon determination of responsibility, repair or replace damaged metal panels and trim to the satisfaction of the Architect and Owner.

END OF SECTION



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SECTION 07 46 46 – MINERAL-FIBER CEMENT SIDING

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Factory-finished fiber cement trim, fascia, and accessories; James Hardie HZ10 Engineered for Climate Siding.

1.02 RELATED SECTIONS

- A. Section 06 10 00 – Rough Carpentry: Wood framing and bracing.
- B. Section 06 10 00 – Rough Carpentry: Sheathing.
- C. Section 07 21 00 – Insulation: Exterior wall insulation

1.03 REFERENCES

- A. AS D3359 – Standard Test Method for Measuring Adhesion by Tape Test, Tool and Tape.
- B. AS E136 – Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.

1.04 SUBMITTALS

- A. Submit under provisions of Section 01 33 00
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Provide detailed drawings of atypical non-standard applications of cementitious siding materials which are outside the scope of the standard details and specifications provided by the manufacturer.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum of 2 years experience with installation of similar products.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store siding on edge or lay flat on a smooth level surface. Protect edges and corners from chipping.

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- C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.07 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.08 WARRANTY

- A. Product Warranty: Limited, non-pro-rated product warranty.
 - 1. HardieTrim HZ10 boards for 15 years
- B. Finish Warranty: Limited product warranty against manufacturing finish defects.
 - 1. When used for its intended purpose, properly installed and maintained according to Hardie's published installation instructions, James Hardie's ColorPlus finish with ColorPlus Technology, for a period of 15 years from the date of purchase: will not peel; will not crack; and will not chip. Finish warranty includes the coverage for labor and material.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Acceptable Manufacturer: James Hardie Building Products, Inc., which is located at: 26300 La Alameda Suite 400; Mission Viejo, CA 92691; Toll Free Tel: 866-274-3464; Tel: 949-367-4980; Fax: 949-367-4981; Email: request info info@jameshardie.com; Web: www.jameshardiepros.com
- B. Other acceptable manufacturers include: Cemplank by Georgia-Pacific subject to review by Architect and conformance with these specifications.

2.02 TRIM

- A. Trim
 - 1. HardieTrim HZ10 boards as manufactured by James Hardie Building Products, Inc. Product: 5/4 Boards, 5-1/2 inch (140 mm) width.
 - a. Product: 5/4 Boards, 5-1/2 inch (140 mm) width
 - b. Texture: Smooth
 - c. Length: 12 feet (3658 mm)
 - d. Thickness: 1 inch (24mm)
 - 2. HardieTrim HZ10 Fascia boards as manufactured by James Hardie Building Products, Inc.
 - 3. Fiber-cement trim - complies with ASTM C 1186 Type A Grade II.
 - 4. Fiber-cement trim - complies with ASTM E 136 as a noncombustible material.
 - 5. Fiber-cement trim - complies with ASTM E 84 Flame Spread Index = 0, Smoke Developed Index = 5.
 - 6. Intertek Product Listing.

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2.03 FASTENERS

A. Wood Framing Fasteners:

1. Wood Framing: 0.093 inch (2.4 mm) shank by 0.222 inch (5.6 mm) head by 2-1/2 inches (64 mm) corrosion resistant siding nails.

2.04 FINISHES

A. Factory Finish: Refer to Exterior Finish Schedule

1. Product: ColorPlus Technology by James Hardie.
2. Definition: Factory applied finish; defined as a finish applied in the same facility and company that manufactures the siding substrate.
3. Process:
 - a. Factory applied finish by fiber cement manufacturer in a controlled environment within the fiber cement manufacturer's own facility utilizing a multi-coat, heat cured finish within one manufacturing process.
 - b. Each finish color must have documented color match to delta E of 0.5 or better between product lines, manufacturing lots or production runs as measured by photospectrometer and verified by third party.
4. Protection: Factory applied finish protection such as plastic laminate that is removed once siding is installed
5. Accessories: Complete finishing system includes pre-packaged touch-up kit provided by fiber cement manufacturer. Provide quantities as recommended by manufacturer.

B. Factory Finish Color for Trim

1. Refer to exterior elevation finish schedule

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If framing preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Nominal 2 inch by 4 inch (51 mm by 102 mm) wood framing selected for minimal shrinkage and complying with local building codes, including the use of water-resistive barriers or vapor barriers where required. Minimum 1-1/2 inches (38 mm) face and straight, true, of uniform dimensions and properly aligned.
 1. Install water-resistive barriers and claddings to dry surfaces.
 2. Repair any punctures or tears in the water-resistive barrier prior to the installation of the siding.
 3. Protect siding from other trades.

3.02 PREPARATION

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- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Install a water-resistive barrier is required in accordance with local building code requirements
- D. The water-resistive barrier must be appropriately installed with penetration and junction flashing in accordance with local building code requirements.
- E. Install Engineered for Climate HardieWrap weather barrier in accordance with local building code requirements.
- F. Use HardieWrap Seam Tape and joint and laps.
- G. Install and HardieWrap flashing, HardieWrap Flex Flashing.

3.03 INSTALLATION

- A. Install materials in strict accordance with manufacturer's installation instructions. Install flashing around all wall openings.
- B. Fasten through trim into structural framing or code complying sheathing. Fasteners must penetrate minimum 3/4 inch (19 mm) or full thickness of sheathing. Additional fasteners may be required to ensure adequate security.
- C. Place fasteners no closer than 3/4 inch (19 mm) and no further than 2 inches (51 mm) from side edge of trim board and no closer than 1 inch (25 mm) from end. Fasten maximum 16 inches (406 mm) on center.
- D. Seal gap with high quality, paint-able caulk.
- E. Shim frieze board as required to align with corner trim.
- F. Install HardieTrim Fascia boards to rafter tails or to sub fascia.

3.04 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

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SECTION 07 52 16 - SBS MODIFIED BITUMENOUS MEMBRANE ROOFING

PART 1 GENERAL

1.01 SUMMARY

- A. The Work involves providing a two-ply polyester reinforced SBS modified bituminous membrane. The base sheet will be mechanically fastened and the cap sheet torched over a plywood deck with polyisocyanurate insulation complete with related flashings and metal edges and fascia, and performing such incidental or other work as may be necessitated by these operations and called for by the Drawings.
- B. Section Includes:
1. Preparation of plywood roof deck to receive roofing felts.
 2. Roof insulation.
 3. Modified bituminous SBS (Styrene-Butadiene-Styrene) roofing felts.
 4. Flashing membrane.
 5. Accessories. and Edge Trim

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM):
1. ASTM C208 - Specification for Insulating Board (Cellulosic Fiber), Structural and Decorative.
 2. ASTM C726 - Specification for Mineral Fiber Roof Insulation Board.
 4. ASTM C1177 - Standard Specification for Glass Mat Gypsum Roof Board.
 5. ASTM D41 - Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
 6. ASTM D226 – Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
 7. ASTM D312 - Specification for Asphalt Used in Roofing.
 8. ASTM D1863 - Specification for Mineral Aggregate Used on Built-Up Roofs.
 9. ASTM D1970 – Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
 10. ASTM D2178 - Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
 11. ASTM D4586 - Specification for Asphalt Roof Cement, Asbestos Free.
 12. ASTM D5147 - Test Methods for Modified Bituminous Sheet Materials.
 13. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
- B. Factory Mutual Research Corporation (FM):
1. FM - Approval Guide, Building Materials.
 2. FM - Loss Prevention Data 1-28, Wind Loads to Roof Systems and Roof Deck Securement.
 3. FM - Loss Prevention Data 1-29, Above Deck Roof Components (June 1996).
 4. FM - Standard 4450, Class 1 Insulated Steel Deck Roofs.
 5. FM - Standard 4470, Class 1 Roof Covers.
 - 6.. FM – Roof Assembly Classifications
- C. Federal Specification (FS):

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1. FS HH-I-1972/2 - Insulation Board, Thermal, Polyurethane or Polyisocyanurate Faced with Asphalt/Organic Felt or Glass Reinforced Fiber Felt on Both Sides of the Foam.

- D. National Roofing Contractors Association (NRCA) - Roofing and Waterproofing Manual.
- E. Underwriters Laboratories (UL) - Fire Hazard Classifications.
- F. Sheet Metal and Air-Conditioning Contractors National Association, inc. (SMACNA).
- G. CGSB 37GP56M Classification: Type 2, Class C, Grade 1.

1.03 SYSTEM DESCRIPTION

- A. System Sopra-fix 32S48 Description:
 1. Membrane: Two ply - base and top - SBS modified bituminous membrane - Torched / Mechanical fastened
 2. Insulation: Tapered and non-tapered polyisocyanurate boards and crickets.
 3. Decking: 3/4 inch plywood decking
 4. Alsan Flashing Coating for sealing around widow's walk railing mounts and as an alternative pipe flashing system (See Paragraph 3.15).

1.04 SUBMITTALS

- A. Manufacturer's product data sheets and installation instructions on all materials proposed for use.
- B. Specimen copy of the manufacturer's standard roofing warranty.
- C. U. L. and F. M. compliance data (Contact Soprema's Technical Department (1-800-543-3085) for additional information).
- D. Shop Drawings indicating setting plan for tapered insulation.
- E. Submit two 8 x10 inch samples of membrane illustrating the color and thickness to be used.
- F. Submit a copy of the manufacturer's installation instructions.

1.05 QUALIFICATIONS

- A. Applicator's Qualifications:
 1. Approved by the manufacturer prior to the bidding period and throughout the installation and able to present a copy of his certification upon request by the Architect or Owner.
 - a. Applicator must have installed at least five roofs of the same materials and methods specified for this project.
- B. Manufacturer's Qualifications:
 1. Must have a minimum of 10 years experience manufacturing SBS modified bitumen roofing membranes.
 2. Provide a factory trained technician for final inspection of the roofing system.
 3. Provide a warranty upon satisfactory installation of the roofing system.

1.06 REGULATORY REQUIREMENTS

- A. Conform to applicable codes for roof assembly fire hazard requirements.

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- B. Factory Mutual Engineering & Research Corporation (FM):
 - 1. Roof assembly classification of Class 1 Construction, wind uplift requirements of (I-90) in accordance with FM Construction Bulletin 1-28.
 - 2. Contact Soprema's Technical Department (1-800-543-3085) for additional information.
 - C. Building Code Compliance--Metro Dade County (Acceptance No. 92-0916.1)
 - D. Underwriters Laboratories, Inc. (UL):
 - 1. Class A Fire Hazard Classification
- 1.07 PRE-INSTALLATION CONFERENCE
- A. Convene a Pre-installation Meeting at Project Site one week prior to commencing work of this Section.
 - B. Require attendance of parties directly affecting work of this Section.
 - C. Review preparation and installation procedures and coordinating and scheduling required with related work.
 - 1. Require Manufacturer's Roofing Quality Control Inspector to conduct Pre-installation Meeting along with Contractor and owner's representative(s).
 - D. Agenda:
 - 1. Tour, inspect and discuss condition of substrate, penetrations and other preparatory work performed by other trades.
 - 2. Review deck for loss of flatness and for required mechanical fastening.
 - 3. Review roofing system requirements (Drawings, Specifications and other Contract Documents).
 - 4. Review required submittals, both completed and yet to be completed.
 - 5. Review and finalize construction schedule related to roofing work and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
 - 6. Review requirements for Manufacturer's Roofing Quality Control Inspector inspections, other inspections, testing, certifying, and material usage accounting procedures.
 - 7. Review weather and forecasted weather conditions, and procedures for coping with unfavorable conditions, including possibility of temporary roofing.
 - 8. Review safety precautions relating to roofing installation.
 - 9. Review environmental procedures.
- 1.08 DELIVERY, HANDLING AND STORAGE
- A. Deliver all materials and store in their unopened original packaging, bearing the manufacturer's name, related standards and any other specification or reference accepted as standard.
 - B. Protect and permanently store all materials in a dry, well vented and weatherproof location. Only materials to be used the same day shall be removed from this location. During winter, store materials in a heated location with a 50 degrees F. minimum temperature, removed only as needed for immediate use. Keep materials away from open flame or welding sparks.

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- C. Carefully store on end materials delivered in rolls, with selvage edges up, a minimum of 6-inches above grade. Store metal flashings and counter flashings in such a way as to prevent wrinkling, twisting, scratching and other damage.
 - 1. When stored outdoors, insulation shall be stacked on pallets or dunnage at least 4 inches above ground level and covered with "non-sweating" tarpaulins.
- D. Avoid stockpiling of materials on roofs without first obtaining acceptance from an Architect/Engineer.

1.09 QUALITY ASSURANCE

- A. Submit certification by the manufacturer of the system materials used that these Specifications and the Drawing Details are acceptable to them for the deck and surfacing to which they are to be applied.
 - 1. If details for any manufacturer's systems proposed in the Contract Documents are not acceptable to the manufacturer, submit corresponding details proposed for the particular application, together with the manufacturer's reasons for not accepting the conditions depicted in the Specifications or Drawings. No alternate details will be considered without evidence of valid objections on the part of the manufacturer to the Contract requirements.
 - 2. No deviation is to be made from this Specification without prior written approval by the manufacturer; submit such approval to the Architect.
- B. Inspection: Prior to, during installation and at completion of the installation, an inspection shall be made by a representative of the manufacturer in order to ascertain that the roofing system has been installed according to their published specifications, standards and details.
 - 1. Warranty will be issued upon approval of the installation.

1.10 JOB CONDITIONS

- A. Surfaces on which the roofing membrane system is to be applied shall be clean, smooth, dry, free of sharp edges, loose and foreign materials, oil and grease.
 - 1. Before beginning work, a representative of the manufacturer shall examine the roof surfaces in order to ensure that the substrate is acceptable.
 - 2. Do not begin installation until all defective conditions have been corrected.
 - 3. All surface voids greater than 1/4 inch wide shall be properly filled with an acceptable fill material.

1.11 WARRANTY

- A. Upon completion of the work, furnish to the Owner via the Contractor the manufacturer's written and signed standard system warranty, without monetary limitation (NDL), certifying the performance of his products and the consistency of the properties of such products affecting their performance for periods of (20) years from date of acceptance and that installation of the product is in accordance with manufacturer's requirements.
 - 1. Include materials and workmanship for the following items within Warranty:
 - a. Membranes.

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- b. Bituminous flashings, including metal flashings and accessories supplied by roofing system manufacturer.
- c. Insulation.
- d. Asphalt bitumen.
- e. Fasteners and adhesives.
2. Include the following additional items within Warranty:
 - a. Roofing inspection by Manufacturer's Roofing Quality Control Inspector between 22 and 24 months after date of Final Acceptance.
 - b. Roofing manufacturer will provide unlimited repairs during warranty period with no cost limitation (NDL).
 - c. Temporary emergency repairs may be made by Owner without voiding any warranty provisions.
 - d. Attach copy of Record Document Roof Plan Drawings, Roof Detail Drawings, and Record Modified Bituminous Membrane Roofing Specification Section to Warranty.
3. Wind Coverage
 - a. Warranty shall cover wind gusts up to 72 miles per hour (FM I-90)
- B. The Contractor is to cover damages to the building resulting from failure to prevent penetration of water during construction.
- C. The Contractor is to guarantee all work against defects in materials and workmanship for a period of (2) years following final acceptance of the Work.

1.12 SITE PROTECTION

- A. During roofing work, exposed surfaces of finished walls and ground shall be protected with tarps in order to prevent damage. Contractor shall assume full responsibility for any damage.

PART 2 PRODUCTS

2.01 ROOFING SYSTEM MANUFACTURERS

- A. Soprema Roofing and Waterproofing, Inc.
6060 Lake Acworth DR., Suite J
Acworth, GA 30101

2.02 MEMBRANE

- A. Base Ply: SOPRA-FIX S (Soprema System No 32S)
 1. Description: Roofing membrane shall have a non-woven polyester reinforcement and thermofusible elastomeric asphalt. Both sides shall have a thermofusible plastic film. This membrane is to be applied by mechanically fastening to the substrate and torching of the seams

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2. Components: Reinforcement shall be 3.68 lbs/sq. non-woven polyester. Elastomeric asphalt shall be a mix of selected bitumen and SBS thermoplastic polymer.
 3. Physical Properties:
 - a. Tensile strength: Longitudinal - 119 lbs./in.; Transversal - 88 lbs./in.
 - b. Ultimate elongation: Longitudinal, 58%; Transversal, 64%
 - c. Static puncture strength - 67 lbs.
 - d. Low temperature flexibility, no cracking at -22 degrees F.
 - e. SBS elongation - 1500%
 - f. Load strain product: Longitudinal – 6902; Transversal - 5632
 - g. Approximate roll weight - 79 lbs (35.8 kgs)
 - h. Approximate thickness - 120 mils (3 mm)
- B. Top Ply : SOPRALENE FLAM 180 GR FR (Soprema System No 48)
1. Description: Roofing membrane shall have a non-woven polyester reinforcement and thermofusible elastomeric asphalt, with a fire retardent agents added. The top side shall be self-protected with colored granules. The underside shall be protected by a thermofusible film. This membrane is to be applied by torching only.
 - a. Color to be selected by Architect from Soprema's standard colors
 2. Components: Reinforcement shall be 3.68 lbs/sq. non-woven polyester. Elastomeric asphalt shall be a mix of selected bitumen and SBS thermoplastic polymer.
 3. Physical Properties:
 - a. Tensile strength: Longitudinal - 119 lbs./in. Transversal - 88 lbs./in.
 - b. Ultimate elongation: Longitudinal, 58%; Transversal, 64%
 - c. Static puncture strength - 67 lbs.
 - d. Low temperature flexibility, no cracking at -22 degrees F.
 - e. SBS elongation - 1500%
 - f. Load strain product:: Longitudinal – 6902; Transversal - 5632
 - g. Approximate roll weight - 87 lbs (39.5 kgs)
 - h. Approximate thickness - 160 mils (4 mm)
- C. Base Ply Flashing : SOPRALENE FLAM 180
1. Description: Flashing membrane shall have a non-woven polyester reinforcement and thermofusible elastomeric asphalt. Both sides shall have a thermofusible plastic film. This membrane is to be applied by torching only.
 2. Components: Reinforcement shall be 3.68 lbs/sq. non-woven polyester. Elastomeric asphalt shall be a mix of selected bitumen and SBS thermoplastic polymer.
 3. Physical Properties:
 - a. Tensile strength:: Longitudinal - 119 lbs./in.: Transversal - 88 lbs./in.
 - b. Ultimate elongation: Longitudinal, 58%; Transversal, 64%
 - c. Static puncture strength - 67 lbs.
 - d. Low temperature flexibility, no cracking at -22 degrees F.

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- e. SBS elongation - 1500%
- f. Load strain product: Longitudinal – 6902: Transversal - 5632
- g. Approximate roll weight - 79 lbs (35.8 kgs)
- h. Approximate thickness - 120 mils (3 mm)

- D. Top Ply Flashing : SOPRALENE FLAM 180 GR
- 1. Description: Flashing membrane shall have a non-woven polyester reinforcement and thermofusible elastomeric asphalt, with a fire retardent agents added. The top side shall be self-protected with colored granules. The underside shall be protected by a thermofusible film. This membrane is to be applied by torching only.
 - a. Color to be selected by Architect.
 - 2. Components: Reinforcement shall be 3.68 lbs/sq. non-woven polyester. Elastomeric asphalt shall be a mix of selected bitumen and SBS thermoplastic polymer.
 - 3. Physical Properties:
 - a. Tensile strength: Longitudinal - 119 lbs./in. Transversal - 88 lbs./in.
 - b. Ultimate elongation: Longitudinal, 58%: Transversal, 64%
 - c. Static puncture strength - 67 lbs.
 - d. Low temperature flexibility, no cracking at -22 degrees F.
 - e. SBS elongation - 1500%
 - f. Load strain product:: Longitudinal – 6902: Transversal - 5632
 - g. Approximate roll weight - 87 lbs (39.5 kgs)
 - h. Approximate thickness - 160 mils (4 mm)

2.03 FASTENERS

- A. Roofing nails: Galvanized steel, long enough to penetrate the wood by at least 3/4-inch on flashings, blocking, nailers, etc.
- B. Mechanical fasteners for securement of insulation to wood decking shall be fasteneres approved by the manufacturer for the system specified.
 - 1. The same brand fastener is to be used throughout the work.
 - 2. Number of fasteners and layout will be as recommended by the manufacturer and as per FM Approval Guide for wind uplift.
 - 3. Length of fastener shall be determined by the thickness of the decking and any fill, and will vary with the thickness of the insulation. Fasteners shall be of appropriate length to achieve a minimum of 1-inch penetration.

2.04 WOOD BLOCKING

- A. All nailers and blocking material to be free of wane, shake, decay or checks, and pressure treated with water-borne preservatives for above ground use, AWPB LP-2.
 - 1. Blocking shall be not less than Construction Grade, Southern Pine.

2.05 ROOF INSULATION

- A. Polyisocyanurate Foam Insulation FS HH-I-1972/2, both faces covered with glass fiber felt. Comply with FM Standard 4450 Approval.

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1. Overlayered insulation board applied as a second layer with joints offset from bottom layer.
 2. Manufacturers: Atlas or Soprema
- B. Tapered Insulation (Upper Building Roof): Provide crickets, saddles, and tapered insulation of same material as second layer of insulation; taper to the following slopes:
1. Slope: 1/2 inch per foot.
 2. Layout shown on Drawings.
 3. Minimum 1-1/2 inch thickness at roofing edge
 4. Maximum 5-1/2 inches thickness at center ridge of roofing area
- C. Flat Insulation (Lower Canopy Roof): Provide insulation to the following requirements:
1. Decking Slope: 1/2 inch per foot .
 2. Layout shown on Drawings.
 3. Minimum 1-1/2 inch uniform thickness

2.06 PRIMER

- A. Asphalt Primer: ELASTOCOL 500
1. Primer shall be applied on all dissimilar materials except insulation.
 2. Description : Black bituminous varnish.
 3. Composition : Asphalt modified bitumen with thermoplastic polymers and volatile solvents.

2.07 COPING, EDGE FLASHING, EDGE TRIM

- A. Soprametal Products or fabricated product of equal gauge and alloy.
1. SopraBond edge flashing
 2. Angle to match transition from flat roof to 6:12 shingle roof
 3. Color to match background
 4. Shape and orientation shown on Drawings.

2.08 MISCELLANEOUS

- A. Roof penetrations including Roof Scuttle: Trim and flashing treatment as recommended by Soprema.
- B. Water Cut-Off Mastic: Sopracolle or Sopramastic.
- C. Sopralene 180 Flam for gusset material.
- D. Standoffs for Newel Posts: Construct standoffs as shown on Drawings.

PART 3 EXECUTION

3.01 SURFACE INSPECTION AND PREPARATION

- A. Before commencing work, all surfaces shall be smooth, clean, dry and free of any debris that would adversely effect the installation of the membrane.

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- B. Before commencing work, the roofing contractor shall inspect and approve the deck and drainage conditions as well as verticals on parapet walls, roof drains, stack vents, vent outlets and others, building joints, etc. If applicable, a non-compliance notice shall be submitted to the contractor so that adjustments can be made. Commencement of work shall imply acceptance of surfaces and conditions.
 - C. Verify that the work of other trades has been properly completed.
 - D. Do not install materials in conditions of inclement weather.
- 3.02 SURFACE PREPARATION
- A. Wood deck: Verify securement and slope of wood decking.
 - 1. Replace damaged or defective areas prior to commencement of work under this section.
- 3.03 INSTALLATION
- A. Install roofing membrane on clean and dry surfaces, in accordance with the manufacturer's requirements and recommendations.
 - B. Perform roofing work on a continuous basis as surface and weather conditions allow.
 - C. Protect adjoining surfaces against any damage that could result from roofing installation.
 - D. Install only as much roofing as can be completed in one day. If weather conditions do not permit such completion, exposed areas shall be temporarily weatherproofed to prevent any water or snow infiltration from damaging other materials already installed, in particular, the thermal insulation.
- 3.04 EQUIPMENT
- A. Maintain all equipment and tools in good working order.
- 3.05 ASPHALT PRIMER APPLICATION
- A. Prime all dissimilar surfaces to which asphalt or membrane will come in contact. Apply at the rate of 150 - 200 sq. ft./gallon. Coat all metal flashings and fascia with primer which will come in contact with membrane.
- 3.06 INSTALLATION OF INSULATION
- A. Install insulation in accordance with the manufacturer's requirements. The insulation shall provide a smooth surface to accept the roof membrane.
 - B. Multiple Layer Installation:
 - 1. Place long edge of boards parallel to deck flutes, forming joint over solid bearing. Lay insulation units with long edge joints continuous and end joints staggered. Mechanically fasten first layer of insulation to deck with FM approved fasteners and

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- plates. Install fasteners in accordance with requirements of FM Loss Prevention Data Sheet 1-29 for specified wind uplift resistance requirements.
2. Solid mop second layer of insulation to meet specified wind uplift resistance requirements, with joints offset a minimum of 6 inches (15 cm) from first layer. Place boards with end joints staggered. Mechanical attachment of second layer of insulation is unacceptable and will be cause for rejection.
- C. Lay insulation boards to moderate contact without forcing joints. Cut insulation to fit neatly to perimeter blocking and around protrusions through roof.
 1. Gaps between insulation boards, nailers and penetrations of 1/4 inch (0.64 cm) or greater are not acceptable.
 - D. Apply only as much insulation to the roof as can be covered the same day with roofing membrane. At the conclusion of each day's work, seal exposed edges of the insulation. Cut and remove seal upon continuation of the work.
 - E. Place tapered insulation in accordance with manufacturer's recommendations and according to approved shop drawings.
 - F. Place roof crickets and tapered insulation to required slope pattern in accordance with manufacturer's published instructions.
 - G. Place a minimum of one fastener for every FOUR square feet of insulation. Per FM Loss Prevention Data preliminary fastening. Additional fasteners may be required along perimeter depending upon height and location of building. Complay with FM guide book.
- 3.07 BASE PLY INSTALLATION
- A. Unroll dry base ply membrane on substrate for alignment. Each strip shall have a minimum four (4) inch side laps and six (6) inch end laps.
 1. The base ply Sopra-fix S must be rolled out and allowed to relax a minimum of 30 minutes before torched in place.
 2. Begin at low point of roof.
 3. Place membrane so edge lap will be centered on drain.
 - B. The starter roll of the base ply after alignment is to be fastened with approved fasteners.
 1. Fastening pattern shall be eighteen (18) inches O.C. on the laps in the field and increased to twelve (12) inches along the perimeter. The distance from the edge is 40% of the height or 10% of the minimum width. Corners are typically represented by the intersection of the perimeter coordinnates.
 2. Laps shall cover plates a minimum of 1.5 inches, and plates shall be no less than 1/2 inch from the outer edge lap
 - C. Each row will be completed before the next row is started.
 - D. The second row will be torched on the lap only. The laps are to be torched before they are fastened.
 - E. This sequence will continue until all base sheets are applied.

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- F. Application shall provide a smooth surface, free of air pockets, wrinkles, fishmouths or tears.
- G. Seal all laps by running a hot trowel along the edge of the seam.

3.08 BASE PLY FLASHING INSTALLATION

- A. Prior to application, the surface receiving the base ply flashing shall receive a coat of primer at the rate of 150-200 sq. ft./gallon. This primer coating must be dry before application of the base sheet flashing.
 - 1. For gusset application refer to 3.22 of this section.
- B. Lay base ply flashing in strips three (3) feet wide, extending onto the sloped (shingle) surface of the roof a minimum of twelve (12) inches. Side laps shall be three (3) inches and shall be staggered a minimum of four (4) inches with the laps of the base ply.
- C. Torch weld base ply flashing directly on its support from bottom to top followed by the torching of the roof tie-in.
- D. After installation of base ply flashing, check all lap seams on the flashing by running a heated trowel along the edge of the seams.
 - 1. Thoroughly seal all voids in the corners and seams.

3.09 TOP PLY INSTALLATION

- A. Once the base ply has been completed and does not show any defects, install the top ply.
- B. Care must be taken to insure good alignment of the first roll. A 45 degree cut shall be made on the selvage edge of underlying membrane prior to application to insure a good seal between the membranes.
 - 1. If low point is at a drain then the first piece must have granules embedded 4-inches wide along the full length and 6-inches at end laps.
- C. Torch weld top ply in accordance with recommendations of Soprorema, onto the base ply membrane.
 - 1. During this application, simultaneously melt both surfaces forming an asphalt bead that pushes out in front of the top sheet.
- D. Do not to burn the membrane and their respective reinforcements.
- E. Top ply shall have side laps of three (3) inches and end laps of six (6) inches. Prior to installation of following ply, embed surface granules on laps by torch heating the membrane surface and pressing the granules into the melted asphalt with a hot trowel.
- F. Ensure the two membranes are perfectly welded, without air pockets, wrinkles, fishmouths or tears.
- G. After installation of the top ply, check all lap seams on the top ply using the edge of a hot trowel. Correct any defect.

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- H. During installation, avoid asphalt seepage greater than 1/4 inch at seams.
 - 1. Cover any asphalt seepage with a sprinkling of loose granules, color to match membrane.

3.10 TOP PLY FLASHING INSTALLATION

- A. Lay top ply flashing in strips three (3) feet wide.
 - 1. Side laps shall be three (3) inches and shall be staggered a minimum of four (4) inches from top ply laps in order to avoid excessive thickness.
- B. Using a chalk line, lay-out a straight line on the top ply surface, parallel to the roof edge, twelve (12) inches from the roof edge to be flashed.
- C. Using a torch and hook blade knife remove aluminum facing from the chalk line to the edge of the top ply following the specifications outlined under top ply installation above.
- D. Extend top ply flashing onto the sloped roof at a distance of twelve (12) inches, to the extent of the area of removed facing. For ease of application, cut roll into required lengths and use width of roll three (3) feet down length of roof, maintaining specified three (3) inch laps.
 - 1. Torch weld top ply flashing in accordance with recommendations of SOPREMA, directly on its base ply, proceeding from bottom to top followed by the torching of the roof tie-in.
 - 2. Firmly press flashing into position using a damp sponge.
- E. Thoroughly seal all voids in the corners and seams.
- F. Application shall provide a smooth surface, free of air pockets, wrinkles, fish mouths or tears.
- G. During installation, avoid asphalt seepage greater than 1/4 inch at seams.

3.11 WATER CUT-OFF

- A. At the end of the day's work, and when precipitation is eminent, a water cut-off shall be constructed at all open edges. Construct the cut-off with the same membrane and asphalt as that used for the roofing system. Cut-off must be able to withstand extended periods of wet weather. The water cut-off shall be completely removed prior to resuming the installation of the roofing system.

3.12 CLEANING

- A. Clean-up and remove daily from the site all wrappings, empty containers, paper, loose particles and other debris resulting from these operations.
- B. Remove asphalt markings from finished surfaces.
- C. Repair or replace defaced or de figured finishes caused by work of this section.

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3.13 PROTECTION

- A. Provide traffic ways, erect barriers, fences, guards, rails, enclosures, chutes and the like to protect personnel, roofs, structures, vehicles and utilities.
- B. Plywood for traffic ways required for material movement over existing roofs shall be not less than 5/8- inch thick.

3.14 FIELD CONTROL

- A. Field inspection will be performed as outlined in this Specification.

3.15 PVC CONCENTRIC FLUE VENT (STACK) NON-METAL SLEEVE

- A. Inspect base ply installation and ensure tight seal around pipe.
- B. Install flashing layers in compliance with Soprema Detail No. U-1/91/16 and as shown on Drawings.
 - 1. Provide a minimum 12 inch horizontal base ply first cut.
 - 2. Provide a minimum 8 inch vertical flashing base ply second cut and flashing top ply
 - 3. Provide a compression clamp not less than 8 inches above finished roof membrane
 - 4. Install all plys and flashing as recommended by Soprema
 - 5. An alternative flashing using Alsan Flashing Coating is acceptable when applied in strict accordance with Soprema Recommendations.

3.16 VENT (STACK) METAL SLEEVE

- A. Inspect base ply installation and ensure tight seal around pipe.
- B. Construct and install over base ply a sheet metal vent sleeve with welded or soldered seams and as per details.
 - 1. Provide a minimum 5-inch base flange.
 - 2. Prime all metal surfaces.
 - 3. Heat metal flange with torch prior to setting in place and firmly pressing on flange to ensure even contact with roof surface.
- C. Torch into place a reinforcing sheet of base ply material three feet square over the vent.
 - 1. Seal all seams and edges with a heated trowel.
- D. Install top ply as specified under 3.11 of this section.
 - 1. Cut membrane to fit tight against stack sleeve and seal by running a heated trowel around vent base.
- E. Install metal vent cap.

3.17 CORNER FLASHING

- A. Inside Corner:
 - 1. Pre-cut all flashing pieces and prime all surfaces prior to installation.

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2. Fabricate gusset 4-inch wide by 8-inch long with a 2-inch triangular tip.
 - a. Install gusset into corner using a torch and firmly pressing with a hot trowel.
 - b. Set gusset with triangular tip on base ply and wrapping the corner a minimum of 2-inches on each side.
 3. Pre-cut base flashing membranes to provide a 4-inch tie-in to roof surface and 3-inch return at corner.
 4. Torch first base flashing sheet into corner over gusset pressing overlap and tie-in firmly into position with a hot trowel.
 5. Torch second base flashing sheet into position with edge tight into corner.
 - a. Cut off base tie-in selvage at 45-degree from vertical.
 - b. Seal all edges with a hot trowel.
 6. Pre-cut top flashing membranes to provide a 6-inch tie-in to roof surface and 3-inch return at corner.
 - a. Remove aluminum facing where flashing overlap occurs.
 7. Torch first top flashing sheet into corner over second base ply pressing overlap and tie-in firmly into position with a damp sponge.
 - a. Remove aluminum facing where flashing overlap occurs.
 8. Torch second top flashing sheet into position with edge tight into corner.
 - a. Cut off base tie-in selvage at 45-degree from vertical.
 - b. Press flashing firmly into position with a damp sponge.
 - c. Seal all edges with hot trowel and sprinkle granules to cover seeping asphalt.
- B. Outside Corners:
1. Pre-cut all flashing pieces and prime all surfaces prior to installation.
 2. Fabricate gusset 4-inch wide by 8-inch long with a 2-inch triangular tip.
 - a. Install gusset into corner using a torch and firmly pressing with a hot trowel.
 - b. Set gusset with triangular tip on base ply and wrapping the corner a minimum 2-inches on each side.
 3. Pre-cut base flashing membranes to provide a 4-inch tie-in to roof surface and 3-inch return at corner.
 4. Torch first base flashing sheet into corner over gusset pressing overlap and tie-in firmly into position with a hot trowel.
 5. Torch second base flashing sheet into position with returns wrapped around corners.
 - a. Cut off base tie-in selvage at 45-degree from vertical.
 - b. Seal all edges with a hot trowel.
 6. Pre-cut top flashing membranes to provide a 6-inch tie-in to roof surface and 3-inch return at corner.
 - a. Remove aluminum facing where flashing overlap occurs.
 7. Torch first top flashing sheet into corner over second base ply pressing overlap and tie-in firmly into position with a damp sponge.
 - a. Remove aluminum facing where flashing overlap occurs.
 8. Torch second top flashing sheet into position with edge tight into corner.
 - a. Cut off base tie-in selvage at 45-degree from vertical.
 - b. Press flashing firmly into position with a damp sponge.
 - c. Seal all edges with hot trowel.

3.18 ROOF EDGE WITH GUTTER SYSTEM (TO MATCH SOPRABOND FASCIA TRIM TYPE B)

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- A. Install base ply membrane as specified in these Specifications. Carry membrane over roof edge a minimum of 3-inches and temporarily fasten using galvanized roofing nails.
- B. Install a SopraBond metal edge fascia as detailed. A fabricated fascia of equal shape, size, and alloy is acceptable, subject to Soprema's approval.
 - 1. Prime all dissimilar surfaces prior to membrane or flashing installation.
 - 2. Flange on edge to be 4-inch minimum.
 - 3. Nail flange to wood blocking at 4-inch center - staggered.
 - 4. Coordinate with gutter details on canopy structures
- C. Cover edge with an eight (8) inch reinforcing strip of base membrane torched into place. Membrane is to carry beyond the metal flange onto base ply a minimum of 4-inches.
 - 1. Hold the reinforcing strip back from outside edge of metal by 3/4-inch.
 - 2. Seal all edges with a hot trowel.
- D. Install top ply of membrane with the edge tight against the metal and sealed with a hot trowel.

3.19 UPPER ROOF EDGE MEETING SHINGLES (TO MATCH SOPRABOND EDGE TRIM TYPE B)

- A. Install base ply membrane as specified in these Specifications. Carry membrane over roof edge a minimum of 18-inches and temporarily fasten using galvanized roofing nails.
- B. Install a SopraBond custom metal edge. An edge fabricated of equal shape, size, and alloy is acceptable, subject to Soprema's approval as detailed in the Drawings.
 - 1. Prime all dissimilar surfaces prior to membrane or flashing installation.
 - 2. Perforated flange on upper edge to be 4-inch minimum.
 - 3. Nail flange to solid wood blocking at 4-inch center - staggered.
 - 4. Manufacture SopraBond metal angle to match 6:12 slope of shingled roof.
- C. Cover edge with an eight (8) inch reinforcing strip of base membrane torched into place. Membrane is to carry beyond the metal flange onto base ply a minimum of 4-inches.
 - 1. Hold the reinforcing strip back from outside edge of metal by 3/4-inch.
 - 2. Seal all edges with a hot trowel.
- D. Install top ply of membrane with the edge tight against the metal and sealed with a hot trowel.

3.20 CONSTRUCTION

- A. Interface with Other Work:
 - 1. Coordinate Work with installation of associated metal counterflashings specified under other Sections as Work of this Section proceeds.
 - 2. Phased installation of roofing felts (glaze coating of ply felts) is not permitted.
 - 3. Complete installation of base flashing at roof curbs prior to setting roof top equipment.

3.21 FIELD QUALITY CONTROL

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- A. Section 01450 - Quality Control: Field inspection.
- B. Manufacturer's Field Services: Manufacturer's Roofing Quality Control Inspector.
 - 1. Attend and conduct Pre-installation Meeting.
 - 2. Perform preparatory, initial, follow-up and final inspections for roof insulation and roofing system.
 - 3. Prepare and submit inspection reports for each inspection made.

3.22 CLEANING

- A. Section 01700 - Execution Requirements: Requirements for cleaning.
- B. Remove bituminous markings from finished surfaces. In areas where finished surfaces are soiled by asphalt or other source of soiling caused by work of this Section, consult manufacturer of surfaces for cleaning advice and comply with their instruction.
- C. Replace defaced or disfigured finishes caused by Work of this Section.

3.23 PROTECTION

- A. Where construction traffic must continue over finished roof installation, protect surfaces in manner recommended by roofing system manufacturer to protect Manufacturer's Warranty.

END OF SECTION

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SECTION 07 60 00 – FLASHING AND SHEET METAL

PART 1 – GENERAL

1.01 SUMMARY

- A. Provide flashing and sheet metal components for building construction.
 - 1. Masonry through-wall flashing.
 - 2. Metal counter-flashing.
 - 3. Gutter and Downspouts
 - 4. Exposed metal trim units.
 - 5. Miscellaneous sheet metal accessories.

1.02 SUBMITTALS

- A. Submit for approval samples, shop drawings, product data, 12-inch samples of gutter and downspout..

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual." Conform to dimensions and profiles shown unless more stringent requirements are indicated.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Flashing: Acceptable material for flashing conditions. Specific application noted on drawings.
 - 1. Weatherproof Backing: Specified in Section 06 61 00.
 - 2. Visible Masonry Flashing: Specified in Section 04 20 00
 - 3. Concealed Masonry Flashing: Specified in Section 04 20 00
 - 4. Intersection of Shingles with Vertical Surfaces:
 - a. For Concealed Areas: Use aluminum step flashing (0.019") 20 gage alloy 3003 clear aluminum, tensile strength 16,000 psi, ASTM B 209.
 - b. For Exposed Areas: Use copper step or continuous flashing. Material Specified in Section 04 20 00.
 - 7. Flat Roof Edge Flashing: Specified in Section 07 52 16,
- B. Gutters and downspouts: Refer to drawings for locations.

PART 3 - EXECUTION

3.01 GENERAL

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SECTION 07 60 00 – FLASHING AND SHEET METAL

- A. Follow recommendations of SMACNA manual. Allow for expansion. Isolate dissimilar materials.
- B. Install materials and systems in accordance with SMACNA recommendations and approved submittals. Install materials and systems in proper relation with adjacent construction, and with uniform appearance. Coordinate with work of other sections.
- C. Restore damaged components and finishes. Clean and protect work from damage.

3.02 FLASHING INSTALLATION

- A. Coordinate flashing installation for the following areas. Refer to Drawings for specific locations, and paths of flashing membranes. Provide necessary laps, and counterflashing for any areas not specifically identified on Drawings or in these Specifications:
 - 1. Window and Door Head Flashing: Install copper flashing extending from front edge of trim or lintel, up and over trim or lintel and up the face of the wall sheathing at least 4 inches. This 4 inch vertical leg of flashing shall fastened to the face of sheathing, and be counterflashed with exterior wall flashing.
 - 2. Exterior Wall Flashing (weatherproof backing): Asphalt felt described in Section 06 10 00. Install on surface of all wall sheathing. Lap membrane to form a continuous drainage surface (shingle fashion) from top of wall at eave to masonry base course. Lap over all other embedded masonry flashing to form a counterflashing. Coordinate installation of all flashing to provide a continuous path of moisture removal from masonry air space and outward through weep holes.
 - 3. Masonry Base Flashing: See Section 04 20 00
 - 4. Eave, Rake and Valley Flashing: Apply adhesive-backed membrane, 40 mils, on all roof edges, eaves, rakes, valleys, and other areas shown on the Drawings
 - 5. Eave Edge and Rake Edge Flashing: Premolded metal edge trim. See Section 07 31 13 for roofing underlayment on Eaves and Rake edges.
 - 6. Flat Roof Flashing: See Section 07 53 16
 - 7. Pipes and Vents: All pipes and vents passing through the roof or wall shall be sealed and flashed to assure protection against the entry of water. Use appropriate materials, storm collars, compression bands, or pre-formed gaskets approved for use and acceptable to roofing manufacturer.
- B. Provide necessary laps, and counterflashing for any areas not specifically identified on Drawings or in these

3.03 GUTTER & DOWNSPOUT INSTALLATION

- A. Install gutter and downspout as shown on drawings and in accordance with manufacturer's recommendations.

SECTION 07 60 00 – FLASHING AND SHEET METAL

- B. Slope gutters to downspouts in accordance with SMACNA manual, but not more than 1/4 inch per foot and not less than 1/16 inch per foot or as otherwise recommended by gutter system manufacturer.
- C. Downspouts shall be fastened to face of exterior wall and held tight and flush against wall for its full height, including at the base connection to the downspout tile adapter.
- D. Downspout tile adapters shall be installed flush to the face of exterior wall and flush with finished sidewalk. Downspouts are not permitted to divert away from the exterior face of the wall anywhere along its length including the base of the downspout where it enters the tile adaptor. Sleeves, blockouts, or other provisions shall be made at the time concrete foundation and footing is poured to accommodate downspout tile adapters as described. Coordinate this work with Section 03300.
- E. Downspout tile adapters shall be sized to permit downspout to fit inside receiver without special adapters, fittings, or additional exposed sheet metal work. The receiver socket shall permit a 4"x6" OD downspout to fit inside the PVC flanges.
- F. Relocation of downspouts, if necessary to avoid utility connections or other building obstruction shall be made only with approval of the Architect.

END OF SECTION

SECTION 07 72 33 – ROOF HATCHES

PART 1 – GENERAL

1.01 SUMMARY

- A. Work included: Furnishing and installing factory fabricated roof scuttle.
- B. Related work: See roof flashing (SBS Modified Bituminous Roofing 07530)

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM) 100 Bar Harbour Drive, West Conshocken, PA 19428-2959: (610) 832-9585, fax (610) 832-9555
 - 1. ASTM A 36-933a: Standard Specification for Structural Steel

1.03 SUBMITTALS

- A. Product Data: Provide manufacturer's product data for all materials in this specification.
- B. Shop Drawings: Show profiles, accessories, location, and dimensions.
- C. Samples; Manufacturer to provide upon request; sized to represent material adequately.
- D. Contract Closeout: Roof scuttle manufacturer shall provide the manufacturer's Warranty prior to the contract closeout. [if applicable]

1.04 PRODUCT HANDLING

- A. All materials shall be delivered in manufacturer's original packaging.
- B. Store materials in a dry, protected, well vented area. The contractor shall thoroughly inspect product upon receipt and report damaged material to delivering carrier and note such damage on the carrier's freight bill of lading.
- C. Remove protective wrapping immediately after installation.

1.05 SUBSTITUTIONS

- A. Proposals for substitution products shall be accepted only from bidding contractors and not less than (10) working days before due date. Contractor guarantees that proposed substitution shall meet the performance and quality standards of this specification.

1.06 JOB CONDITIONS

- A. Verify that other trades with related work are complete before installing roof scuttle.
- B. Mounting surfaces shall be safe and secure: substrates shall be of proper width.

- C. Refer to the construction documents, shop drawings, and the manufacturer's installation instructions.
- D. Coordinate installation with roof membrane and roof insulation manufacturer's instructions before starting.
- E. Observe all appropriate OSHA safety guidelines for this work.

1.07 WARRANTY/GUARANTEE

- A. Manufacturer's standard warranty: Materials shall be free of defects in material and workmanship for a period of five years from date of purchase. Should a part fail to function in normal use within this period, manufacturer shall furnish a new part at no charge.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. The BILCO Company, P.O. Box 1203, New Haven, CT 06505, 1-203-934-6363, fax; 1-203-933-8478,

2.02 ROOF SCUTTLE

- A. Furnish and install where indicated on plans metal roof scuttle Type S, size width: 3'-0" x length: 2'-6". Length denotes hinge side. The roof scuttle shall be single leaf. The roof scuttle shall be pre-assembled from the manufacturer.
- B. Performance characteristics:
 - 1. Cover shall be reinforced to support a minimum live load of 40 psf with a maximum deflection of 1/150th of the span or 20psf wind uplift.
 - 2. Operation of the cover shall be smooth and easy with controlled throughout the entire arc of opening and closing.
 - 3. Operation of the cover shall not be affected by temperature.
 - 4. Entire scuttle shall be weather tight with fully welded corner joints on cover and curb.
- C. Cover: Shall be 14 gauge paint bond G-90 galvanized steel, with 3" beaded flange with formed reinforcing members. Cover shall have a heavy extruded EPDM rubber gasket that is bonded to the cover interior to assure a continuous seal when compressed to the top surface of the curb.
- D. Cover insulation: Shall be fiberglass of 1" thickness, fully covered and protected by a metal liner 22 gauge paint bond G-90 galvanized steel.
- E. Curb: Shall be 12" in height and of 14 gauge paint bond G-90 galvanized steel. The curb shall be formed with a 3 1/2" flange with 7/16" holes provided for securing to the roof deck. The curb shall be equipped with an integral metal cap flashing and the same gauge and material as the curb, fully welded at the corners, that features the Posi-Flash flashing system, including stamped tabs, 6" on center, to be bent inward to hold single ply roofing membrane securely in place.

- F. Curb Insulation: Shall be rigid high density fiberboard of 1" thickness on outside of curb.
- G. Lifting mechanisms: Manufacturer to provide compression spring operators enclosed in telescopic tubes to provide, smooth, easy, and controlled cover operation throughout the entire arc of opening and closing. The upper tube shall be the outer tube to prevent accumulation of moisture, grit and debris inside the lower tube assembly. The lower tube shall interlock with a flanged support shoe through bolted to frame assembly.
- H. Hardware
 - 1. Heavy pintle hinges shall be provided.
 - 2. Cover shall be equipped a spring latch with interior and exterior turn handles.
 - 3. Roof scuttle to be equipped with interior and exterior padlock hasps.
 - 4. The latch strike shall be a stamped component bolted to the curb assembly.
 - 5. Cover shall automatically lock in the open position with a rigid hold open arm equipped with a 1" red vinyl grip handle to permit easy release for closing.
 - 6. Compression spring tubes shall be an anti-corrosive composite material and all other hardware shall be zinc plated and chromate sealed. Springs shall have an electrocoated acrylic finish for corrosion resistance.
 - 7. Cover hardware shall be bolted into heavy gauge channel reinforcing welded to the underside of the cover and concealed within the insulation space.
- I. Finishes: Factory finish shall be alkyd based red oxide primed steel.

PART 3 EXECUTION

3.01 INSPECTION

- A. Verify that roof scuttle installation will not disrupt other trades. Verify that the substrate is dry, clean, and free of foreign matter. Report and correct defect prior to any installation.

3.02 INSTALLATION

- A. Submit product design drawings for review and approval to the architect before fabrication.
- B. The installer shall check as built conditions and verify the manufacturer's roof scuttle details for accuracy to fit the application prior to fabrication. The installer shall comply with the roof scuttle Manufacturer's installation instructions.
- C. The installer shall furnish mechanical fasteners consistent with roof requirements.

3.03 COORDINATION

- A. Coordinate location of scuttle and roof access ladder to provide easy use of scuttle without interference with other structural members either above or below the roof deck..

END OF SECTION

SECTION 07 90 00 - JOINT SEALANTS

PART 1 – GENERAL

1.01 SUMMARY

- A. Provide sealants at intersection of building components and at control and expansion joints.

1.02 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Joints designed for expansion and movement conditions at site:
 1. Exterior joints on vertical surfaces: Non-sag polyurethane; Pecora Dynatrol II or Tremco Dymeric or approved equal.
 2. Horizontal paving joints, interior and exterior: Self-leveling polyurethane; Tremco THC 900 or approved equal.
 3. Toilet fixture joints: Silicone rubber; Tremco Proglaze or Dow 786 or approved equal.
 4. Interior joints: Acrylic latex; Tremco Acrylic Latex or approved equal.
 5. Pre-compressed expanding sealant tape; Emseal PC-SA or equal.
 6. Pavement joint filler: Resilient, premolded asphalt impregnated fiberboard.
 7. Primers, bond breakers, and backer rods compatible with sealant and adjacent surfaces.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Examine substrate; report unsatisfactory conditions in writing. Beginning work means acceptance of substrates.
- B. Provide sealants in colors as selected from manufacturer's standards.
- C. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections. Clean and prime joints, and install bond breakers, backer rods and sealant as recommended by manufacturers.
- D. Depth shall equal width up to 1/2" wide; depth shall equal 1/2 width for joints over 1/2" wide.

- E. Cure and protect sealants as directed by manufacturers. Replace or restore damaged sealants. Clean adjacent surfaces to remove spillage.

END OF SECTION



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JOINT SEALANTS

SECTION 08 11 00 – METAL DOORS AND FRAMES

PART 1 – GENERAL

1.01 SUMMARY

- A. Provide hollow metal embossed steel doors
- B. Provide hollow metal steel frames for doors
- C. Provide hollow metal steel frames for door – sidelight combinations
- D. Provide hollow metal steel frames for interior windows

1.02 SUBMITTALS

- A. Submit for architect's approval samples, shop drawings, and manufacturer's product data on all components.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Steel Doors and Frames in this section must meet all standards as established by the following listing.
 - 1. Door and Hardware Preparation ANSI 115.
 - 2. Life Safety Codes NFPA-101 (Latest edition).
 - 3. Steel Door Institute ANSI/SDI-100 (Latest edition)

PART 2 - PRODUCTS

2.01 NATIONAL ACCOUNT VENDOR

- A. Hollow metal and other components described in these Specifications shall be obtained from Goddard System Inc. National Account Program with:
 - 1. MPM Industries, Inc.
#1 Cottonwood Industrial Park
Glen Carbon, Illinois 62034
Phone: 618.288.3000
Contact: Jeff Hanselman ext 212
Email: jeff@mpm-industries.com
Goddard_RFQ@mpm-industries.com

2.02 MATERIALS

- A. Hollow Metal Frame and Door Manufacturers
 - 1. MPM Industries, Inc.
 - 2. Ceco Door Products
 - 3. Steelcraft

SECTION 08 11 00 – METAL DOORS AND FRAMES

- B. Exterior Doors: 1-3/4" thick embossed steel.
 - 1. Insulated exterior doors, 18 gage, Grade II, Heavy-duty, ASTM A526 steel galvanized in accordance with ASTM A653, embossed face sheets, inverted top and bottom channels, hardware reinforcements meeting SDI-100, with polystyrene door core. 20 psi strength, 1.8 pcf density, 1/2 inch maximum voids in any direction. Strength of bond between core and steel face sheet shall exceed strength of core so delamination will not occur during operation conditions.
 - 2. For exterior doors with glass panels, use internal muntins.
 - 3. Provide a sealed, snap-in top cap on all exterior doors
 - 4. Provide door styles shown on Drawings.
- C. Hollow Metal Frames:
 - 1. Exterior Frames: 16 gage A60 galvanized steel for installation in metal or wood stud exterior wall framing with masonry veneer. Coordinate frame configuration to provide closure of brick air space without use of additional closure trim. Construct and install frames in accordance with SDI 105 with die mitered corners, full face welded and factory primed.
 - 2. Interior Frames: 16 gage cold rolled steel, for installation on a metal or wood stud and gypsum board partition. Construct frames in accordance with SDI 105, with die mitered corner, full face welded and factory primed.
 - 3. Interior View Panel 16 gage cold rolled steel with removable glass stops. Construct and install frames in accordance with SDI 105 with mitered corners, fully face welded and factory primed.
 - 4. Sidelight Panels: 16 gage cold rolled steel (interior) or A60 galvanized steel (exterior) with removable glass stops. Integral with welded door frames where shown on drawings.
- D. Rubber Silencers: Provide three resilient rubber silencers for each door except for fully weatherstripped doors not requiring such silencers.

2.03 HARDWARE LOCATIONS AND REINFORCEMENTS

- A. Locate hardware on doors and frames in accordance with the manufacturer's standard location.
- B. When steel frames are used with wood doors, the hardware preparation on the door is governed by the location on the frame. If the doors are factory mortised, the door supplier is responsible for coordinating hardware locations.
- C. Hardware reinforcements are to be in accordance with the minimum standard gages as listed in SDI-100.
- D. Doors shall be machined to receive hardware, reinforced and function holes provided at the factory in accordance with the hardware schedule and manufacturer's templates provided by the hardware supplier.

2.04 FINISHES

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METAL DOORS AND FRAMES

SECTION 08 11 00 – METAL DOORS AND FRAMES

- A. Finish: All surfaces of the door and frame exposed to view shall receive a factory-applied coat of rust inhibiting primer. Prior to field finish painting, sand smooth any rusted or damaged areas and reapply prime coat as required. All doors and frames are to be cleaned and chemically treated to insure maximum paint adhesion. The finish must meet the requirements for acceptance stated in ANSI A250.10 "Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces."

Note: The prime finish is not intended to be the final layer of protection from the elements.

- B. Field finishes: See Section 09900 for coatings. See APPENDIX for color.

PART 3 - EXECUTION

3.01 GENERAL

- A. Fabricate work to be rigid, neat and free from defects, dents, warp, buckle, and exposed fasteners. Install doors and frames in compliance with SDI-105 "Recommended Erection Instructions for Steel Frames", SDI-100, SDI-110 "Standard Steel Doors and Frames for Modular Masonry Construction", and NFPA 80.

3.02 INSTALLATION

- A. Frames
1. Prior to installation, **remove shipping spreader bar** and insert a wood spreader cut to the opening width, notched to clear the stops. All frames must be checked for rack, twist and out of square conditions.
 2. Place interior frames prior to enclosing walls and ceilings. Set frames accurately in position, plumbed and braced securely until permanent anchors are set.
 3. SDI-105, "Recommended Erection Instructions for Steel Frames" and SDI-110 "Standard Steel Doors and Frames for Modular Masonry Construction" shall indicate the proper installation procedures.
 4. Recess exterior frames from the exterior finished face of brick veneer, a consistent distance as shown on the Drawings.
- B. Doors
1. Install doors plumb and in true alignment in a prepared opening and fasten them to achieve the maximum operational effectiveness and appearance.
 2. Proper door clearance must be maintained in accordance with SDI - 110.
 3. Where necessary, only metal hinge shims are acceptable to maintain clearances.
 4. "Installation Guide for Doors and Hardware" published by DHI is recommended for further details.
- C. Hardware shall be applied in accordance with hardware manufacturer's templates and instructions.

SECTION 08 11 00 – METAL DOORS AND FRAMES

3.03 ADJUST AND CLEAN

- A. Check and re-adjust operating finish hardware items in hollow metal work just prior to final inspection. Leave work in complete and proper condition.

END OF SECTION



SECTION 08 14 00 - WOOD DOORS

PART 1 – GENERAL

1.01 SUMMARY

- A. Provide wood doors.

1.02 SUBMITTALS

- A. Submit for approval veneer finish samples, shop drawings, product data, and warranty.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of approved manufacturer. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Comply with Architectural Woodwork Institute (AWI) Quality Standards, 8th Edition, Version 2.0.

PART 2 - PRODUCTS

2.01 NATIONAL ACCOUNT VENDOR

- A. Hardware and other components described in these Specifications shall be obtained from Goddard System Inc. National Account Program with:

1. MPM Industries, Inc.
#1 Cottonwood Industrial Park
Glen Carbon, Illinois 62034
Phone: 618.288.3000
Contact: Jeff Hanselman ext 212
Email: jeff@mpm-industries.com
Goddard_RFQ@mpm-industries.com

2.02 MATERIALS

- A. Manufacturers
 1. V-T Industries. (No substitution allowed.)
- B. Architectural Flush Wood Doors
 1. General: Solid Core Wood Doors for interior use per AWI Section 1300.
 2. Thickness: 1-3/4 inches.(44 mm).
 3. Veneer: Book match veneer leaves per AWI 1300-G-12; Run match veneers per AWI 1300-G-13
 4. Face Veneer: Grade A per AWI 200-T-9 and 1300-G-17
 5. Veneer Species and Cut: Rotary Cut Select White Birch
 6. Core Construction: Use cores of cross banded particleboard meeting ANSI A208.1, Grade LD-2; and meeting AWI 1300 Designation PC-5 or SCLC-5.

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WOOD DOORS

SECTION 08 14 00 - WOOD DOORS

7. Door Grade: Premium Grade per AWI 1300-T-8, 1300-T-10, and 1300-T-16,
 8. Finish: Manufacturer's standard factory pre-finished "clear" with performance equal to Standards Section 1500 Conversion Varnish System; a two-part catalyzed system for Premium Grade per AWI 1500-T-14 .
 9. Warranty: Lifetime. Provide draft copy of warranty with Submittals
- C. View Panels: Factory glaze 1/4 inch glass plate, safety tempered panels in architectural flush wood doors where shown on Schedule or otherwise noted.
- D. Glass:
1. For non-rated doors with glazing required, use factory installed flush wood stops with 1/4" clear tempered glass with etched label.
 2. For fire rated doors with glazing required, use factory installed metal vision kits with fire rated glass.
- E. Louvers:
1. For non-rated doors: Sight proof, stationary type. Prefinished wood to match door veneer.
 2. For fire rated doors: Sight proof, metal to meet fire rating.

2.03 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Comply with AWI Quality Standards (8th Edition). Pre-fit all doors to steel frames in accordance with AWI Section 1300-G-20. Pre-machine doors for hardware listed on final schedules. Factory bevel doors.
- B. When steel frames are used with wood doors, the hardware preparation on the door is governed by the location on the frame. If the doors are factory mortised, the door supplier is responsible for coordinating all hardware locations.
- C. Factory-machine all doors to receive finish hardware as shown on schedule and to fit frames identified in Section 08110 or as otherwise shown on the Drawings.
- D. Factory bevel all doors in accordance with AWI Section 1300-G-19.
- E. Install doors with not more than 1/8" clearance at top and sides, 5/8" at bottom (1" at restrooms and data closet) in accordance with AWI Section 1300-G-20.
- F. After factory-machining for hardware described in Section 08700, factory finish all doors in accordance with this Section. Wrap and protect after all factory preparation and before shipping to jobsite in accordance with AWI Section 1500.
- G. Adjust, clean, and protect all doors until final occupancy.

END OF SECTION

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WOOD DOORS

SECTION 08 31 13 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide access doors or panels for access to valves, controls, and concealed items requiring maintenance.

1.02 SUBMITTALS

- A. Submit for approval shop drawings, product data.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Doors: 20 gage recessed steel panel doors to accept field finish of drywall or tile; cam locks.
- B. Frames: 16 gage with concealed flanges for drywall and tile; and 1" exposed flanges for installation into concrete or masonry.
- C. Primed finish for field finish.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Comply with manufacturer's installation instructions. Install plumb, level and square.
- B. Coordinate installation and field finishing with work of other trades.
- C. Adjust hardware and operation. Repair or replace damaged units.

END OF SECTION

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ACCESS DOORS AND FRAMES

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SECTION 08 54 00 – COMPOSITE WINDOWS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Composite-framed windows of the following types: single-hung.

1.02 REFERENCES

A. General: Standards listed by reference form a part of this specification section. Standards listed are identified by issuing authority, abbreviation, designation number, title or other designation. Standards subsequently referenced in this Section are referred to by issuing authority abbreviation and standard designation.

B. American Architectural Manufacturers Association (AAMA):

1. AAMA 502 - Voluntary Specification for Field Testing of Newly Installed Fenestration Products.
2. AAMA 615 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Plastic Profiles.
3. NAFS - North American Fenestration Standard/Specification for windows, doors and skylights (AAMA/WDMA/CSA/101/I.S.2/A440).

C. Andersen Unit Installation Guide.

D. ASTM International (ASTM):

1. ASTM C1036 - Standard Specification for Flat Glass.
2. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass.
3. ASTM D2244 - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.
4. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
5. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls.
6. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation.
7. ASTM F2090 - Standard Specification for Window Fall Prevention Devices with Emergency Escape (Egress) Release Mechanisms.

E. Insulating Glass Certification Council (IGCC):

1. Insulating Glass Unit Certification.

F. Insulating Glass Manufacturers Alliance of Canada (IGMAC) and Canadian General Standards Board (CGSB):

1. Insulating Glass Units Standard CAN/CGSB 12.8-97.

G. International Standards Organization (ISO):

1. ISO 14021 - Environmental Labels and Declarations -- Self-Declared Environmental Claims (Type II Environmental Labeling).

H. National Fenestration Rating Council (NFRC):

1. NFRC 100 - Procedure for Determining Fenestration Product U-factors.

2. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence.

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

1. ENERGY STAR v5.0 (2010).

J. Window and Door Manufacturers Association (WDMA):

1. WDMA Hallmark Certification Program for Manufacturers.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Pre-installation Meetings: Conduct pre-installation meeting to clarify Project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation instructions.
- B. Shop Drawings: Provide drawings indicating direction of operable parts, typical jamb, head and sill conditions and special mullion reinforcement details.
- C. Samples: Submit selection and verification samples, including the following:
 - 1. Hardware: Submit sample indicating typical finish on hardware.
 - 2. Vinyl Cladding: Submit color samples of exterior cladding.
- D. Quality Assurance/Control Submittals: Submit the following:
 - 1. Performance Data: Provide manufacturer's published performance data for specified products.
- E. Closeout Submittals: Submit the following:
 - 1. Warranty documents specified herein.
 - 2. Owner's Manual: Bound manual clearly identified with project name, location and completion date. Identify type and size of window units installed. Provide recommendations for periodic inspections, care and maintenance. Identify common causes of damage with instructions for temporary repair.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications:

- 1. Member in good standing of The Insulating Glass Certification Council (IGCC).
- 2. Hallmark Certified Manufacturer and member in good standing of the Window and Door Manufacturers Association (WDMA).
- 3. Member in good standing of U.S. Green Building Council.
- 4. U.S. ENERGY STAR Partner.
- 5. Capable of demonstrating an extended history of window and door design,

Inc. National Account Program with:

1. Andersen Windows Inc.
Contact: Sean Braasch
Phone: (833) 266-7253
Email: commercialquotes@andersencorp.com

2.02 COMPOSITE WINDOWS

- A. General: Provide composite windows complying with the performance requirements indicated and tested according to NAFS (AAMA/WDMA/CSA/101/I.S.2/A440).
- B. Basis-of-Design Product: Subject to compliance with requirements provide Andersen Corporation: Andersen 100 Series windows.
- C. Substitution Limitations: No substitutions permitted.

2.03 MATERIALS

- A. Material Composition: Extruded composite profile consisting of 40 percent reclaimed pre-consumer wood fiber and 60 percent thermoplastic polymer, by weight.
- B. Manufacturer Designation: Fibrex material.
- C. Pre-consumer Recycled Content: **<Insert percentage>** percent minimum, third-party certified.
- D. Interior Color: **White**.
- E. Exterior Color: **White**.
- F. Exterior Color Retention: Resist fading with a change of no more than 5 Delta E units over 10 years in compliance with color retention provisions of AAMA 615 and ASTM D2244.

2.04 WINDOWS

- A. Window Type: Single-Hung and Fixed in configurations as indicated on Drawings.
- B. Performance Requirements: Comply with NAFS (AAMA/WDMA/CSA 101/I.S. 2).
 1. Single-hung, Performance Class and Grade: LC-PG30 (47-1/2 inches by 89-1/2 inches).
 2. Fixed, Performance Class and Grade: LC-PG40 (95-1/2 inches by 71-1/2 inches)
- C. Environmental Qualifications:
 1. ENERGY STAR performance.
 2. Indoor air quality performance.
- D. Weather-stripping Type and Material: Three fins and pile, polypropylene.
- F. Overall Depth: 3-1/4 inches (82.6 mm).

G. Attachment Flange: **1-3/8 inches Flange Setback.**

H. Hardware:

1. Hardware Type and Material: Self-latching, polycarbonate with integral color.
2. Balance Type and Material: Spring loaded block and tackle, galvanized steel.
3. Window Opening Control Device: Provide device to restrict operable sash to less than 4 inches maximum clear opening and releasable, in compliance with ASTM F2090.

I. Insect Screens:

1. Frame Material: Aluminum.
2. Frame Color: Match window frame.
3. Insect Screen Material: **Fiberglass cloth** secured with vinyl spline.

2.05 GLAZING Values listed for Single-Hung windows.

A: Thermal Transmission (U-Factor), NFRC 100:

1. **0.30 with grilles]**

B. Solar Heat Gain Coefficient (SHGC), NFRC 200:

1. **0.28 with grilles**

C. Visible Light Transmittance (VLT), NFRC 200:

1. **0.48 with grilles**

D. Sound Transmission Class (STC)/Outdoor-Indoor Transmission Classification (OITC), ASTM E90:

1. **25/21**

E. Glass Units: Provide insulating glass units certified through **The Insulating Glass Certification Council as conforming to the requirements of IGCC and ASTM E2190**

1. Manufacturer Designation: **Andersen Low-E Glass**
2. Seal and Spacer Type: Dual sealed insulating glass units with polyisobutylene primary seal, silicone secondary seal and metal spacers with bent or soldered corners.
3. Glass Type: **Flat glass, ASTM C1036**
4. Glass Pattern: **None.**

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that all substrate conditions are suitable for installation in compliance with manufacturer's recommendations.

B. Do not begin installation until substrates have been properly prepared and any conditions not in compliance with manufacturer's recommendations have been corrected.

C. Site Verification of Conditions:

1. Verify that site conditions are acceptable for installation of windows including the following:

- a. Concrete surfaces are dry and free of excess mortar, rocks, sand and other construction debris.
 - b. Rough opening or masonry opening is square and dimensions are correct.
 - c. Sill plates are level.
 - d. Wood frame walls are dry, clean, sound and well nailed, and/or glued, free of voids and without offsets at joints.
 - e. Nail heads are driven flush with all surfaces in opening and within 3 inches (75 mm) of rough opening.
2. Do not proceed with installation of windows until unacceptable conditions are corrected.

3.02 INSTALLATION

A. General: Comply with manufacturer's product recommendations, including but not limited to the Andersen Unit Installation Guide, and installation information in product literature and on product packaging. Comply with Drawings [**and Shop Drawings**] for installing windows, hardware, accessories, and other components.

B. Install windows plumb, level and square. Anchor windows securely to structure in correct orientation to flashing and adjacent construction as indicated. Comply with installation instructions for proper flashing integration of window into wall system. Install windows so as to drain condensation and moisture penetration to the exterior.

D. Adjust sashes, insect screens, ventilators, hardware and accessories as applicable for correct fit. Adjust weather stripping for smooth operation and weather-tight closure.

E. Techniques:

1. Remove window components, parts, accessories and installation guides from carton.
2. Inspect window components and verify that components are not damaged and that all parts are included before disposing of carton.

F. Rough Opening Furring & Gaskets:

1. Each window rough opening shall be framed with a minimum 3/4 inch thick by 3-1/2" wide furred mounting surface for nailing fins, providing a window mounting surface 3/4 inches forward of the exterior wall sheathing surface. This furred mounting surface is required to provide closure of the brick veneer air space.
2. After fastening window fins, apply a minimum 8-inch wide adhesive window fin gasket around all four sides of window to cover the window nailing fin and forming a seal between the fin and the backing material.
3. Confirm that all surrounding membranes, flashing, gaskets, and trim are installed in a fashion that will shed water away from the window fins, and toward weep holes and other drainage outlets.

G. Interface with Other Work:

1. Install windows level, plumb, square, true to line, without distortion, anchored securely in place to structural support and in proper relation to wall flashing and other adjacent construction.

2. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.
3. Install insulation in shim space around window perimeter to maintain continuity of building insulation. Do not overfill.
4. Hold back exterior siding or other finish materials from edge of window to allow for expansion and contraction and the installation of a proper sealant joint with backing materials. Seal perimeter of window after exterior finish is applied in accordance with the requirements of related section.
5. Install optional hardware and unit accessories after cleaning.
6. Install a window setting gasket over all window nailing flanges as described in Section 06100.

H. Site Tolerances:

1. Adjust operating sashes and ventilators, screens, hardware and accessories for a tight fit at contact points and weatherstripping for smooth operation and weathertight closure.

3.03 CLEANING

- A. Remove protective films and non-permanent labels prior to 90 days after installation.
- B. Remove excess sealant, soiling, dirt and other substances. Clean window frame and glass surfaces. Avoid damaging coatings and finishes.
- C. Touch-up, repair or replace glass or other window components broken, scratched or damaged during construction prior to Substantial Completion.
- D. Remove and lawfully dispose of construction debris from Project site.

3.04 PROTECTION

- A. Protect installed windows and finish surfaces from damage during construction until completion of Project and acceptance by Owner.

END OF SECTION

SECTION 08 70 00 - HARDWARE

PART 1 – GENERAL

1.01 SUMMARY

- A. Finish hardware for doors

1.02 SUBMITTALS

- A. Submit for Architect's approval complete hardware schedule, with manufacturer's product data, cross-references to door and room numbers, and indication of left-hand/ right-hand installations. Architect's review and approval is a prerequisite for ordering hardware, doors, or frames.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 NATIONAL ACCOUNT VENDOR

- A. Hardware and other components described in these Specifications shall be obtained from Goddard System Inc. National Account Program with:

1. MPM Industries, Inc
#1 Cottonwood Industrial Park
Glen Carbon, Illinois 62034
Phone: 618-288-3000
Contact: Jeff Hanselman ext 212
E-mail: jeff@mpm-industries.com
Goddard_RFQ@mpm-industries.com

2.02 MATERIALS

- A. Hinges, butts: Full-mortise, 5 knuckle ball-bearing type, meeting ANSI A156.1-2013; Use PBB BB81 at all interior doors. No substitution allowed.
- B. SELECT SL11HD continuous hinge at all exterior doors, meeting ANSI A156.26-2012. No substitution allowed.
- C. Cylindrical Locksets (exterior doors):
 1. Standard Duty Commercial meeting Grade 1, and ANSI A156.2-2011 Accessibility; PDQ XGT SERIES. No substitution allowed.
- D. Cylindrical Locksets:
 1. Standard Duty Commercial meeting ANSI Grade 1, and ANSI A156.2-2011 Accessibility;. PDQ GT SERIES. No substitution allowed.

- E. Lock Cylinder Cores: Minimum 6-pin interchangeable lock cylinder core; Pin tumbler-type lock cylinders with (2) nickel silver keys per core, meeting ANSI A156.5-2010. Provide (4) master keys & (2) control keys.
- F. Exit Panic Devices: Panic bar for rim latch installation on wide stile metal clad embossed doors, and half-light SCW flush doors. Provide panic device with exterior lever handle, exterior key cylinder to retract latch, cylinder dogging, rim latch function, and compatibility with electric strike, meeting ANSI A156.3-2008. Use PDQ 6200 series with exterior trim, handles, and escutcheon plates. Supply with lock cylinders as described above.
- G. Access Control System: Complete access control system consisting of an electric strike manual push buttons and wireless remote push buttons to activate the strike.
1. Electric Strike: compatible with metal door frame without frame modifications; compatible with panic bar latch system, 12 volt operation, normally locked, provide with entry buzzer, meeting ANSI A156.31-2007. Use HES Series 9600. Normally locked position, activate (open) with any of the following: 1) remote activation of receiver, 2) manual push buttons, 3) activation of any component of the fire alarm, 5) activation of any component of the sprinkler system.
 2. Power Supply: AL300ULM by Altronix 12 volt, fire/fail safe power supply unit. Coordinate and connect in accordance with access security system sequence of operation, and activation input noted above
 3. Manual Push Button: Access Security Products model ASP 12, 3 buttons required as shown. Spring loaded momentary button for fail-safe exit lock release
 4. Remote-Wireless Push Buttons: ASP-12 (Supply three (3) units)
 5. Transmitter & Receiver:
 - a. Supply wireless remote Transmitters Model 10TD433HH1, manufactured by BEA INC., 100 ENTERPRISE DR; PITTSBURGH, PA 15275 (412) 249-4100
 - b. Supply one (1) Receiver activated by remote transmitters and wired to electric strike. Model No. 10RD433EH, manufactured by BEA INC., 100 ENTERPRISE DR; PITTSBURGH, PA 15275 (412) 249-4100
 - c. Installation of Transmitter and Receiver will be by Contractor.
 - d. Fire alarm wiring to electric strike will be by Contractor
- H. Closers: Use PDQ 7100 series meeting ANSI A156.4-2008. Grade 1 at main exterior doors. Use PDQ 5300 series meeting ANSI A156.4-2008 at interior doors and exterior classroom doors. Provide hold-open feature where noted on hardware schedule. All closers to be mounted on non-public side of door.
- I. Miscellaneous Door Trim: kickplates, silencers, bumpers, stops, meeting ANSI A156.6-2010; Rockwood.
- J. Thresholds, bottom seals, weatherstrip: Use National Guard Products, Inc. (NGP). Any exterior door requiring weatherstrip, shall be considered to mean being Fully Weatherstripped including head, jambs, and threshold, meeting ANSI A156.21-2009 and A156.22-2012.
1. Saddle Threshold NGP 8427 1/2" x 7" thermal break, mill aluminum
 2. Metal Door Bottom Seal NGP 200NA, vinyl finned
 3. Door Jamb Seal NGP 5050 WHITE, vinyl
- K. Door Finger Guards: Provide door finger guards consisting of UPVC plastic and nitrile rubber gaskets installed on the inner and outer hinge side of the door. Comply with UL-10B and UL-11B 4-hour door seal rating; NFPA 252; and ASTM E152. Use finger guards manufactured by FingerSafe USA, Inc., No substitutions allowed.
1. Inner Finger Guard Model MK1A: pleated rigid PVC with TPE flanges, 0.40 inches thick and Retaining Plate of rigid extruded PVC.

2. Outer Finger Guard Model MK1B: 1.10 inch wide rigid PVC with TPE hinges.
3. Finger Guards to be installed on both sides of every door, except at exterior with continuous hinge.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Follow guidelines of DHI "Recommended Locations for Builder's Hardware for Standard Steel Doors and Frames" and hardware manufacturers' instructions.
- B. Coordinate work with electrical contractor to wire electric strike and access security system. See Sections 13720, 16000.
- C. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Provide all components, accessories, shims, spacers, blocking, fasteners, and miscellaneous accessories necessary for a fully functional, complete, and final installation.
- D. Adjust operation of all doors, hardware, hinges, closers, and seals. Door locksets shall operate easily and smoothly and shall retract locking mechanism without excessive force or effort. Door cylinder and bolts shall be in exact alignment with strikes and receivers.
- E. Set all door thresholds in a full bed of asphalt mastic, or SBS modified bitumen, or 60 mil butyl sealer gasket. Cut and insert all thresholds so that flat surface of threshold, aligns with door bottom seal. Use only thermal-break type thresholds. Maximum height of threshold to be 1/2 inch. Install thresholds in lengths necessary to scribe cut and fit tight to metal door frame profile.

3.02 KEYING

- A. Master Keying Plan: Contractor to provide locksets equipped with temporary construction cores. MPM Industries shall deliver permanent lock cores directly to the Contractor. Contractor shall pull out all construction cores, and install the permanent cores upon building turnover. The Contractor's responsibility for interior building security ends with the installation of the permanent lock cores.
 1. Key doors for the following categories:
 - a. Master (A)
 - b. Owner's Office and closet (AA1)
 - c. Director's Office and closet (AA2)
 - d. All remaining Interior Doors (AA3)
 - e. Exterior Doors, Interior vestibule door and fence egress gates (AA4)

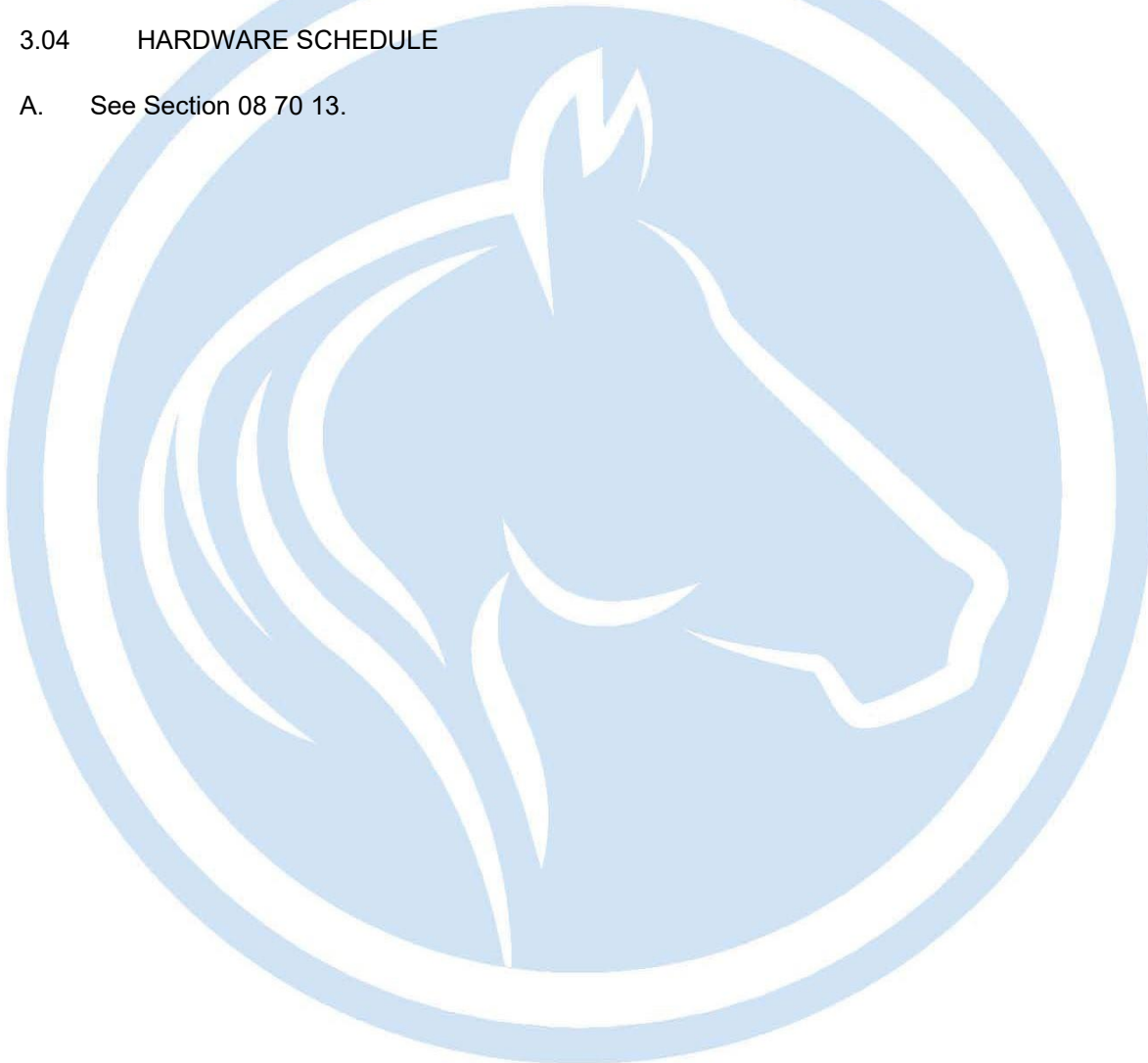
3.03 ACCESS SECURITY

- A. Install and wire all components of the Access Control System consisting of an electric strike, manual push buttons and a receiver with wireless transmitters to activate the strike.
- B. Install manual push buttons where shown on the Drawings or where instructed by the Goddard Systems Project Manager. Wire each push button to the strike for activation of release function to allow entry.

- C. Install and connect wiring from the electric strike to the remote receiver. Locate in an area above the lay-in ceiling tiles, directly above the strike door frame. Coordinate work with electrical contractor to provide a 120-volt wiring connection for the receiver and transformer.
- D. Test for operation. Activation of any push button or any remote transmitter shall activate the strike, sound a buzzer at the strike signaling that the strike is released, and release the door for entry. Test fire alarm function. Activation of the fire alarm system will also release the strike and permit unrestrained access from exterior of building to interior of building.

3.04 HARDWARE SCHEDULE

- A. See Section 08 70 13.



SECTION 08 70 13 - HARDWARE SCHEDULE

Hardware Set GATE 1

MOUNT ALARM INSIDE ON HINGE SIDE OF GATE

Door Number

GATE 1 (Gate 1 refers to the front gates to the parking lot) ***Please note that gate hardware is based on Ameristar steel or aluminum fencing per GSI Specification Section 32.31.00 Fence and Gates.***

	Qty	Description	
CYLINDER - MORTISE	1 EA	MORTISE I.C. CYL HOUSING 307 600 X 626 (LESS CORE)	KILLEEN
EXIT DEVICE - RIM	1 EA	EXIT DEVICE V4008BN X 36" X LD X W X IC7(INSTALLED) X 628/689	DETEX
EXIT DEVICE - RIM	1 EA	EXIT DEVICE GATE PLATE KIT (GTPLKIT) (BLACK)	DETEX
EXIT ALARM	1 EA	EXIT ALARM EAX-500-W X KS X CL14 X GRAY X (LESS MORTISE CYL/CORE)	DETEX
CORE	2 EA	IC CORE 206-A X 26D X "A" KEYWAY M.K. TO SCHED.	KILLEEN
MISC	1 EA	SPACER FOR NARROW LEVER TRIM 08GSN (BLACK)	DETEX

Hardware Set GATE 2

Door Number

GATE 2 (Gate 2 refers to the gates in rear of the building) ***Please note that gate hardware is based on Ameristar steel or aluminum fencing per GSI Specification Section 32.31.00 Fence and Gates.***

	Qty	Description	
EXIT DEVICE - RIM	1 EA	EXIT DEVICE V4008BN X 36" X LD X W X IC7(INSTALLED) X 628/689	DETEX
EXIT DEVICE - RIM	1 EA	EXIT DEVICE GATE PLATE KIT (GTPLKIT) (BLACK)	DETEX
CORE	1 EA	IC CORE 206-A X 26D X "A" KEYWAY M.K. TO SCHED.	KILLEEN
MISC	1 EA	SPACER FOR NARROW LEVER TRIM 08GSN (BLACK)	DETEX

SECTION 08 70 13 - HARDWARE SCHEDULE

**Hardware Set H-01
Exterior Entry Door**

Door Number

100

	Qty	Description	
HINGE - CONTINUOUS	1 EA	CONTINUOUS HINGE SL-11HD CLEAR 83"	SELECT
EXIT DEVICE - RIM	1 EA	EXIT DEVICE 6310R x 630 x 4' x CD-SFL (LESS SFIC)	PDQ
EXIT DEVICE TRIM ONLY	1 EA	EXIT DEVICE TRIM 6 W 08 PHL x 626 x SF6L (LESS CORE, CLASSROOM)	PDQ
CORE	1 EA	CONSTRUCTION CORE IC-I 5206(COMBINATED) 6 PIN CORE SMALL FORMAT BLACK CONST. CORE	PDQ
CORE	2 EA	IC CORE 206-A X 26D X "A" KEYWAY M.K. TO SCHED.	KILLEEN
CLOSER - PARALLEL ARM	1 EA	CLOSER 7101 X BC X DS X ALUM (689)	PDQ
KICK PLATE	1 EA	KICKPLATE 10 X 38 X 630 X 4BE X WD/TEK SCREWS	ROCKWOOD
DOOR SEAL	1 EA	WEATHERSTRIP 5050-20' WHITE	NGP
SWEEP	1 EA	DOOR SWEEP 200NA X 48" X WD/TEK SCREWS	NGP
THRESHOLD	1 EA	THRESHOLD 8427 X 42" X ALUM	NGP
MISC	1 EA	FINGER GUARD INNER MK1A-84" WHITE	FINGERSAFE

SECTION 08 70 13 - HARDWARE SCHEDULE

Hardware Set H-02
Interior Entry & Access Control

Door Number

100A

	Qty	Description	
HINGE - CONTINUOUS	1 EA	CONTINUOUS HINGE SL-11HD CLEAR 83"	SELECT
EXIT DEVICE - RIM	1 EA	EXIT DEVICE 6310R x 630 x 4' x CD (LESS SFIC)	PDQ
EXIT DEVICE TRIM ONLY	1 EA	EXIT DEVICE TRIM 6 W 09 PHL x 626 x SF6L (LESS CORE, STOREROOM)	PDQ
ELECTRIC STRIKE	1 EA	ELECTRIC STRIKE CX-EPD1289L x 12/24 x 630 (RPN)	CAMDEN
CORE	2 EA	IC CORE 206-A X 26D X "A" KEYWAY M.K. TO SCHED.	KILLEEN
PUSH PLATE	3 EA	PUSH BUTTON SWITCH ASP-12	ASP
CLOSER - PARALLEL ARM	1 EA	CLOSER 7101 X BC X DS X HO X ALUM (689)	PDQ
KICK PLATE	1 EA	KICKPLATE 10 X 38 X 630 X 4BE X WD/TEK SCREWS	ROCKWOOD
MISC	1 EA	BATTERY BACK-UP ASP MPB-1270	ASP
MISC	1 EA	FINGER GUARD INNER MK1A-84" WHITE	FINGERSAFE
MISC	4 EA	TRANSMITTER 10TD433HH1 (BATTERY OPERATED-1 BUTTON)	BEA INC
MISC	1 EA	RECEIVER 10RD433EH	BEA INC
POWER SUPPLY	1 EA	POWER SUPPLY AL300ULM MULTI OUTPUT ACCESS CONTROL	
SILENCER	3 EA	DOOR MUTES 608 GREY	ROCKWOOD

SECTION 08 70 13 - HARDWARE SCHEDULE

**Hardware Set H-03
Exterior Classroom Egress Door**

Door Number

102D	104D	105D	106D
107D	108C	109C	110C
112C	113B	114B	

	Qty	Description	
HINGE - CONTINUOUS	1 EA	CONTINUOUS HINGE SL-11HD CLEAR 83"	SELECT
CYL. LOCKSET (WITH THRU-BOLTS)	1 EA	ENTRANCE XGT 116 X PHL X IC X 626 X 2-3/4 X ASA X LESS CORE	PDQ
CORE	1 EA	CONSTRUCTION CORE IC-I 5206(COMBINATED) 6 PIN CORE SMALL FORMAT BLACK CONST. CORE	PDQ
CORE	1 EA	IC CORE 206-A X 26D X "A" KEYWAY M.K. TO SCHED.	KILLEEN
CLOSER	1 EA	CLOSER 5301 X BC X DS X ALUM (689)	PDQ
KICK PLATE	1 EA	KICKPLATE 10 X 32 X 630 X 4BE X WD/TEK SCREWS	ROCKWOOD
DOOR SEAL	1 EA	WEATHERSTRIP 5050-17' WHITE	NGP
SWEEP	1 EA	DOOR SWEEP 200NA X 36" X WD/TEK SCREWS	NGP
THRESHOLD	1 EA	THRESHOLD 8427 X 36" X ALUM	NGP
MISC	1 EA	FINGER GUARD INNER MK1A-84" WHITE	FINGERSAFE

SECTION 08 70 13 - HARDWARE SCHEDULE

**Hardware Set H-04
Exterior Corridor Egress Door**

Door Number

123

	Qty	Description	
HINGE - CONTINUOUS	1 EA	CONTINUOUS HINGE SL-11HD CLEAR 83"	SELECT
EXIT DEVICE - RIM	1 EA	EXIT DEVICE 6300R x 630 x 3' x CD (LESS SFIC)	PDQ
EXIT DEVICE TRIM ONLY	1 EA	EXIT DEVICE TRIM 6 W 09 PHL x 626 x SF6L (LESS CORE, STOREROOM)	PDQ
CORE	1 EA	CONSTRUCTION CORE IC-I 5206(COMBINATED) 6 PIN CORE SMALL FORMAT BLACK CONST. CORE	PDQ
CORE	2 EA	IC CORE 206-A X 26D X "A" KEYWAY M.K. TO SCHED.	KILLEEN
CLOSER	1 EA	CLOSER 5301 X BC X DS X ALUM (689)	PDQ
KICK PLATE	1 EA	KICKPLATE 10 X 32 X 630 X 4BE X WD/TEK SCREWS	ROCKWOOD
DOOR SEAL	1 EA	WEATHERSTRIP 5050-17' WHITE	NGP
SWEEP	1 EA	DOOR SWEEP 200NA X 36" X WD/TEK SCREWS	NGP
THRESHOLD	1 EA	THRESHOLD 8427 X 36" X ALUM	NGP
MISC	1 EA	FINGER GUARD INNER MK1A-84" WHITE	FINGERSAFE

SECTION 08 70 13 - HARDWARE SCHEDULE

Hardware Set H-05

Exterior Mechanical Room Door

Door Number

103

	Qty	Description	
HINGE - CONTINUOUS	1 EA	CONTINUOUS HINGE SL-11HD CLEAR 83"	SELECT
CYL. LOCKSET (WITH THRU-BOLTS)	1 EA	STOREROOM XGT 115 X PHL X IC X 626 X 2-3/4 X ASA X LESS CORE	PDQ
CORE	1 EA	CONSTRUCTION CORE IC-I 5206(COMBINATED) 6 PIN CORE SMALL FORMAT BLACK CONST. CORE	PDQ
CORE	1 EA	IC CORE 206-A X 26D X "A" KEYWAY M.K. TO SCHED.	KILLEEN
CLOSER - PARALLEL ARM	1 EA	CLOSER 7101 X BC X DS X HO X ALUM (689)	PDQ
DOOR SEAL	1 EA	WEATHERSTRIP 5050-17' WHITE	NGP
SWEEP	1 EA	DOOR SWEEP 200NA X 36" X WD/TEK SCREWS	NGP
THRESHOLD	1 EA	THRESHOLD 8427 X 36" X ALUM	NGP
MISC	1 EA	FINGER GUARD INNER MK1A-84" WHITE	FINGERSAFE

SECTION 08 70 13 - HARDWARE SCHEDULE

**Hardware Set H-06
Interior Classroom Corridor Door**

Door Number

102	104	105	106
107	108	109	110
112	113	114	

	Qty	Description	
HINGE - (4-1/2 STD WT(.134))	3 EA	HINGE BB81 4.5 X 4.5 X 652	PBB
PASSAGE SET (WITH THRU- BOLTS)	1 EA	PASSAGE GT 126 X PHL X 626 X 2-3/4 X ASA	PDQ
CLOSER	1 EA	CLOSER 5301 X BC X PA X ALUM (689)	PDQ
KICK PLATE	1 EA	KICKPLATE 10 X 32 X 630 X 4BE X WD/TEK SCREWS	ROCKWOOD
WALL STOP	1 EA	WALL STOP 409 X 630	ROCKWOOD
KICKDOWN HOLDER	1 EA	KICKDOWN STOP 458 X CRM	ROCKWOOD
MISC	1 EA	FINGER GUARD INNER MK1A-84" WHITE	FINGERSAFE
MISC	1 EA	FINGER GUARD OUTER MK1B-84" WHITE	FINGERSAFE
SILENCER	3 EA	DOOR MUTES 608 GREY	ROCKWOOD

SECTION 08 70 13 - HARDWARE SCHEDULE

**Hardware Set H-07
Office Door**

Door Number

101 115 122

	Qty	Description	
HINGE - (4-1/2 STD WT(.134))	3 EA	HINGE BB81 4.5 X 4.5 X 652	PBB
CYL. LOCKSET (WITH THRU- BOLTS)	1 EA	ENTRANCE GT 116 X PHL X IC X 626 X 2-3/4 X ASA X LESS CORE	PDQ
CORE	1 EA	IC CORE 206-A X 26D X "A" KEYWAY M.K. TO SCHED.	KILLEEN
CLOSER	1 EA	CLOSER 5301 X BC X PA X ALUM (689)	PDQ
WALL STOP	1 EA	WALL STOP 409 X 630	ROCKWOOD
KICKDOWN HOLDER	1 EA	KICKDOWN STOP 458 X CRM	ROCKWOOD
MISC	1 EA	FINGER GUARD INNER MK1A-84" WHITE	FINGERSAFE
MISC	1 EA	FINGER GUARD OUTER MK1B-84" WHITE	FINGERSAFE
SILENCER	3 EA	DOOR MUTES 608 GREY	ROCKWOOD

**Hardware Set H-08
Closet & Storage Door**

Door Number

101A 102A 104A 105A
106A 107A 109A 110A
112A 113A 114A 115A 123A

	Qty	Description	
HINGE - (4-1/2 STD WT(.134))	3 EA	HINGE BB81 4.5 X 4.5 X 652	PBB
CYL. LOCKSET (WITH THRU- BOLTS)	1 EA	CLASSROOM GT 148 X PHL X IC X 626 X 2-3/4 X ASA X LESS CORE	PDQ
CORE	1 EA	IC CORE 206-A X 26D X "A" KEYWAY M.K. TO SCHED.	KILLEEN
WALL STOP	1 EA	WALL STOP 409 X 630	ROCKWOOD
MISC	1 EA	FINGER GUARD INNER MK1A-84" WHITE	FINGERSAFE
MISC	1 EA	FINGER GUARD OUTER MK1B-84" WHITE	FINGERSAFE
SILENCER	3 EA	DOOR MUTES 608 GREY	ROCKWOOD

SECTION 08 70 13 - HARDWARE SCHEDULE

Hardware Set H-09

MP Room/Double Storage Door/Data

Door Number

108A 118A

	Qty	Description	
HINGE - (4-1/2 STD WT(.134))	6 EA	HINGE BB81 4.5 X 4.5 X 652	PBB
FLUSH BOLT - MANUAL (EXTENSION)	1 EA	FLUSH BOLT 93170 X 626	PDQ
		TOP ONLY	
CYL. LOCKSET (WITH THRU- BOLTS)	1 EA	CLASSROOM GT 148 X PHL X IC X 626 X 2-3/4 X ASA X LESS CORE	PDQ
DUMMY TRIM - SINGLE	1 EA	DUMMY GT 211 X PHL X 626 (SINGLE DUMMY)	PDQ
CORE	1 EA	IC CORE 206-A X 26D X "A" KEYWAY M.K. TO SCHED.	KILLEEN
WALL STOP	1 EA	WALL STOP 409 X 630	ROCKWOOD
MISC	2 EA	FINGER GUARD INNER MK1A-84" WHITE	FINGERSAFE
MISC	2 EA	FINGER GUARD OUTER MK1B-84" WHITE	FINGERSAFE

Hardware Set H-10

Toilet Room Door – Adult

Door Number

120 121

	Qty	Description	
HINGE - (4-1/2 STD WT(.134))	3 EA	HINGE BB81 4.5 X 4.5 X 652	PBB
PRIVACY SET (WITH THRU- BOLTS)	1 EA	PRIVACY GT 176 X PHL X 626 X 2-3/4 X ASA	PDQ
CLOSER	1 EA	CLOSER 5301 X BC X PA X ALUM (689) MOUNT PA	PDQ
KICK PLATE	1 EA	KICKPLATE 10 X 32 X 630 X 4BE X WD/TEK SCREWS	ROCKWOOD
WALL STOP	1 EA	WALL STOP 409 X 630	ROCKWOOD
MISC	1 EA	FINGER GUARD INNER MK1A-84" WHITE	FINGERSAFE
MISC	1 EA	FINGER GUARD OUTER MK1B-84" WHITE	FINGERSAFE
SILENCER	3 EA	DOOR MUTES 608 GREY	ROCKWOOD

SECTION 08 70 13 - HARDWARE SCHEDULE

**Hardware Set H-11
PANTRY**

Door Number

117A

	Qty	Description	
HINGE - (4-1/2 STD WT(.134))	3 EA	HINGE BB81 4.5 X 4.5 X 652	PBB
CYL. LOCKSET (WITH THRU- BOLTS)	1 EA	CLASSROOM GT 148 X PHL X IC X 626 X 2-3/4 X ASA X LESS CORE	PDQ
CORE	1 EA	IC CORE 206-A X 26D X "A" KEYWAY M.K. TO SCHED.	KILLEEN
OVERHEAD HOLDER/STOP (SURFACE)	1 EA	OVERHEAD STOP 904S X SP28	GJ
MISC	1 EA	FINGER GUARD INNER MK1A-84" WHITE	FINGERSAFE
MISC	1 EA	FINGER GUARD OUTER MK1B-84" WHITE	FINGERSAFE
SILENCER	3 EA	DOOR MUTES 608 GREY	ROCKWOOD

**Hardware Set H-12
Toilet Room Door – Children**

Door Number

102B	102C	104B	104C
105B	105C	106B	106C
107B	107C	108B	109B
110B	112B		

	Qty	Description	
HINGE - (4-1/2 STD WT(.134))	3 EA	HINGE BB81 4.5 X 4.5 X 652	PBB
PASSAGE SET (WITH THRU- BOLTS)	1 EA	PASSAGE GT 126 X PHL X 626 X 2-3/4 X ASA	PDQ
WALL STOP	1 EA	WALL STOP 409 X 630	ROCKWOOD
MISC	1 EA	FINGER GUARD INNER MK1A-84" WHITE	FINGERSAFE
MISC	1 EA	FINGER GUARD OUTER MK1B-84" WHITE	FINGERSAFE
SILENCER	3 EA	DOOR MUTES 608 GREY	ROCKWOOD

SECTION 08 70 13 - HARDWARE SCHEDULE

**Hardware Set H-13
Janitor Room Door**

Door Number

118

	Qty	Description	
HINGE - (4-1/2 STD WT(.134))	3 EA	HINGE BB81 4.5 X 4.5 X 652	PBB
CYL. LOCKSET (WITH THRU- BOLTS)	1 EA	CLASSROOM GT 148 X PHL X IC X 626 X 2-3/4 X ASA X LESS CORE	PDQ
CORE	1 EA	IC CORE 206-A X 26D X "A" KEYWAY M.K. TO SCHED.	KILLEEN
CLOSER	1 EA	CLOSER 5301 X BC X PA X ALUM (689)	PDQ
KICK PLATE	1 EA	KICKPLATE 10 X 32 X 630 X 4BE X WD/TEK SCREWS	ROCKWOOD
KICKDOWN HOLDER	1 EA	KICKDOWN STOP 458 X CRM	ROCKWOOD
MISC	1 EA	FINGER GUARD INNER MK1A-84" WHITE	FINGERSAFE
MISC	1 EA	FINGER GUARD OUTER MK1B-84" WHITE	FINGERSAFE
SILENCER	3 EA	DOOR MUTES 608 GREY	ROCKWOOD

SECTION 08 70 13 - HARDWARE SCHEDULE

Hardware Set

Kitchen Door H-14

Door Number

117

	Qty	Description	
HINGE - (4-1/2 STD WT.(134))	3 EA	HINGE BB81 4.5 X 4.5 X 652	PBB
CYL. LOCKSET (WITH THRU- BOLTS)	1 EA	CLASSROOM GT 148 X PHL X IC X 626 X 2-3/4 X ASA X LESS CORE	PDQ
CORE	1 EA	IC CORE 206-A X 26D X "A" KEYWAY M.K. TO SCHED.	KILLEEN
CLOSER	1 EA	CLOSER 5301 X BC X PA X ALUM (689)	PDQ
KICK PLATE	1 EA	KICKPLATE 10 X 32 X 630 X 4BE X WD/TEK SCREWS	ROCKWOOD
WALL STOP	1 EA	WALL STOP 409 X 630	ROCKWOOD
KICKDOWN HOLDER	1 EA	KICKDOWN STOP 458 X CRM	ROCKWOOD
MISC	1 EA	FINGER GUARD INNER MK1A-84" WHITE	FINGERSAFE
MISC	1 EA	FINGER GUARD OUTER MK1B-84" WHITE	FINGERSAFE
SILENCER	3 EA	DOOR MUTES 608 GREY	ROCKWOOD

SECTION 08 70 13 - HARDWARE SCHEDULE

**Hardware Set H-15
LAUNDRY DOOR**

Door Number

111

	Qty	Description	
HINGE - (4-1/2 STD WT(.134))	3 EA	HINGE BB81 4.5 X 4.5 X 652	PBB
CYL. LOCKSET (WITH THRU-BOLTS)	1 EA	CLASSROOM GT 148 X PHL X IC X 626 X 2-3/4 X ASA X LESS CORE	PDQ
CORE	1 EA	IC CORE 206-A X 26D X "A" KEYWAY M.K. TO SCHED.	KILLEEN
CLOSER	1 EA	CLOSER 5301 X BC X PA X ALUM (689)	PDQ
KICK PLATE	1 EA	KICKPLATE 10 X 32 X 630 X 4BE X WD/TEK SCREWS	ROCKWOOD
WALL STOP	1 EA	WALL STOP 409 X 630	ROCKWOOD
MISC	1 EA	FINGER GUARD INNER MK1A-84" WHITE	FINGERSAFE
MISC	1 EA	FINGER GUARD OUTER MK1B-84" WHITE	FINGERSAFE
SILENCER	3 EA	DOOR MUTES 608 GREY	ROCKWOOD

**Hardware Set H-16
Staff RoomDoor**

Door Number

119

	Qty	Description	
HINGE - (4-1/2 STD WT(.134))	3 EA	HINGE BB81 4.5 X 4.5 X 652	PBB
CYL. LOCKSET (WITH THRU-BOLTS)	1 EA	CLASSROOM GT 148 X PHL X IC X 626 X 2-3/4 X ASA X LESS CORE	PDQ
CORE	1 EA	IC CORE 206-A X 26D X "A" KEYWAY M.K. TO SCHED.	KILLEEN
CLOSER	1 EA	CLOSER 5301 X BC X PA X ALUM (689)	PDQ
KICK PLATE	1 EA	KICKPLATE 10 X 32 X 630 X 4BE X WD/TEK SCREWS	ROCKWOOD
KICKDOWN HOLDER	1 EA	KICKDOWN STOP 458 X CRM	ROCKWOOD
MISC	1 EA	FINGER GUARD INNER MK1A-84" WHITE	FINGERSAFE
MISC	1 EA	FINGER GUARD OUTER MK1B-84" WHITE	FINGERSAFE
SILENCER	3 EA	DOOR MUTES 608 GREY	ROCKWOOD

SECTION 08 70 13 - HARDWARE SCHEDULE

Hardware Set KEY

Door Number

KEY

	Qty	Description	
KEY CONTROL CABINET	1 EA	1201-A X	LUND
MASTER KEYING	5 EA	MASTER KEYS	PDQ
KEY BLANK	2 EA	CONTROL KEY -IC	PDQ

Hardware Set SPEAK THRU

Door Number

SPEAK THRU

	Qty	Description	
MISC	1 EA	PRINTED (APPROVED) HARDWARE & FRAME SCHEDULE	MPM
MISC	1 EA	834A TALK-THRU x SATIN ANODIZED ALUMINUM *SEE TRANSACTION WINDOW DRAWING IN SUBMITTAL PACKAGE*	MPM

SECTION 08 70 13 - HARDWARE SCHEDULE

SECTION 08 81 00 - GLASS AND GLAZING

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide glass and glazing for all applications scheduled.
- B. Glass schedule: (TG= Tempered Glass; TIG=Tempered Insulated Glass)
 - 1. **TG** Interior Metal Framed Glass: 1/4" thick clear glass, safety tempered.
 - 2. **TIG** Exterior Metal Framed Glass Sidelights: 1/4" thick clear glass, safety tempered.
 - 3. **TG** Interior Wood Door Glass: 1/4" thick clear glass, safety tempered.
 - 4. **TIG** Exterior Metal Clad Door Glass: Insulated and safety tempered
 - 5. **TIG** Clad Wood Windows: Insulated and safety tempered
 - 6. **TG** Mirrors: 1/4" plate glass, safety tempered.

1.02 SUBMITTALS

- A. Submit for approval samples, shop drawings, product data, mock-ups, warranty, test reports.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Glazing sheets:
 - 1. Primary clear float glass, ASTM C1036
 - 2. All insulating glass shall conform to ASTM E7774 level A.
 - 3. All glazing, fire safety glass, and mirrors shall be safety glazing conforming to both ANSI Z97.1-1975 (100 ft/lb) and CPSC-16 CFR 1201.(Cat II) (400 ft/lb)
 - 4. **TG** - Tempered glazing shall conform to ASTM C1048, FT (Fully Tempered) Condition A (uncoated) Type I (Transparent Glass, Flat), Class 1 (Clear), Quality q3 (Glazing Select).
 - 5. **TIG** - Tempered insulated glazing shall conform to ASTM C1048, FT (Fully Tempered) Condition A (uncoated) Type I (Transparent Glass, Flat), Class 1 (Clear), Quality q3 (Glazing Select).
 - 6. Mirrors, silvering, copper coating, protective organic coating.
 - 7. Safety glazing panels shall each bear an etched label indicating the safety performance, agency compliance, and type of panel.
- B. Insulating glass units: Sealed insulating units fabricated from two panes of glass with air space between, dual sealing system, spacer, desiccant, and corner reinforcement.

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GLASS & GLAZING

Glass thicknesses and heat strengthening to be determined by manufacturer for wind loading conditions. Insulating glass warranty: 10 years.

- C. Glazing materials:
 - 1. Silicone glazing sealants.
 - a) Structural sealant: Dow Corning 795 or approved equal.
 - b) Weather seal: Dow Corning or approved equal.
 - 2. Acrylic glazing sealant (interior); Tremco Mono or approved equal.
 - 3. Preformed glazing tape; Tremco Polyshim Tape or approved equal.
 - 4. Glazing gaskets:
 - a) Lock-strip gaskets; D.S. Brown Co or approved equal.
 - b) Preformed gaskets; Tremco or approved equal.
 - 5. Setting blocks, shims and spacers as required.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Inspect framing and report unsatisfactory conditions in writing.
- B. Comply with FGMA "Glazing Manual" and manufacturers instructions and recommendations. Use manufacturer's recommended spacers, blocks, primers, sealers, gaskets and accessories.
- C. Install glass with uniformity of pattern, draw, bow and roller marks.
- D. Install sealants to provide complete wetting and bond and to create a substantial wash away from glass.
- E. Set mirrors on stainless steel clips and adhere to wall with mirror adhesive.
- F. Remove and replace damaged glass and glazing. Wash, polish and protect all glass supplied under this section.

3.02 INSPECTION

- A. Installed glazing without safety tempered etching or approved identification labeling shall be considered to be non-safety tempered and shall be removed and replaced with properly labeled safety tempered glazing at no additional cost to the Owner or Goddard Systems, Inc..

END OF SECTION

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GLASS & GLAZING

SECTION 09 24 23 – PORTLAND CEMENT STUCCO

PART 1 – GENERAL

1.01 SUMMARY

- A. This section includes materials and installation of exterior stucco wall covering backed with air and water-resistive barrier, and drainage mat.

1.02 RELATED SECTIONS

- A. Section 03 30 00 Cast-In-Place Concrete
- B. Section 06 16 00 Sheathing
- C. Section 07 26 00 Vapor Retarders
- D. Section 07 27 00 Air Barriers
- E. Section 07 50 00 Membrane Roofing
- F. Section 07 62 00 Sheet Metal Flashing and Trim
- G. Section 07 92 00 Joint Sealants
- H. Section 08 40 00 Entrances, Storefronts, and Curtain Walls
- I. Section 08 50 00 Windows

1.03 REFERENCED DOCUMENTS

- A. ASTM Standards:
 - A641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
 - A653 Specification for Sheet Steel Zinc coated (Galvanized) by the Hot-Dip Process, Commercial Quality
 - B69 Specification for Rolled Zinc
 - C144 Specification for Aggregate for Masonry Mortar
 - C297 Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions
 - C578 Specification for Preformed, Cellular Polystyrene Thermal Insulation
 - C847 Standard Specification for Metal Lath
 - C897 Standard Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters
 - C920 Standard Specification for Elastomeric Joint Sealants
 - C926 Standard Specification for Application of Portland Cement-Based Plaster
 - C1063 Standard Specification for Installation of Lathing and Furring for Portland Cement Plaster
 - C1177 Specification for Glass Mat Gypsum for Use as Sheathing

C1513	Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections
D226	Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
D1784	Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
D4541	Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
E84	Test Method for Surface Burning Characteristics of Building Materials
E96	Standard Test Methods for Water Vapor Transmission of Materials
E283	Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
E330	Test Method for Structural Performance of Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
E331	Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
E783	Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors
E2178	Standard Test Method for Air Permeance of Building Materials
E2357	Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
E 2430	Standard Specification for Expanded Polystyrene ("EPS") Thermal Insulation Boards For Use in Exterior Insulation and Finish Systems ("EIFS")
G154	Recommended Practice for Operating Light-and Water-Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Nonmetallic Materials
B.	AISI (American Iron and Steel Institute)
	AISI S200-2007 North American Standard for Cold-Formed Steel Framing-General Provisions
C.	APA Engineered Wood Association
	PS 1 Voluntary Product Standard, Structural Plywood
	PS 2 Performance Standard for Wood-Based Structural-Use Panels
	E 30 APA Engineered Wood Construction Guide
D.	ICC (International Code Council)
	IBC 2012 and 2015 IBC (International Building Code)
E.	ICC ES (International Code Council Evaluation Service)
	AC 11 Acceptance Criteria for Cementitious Exterior Wall Coatings

- AC 212 Acceptance Criteria for Water-resistive Coatings used as Water-resistive Barriers over Exterior Sheathing
- ICC ESR 1233 StoGuard with Gold Coat, StoGuard with Gold Coat, and StoGuard VaporSeal Water-Resistive Barriers, and StoEnergy Guard
- ICC ESR 2323 StoPowerwall and StoPowerwall NEXt Stucco Systems

F. IAPMO (International Association of Plumbing and Mechanical Officials)

- IAPMO ER 382 Western 1-Kote Exterior Stucco System

G. National Fire Protection Association (NFPA) Standards

- NFPA 285 Standard Method of Test for the Evaluation of Flammability Characteristics of Exterior Non-Load-Bearing Wall Assemblies containing Combustible Components Using the Intermediate-Scale, Multistory Test Apparatus

H. Sto Corp.

- Addendum to Sto Stucco Specifications

I. US EPA (United States Environmental Protection Agency)

- 40 CFR Part 59 (Code of Federal Regulations Title 40 Part 59 – National Volatile Organic Compound Emission Standards for Consumer and Commercial Products)

1.04 DESIGN REQUIREMENTS

A. Structural (wind and axial loads)

1. Design for maximum allowable deflection, normal to the plane of the wall of L/360.
2. Design for wind load in conformance with building code requirements.
3. Refer to applicable ICC ESR for wind load limitations that may apply.

B. Moisture Control

1. Prevent the accumulation of water into or behind the stucco, either by condensation or leakage into the wall construction, in the design and detailing of the wall assembly:
 - a. Provide corrosion resistant flashing to protect exposed elements and to direct water to the exterior, including, above window and door heads, beneath window and door sills, at floor lines, at roof/wall intersections, decks, abutments of lower walls with higher walls, above projecting features, and at the base of the wall.
 - b. Air Leakage Prevention – prevent excess air leakage in the design and detailing of the wall assembly. Provide continuity between air barrier components in the wall assembly.
 - c. Vapor Diffusion and Condensation – perform a dew point analysis and/or dynamic hygrothermal modeling of the wall assembly to determine the potential for accumulation of moisture in the wall

assembly as a result of water vapor diffusion and condensation. Adjust wall assembly components accordingly to minimize the risk of condensation. Avoid the use of vapor retarders on the interior side of the wall in warm, humid climates.

- d. Provide StoGuard Air and water-resistive barrier over sheathing, concrete and masonry.
- e. At through wall expansion joints and at joints formed with back-to-back casing beads, back joints with appropriate StoGuard Detail Component. Refer to Sto Guide Details at www.stocorp.com.
- f. Seal stucco terminations and accessory butt joints with appropriate sealant. Seal all penetrations through the stucco wall assembly with appropriate sealant, or backer rod and sealant, as dictated by joint type.

C. Grade Condition

1. Do not specify stucco for use below grade or on surfaces subject to continuous or intermittent water immersion or hydrostatic pressure. Provide minimum 4 inch (100 mm) clearance above earth grade, minimum 2 inch (51 mm) clearance above finished grade (pavers/sidewalk). Provide increased clearance in freeze/thaw climate zones.

D. Sloped surfaces, including Foam Trim and Projecting Architectural Features Attached to Stucco.

1. Avoid the use of stucco on build-outs or weather exposed sloped and horizontal surfaces (refer to 2 and 3 below).
2. Build out trim and projecting architectural features from the stucco wall surface with code compliant EPS foam. All foam trim and projecting architectural features must have a minimum 1:2 [27°] slope along their top surface. All foam horizontal reveals must have a minimum 1:2 [27°] slope along their bottom surface. Increase slope for northern climates to prevent accumulation of ice/snow and water on surface. Where trim/feature or bottom surface of reveal projects more than 2 inches (51 mm) from the face of the wall plane, protect the top surface with waterproof base coat. Limit foam thickness to a maximum of 4 inches (102 mm). Periodic inspections and increased maintenance may be required to maintain surface integrity of finishes on weather exposed sloped surfaces. Limit projecting features to easily accessible areas and limit total area to facilitate maintenance and to minimize maintenance burden. Refer to Sto Guide Details at www.stocorp.com
3. Do not use EPS foam on weather exposed projecting ledges, sills, or other projecting features unless supported by framing or other structural support and protected with metal coping or flashing. Refer to Sto Guide Details at www.stocorp.com

E. Joints and Accessories

1. Provide two piece expansion joints in the stucco assembly where building movement is anticipated: at joints in the substrate or supporting construction, where the system is to be installed over dissimilar

construction or substrates, at changes in building height, at floor lines, at columns and cantilevered areas.

2. Provide one piece expansion joints every 144 ft² (13 m²). Cut and wire tie lath to the expansion joint accessory so lath is discontinuous at or beneath the accessory. Do not exceed length to width ratio of 2-1/2:1 in expansion joint layout and do not exceed more than 18 feet (5.5 m) in any direction without an expansion joint. Where casing bead is used back-to-back as the expansion joint, back the joint with StoGuard Transition Membrane.
3. Provide one piece expansion joints at through wall penetrations, for example, above and below doors or windows.
4. Provide minimum 3/8 inch (9 mm) wide joints where the system abuts windows, doors and other through wall penetrations.
5. Provide appropriate accessories at stucco terminations and joints.
6. Avoid the use of channel reveal accessories which can interfere with proper drainage and proper stress relief.
7. Provide appropriate sealant at stucco terminations and at stucco accessory butt joints.
8. Indicate location of joints, accessories and accessory type on architectural drawings.

F. Fire Protection

1. Noncombustible Type Construction: provide full width firestops at floor lines, typically 4 pcf (64 kg/m³) semi-rigid mineral wool, where metal framing runs continuously past floor line and provide minimum 3/4 inch (19 mm) uniform stucco thickness.
2. Fire Resistance Rated Wall Assemblies: provide 7/8 inch (22 mm) uniform stucco thickness unless thinner is allowed by rated assembly. Refer to 2015 or 2018 IBC Chapter 7, Table 721.1(2), ICC-ESR 2323, IAPMO 382, and other Sto listed ASTM C926 stucco evaluation reports for fire-resistance rated wall assemblies.

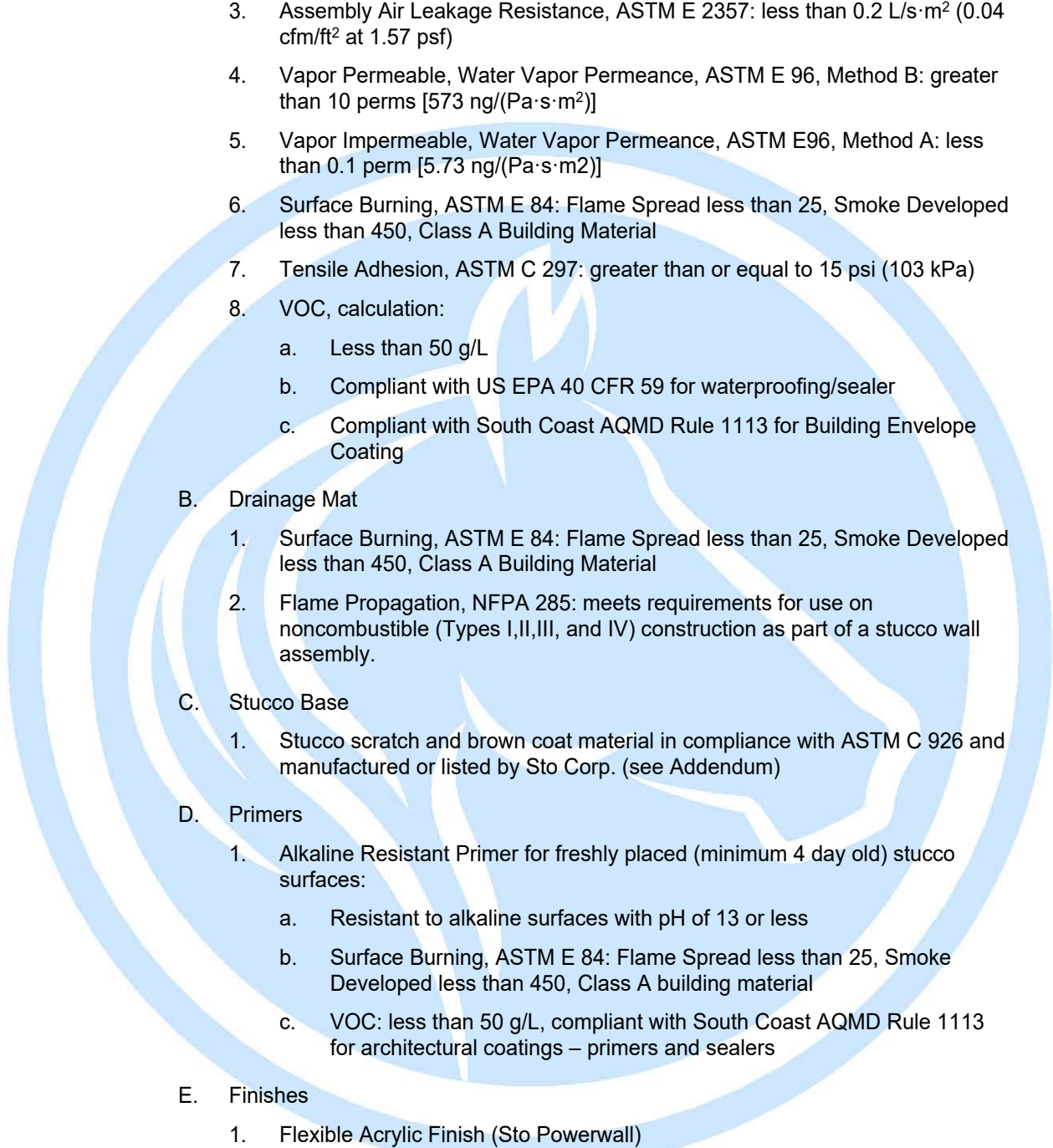
G. Stucco Thickness (does not include primer or textured finish coat)

1. Application to Metal Plaster Bases: stucco thickness shall be uniform 3/4 inch or 7/8 inch (19 or 22 mm). Stucco thickness shall not exceed 7/8 inch (22 mm).
2. Stucco shall be applied in 2 coats, scratch and brown coat, to achieve the prescribed thickness.
3. Thickness shall be uniform throughout the wall area.

1.05 PERFORMANCE REQUIREMENTS

A. Air and Water-Resistive Barrier

1. Compliant with ICC ES Acceptance Criteria AC 212 (ICC ESR 1233)
2. Material Air Leakage Resistance, ASTM E 2178: less than 0.02 L/s·m² at 75 Pa (0.004 cfm/ft² at 1.57 psf)

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3. Assembly Air Leakage Resistance, ASTM E 2357: less than 0.2 L/s·m² (0.04 cfm/ft² at 1.57 psf)
 4. Vapor Permeable, Water Vapor Permeance, ASTM E 96, Method B: greater than 10 perms [573 ng/(Pa·s·m²)]
 5. Vapor Impermeable, Water Vapor Permeance, ASTM E96, Method A: less than 0.1 perm [5.73 ng/(Pa·s·m²)]
 6. Surface Burning, ASTM E 84: Flame Spread less than 25, Smoke Developed less than 450, Class A Building Material
 7. Tensile Adhesion, ASTM C 297: greater than or equal to 15 psi (103 kPa)
 8. VOC, calculation:
 - a. Less than 50 g/L
 - b. Compliant with US EPA 40 CFR 59 for waterproofing/sealer
 - c. Compliant with South Coast AQMD Rule 1113 for Building Envelope Coating
- B. Drainage Mat
1. Surface Burning, ASTM E 84: Flame Spread less than 25, Smoke Developed less than 450, Class A Building Material
 2. Flame Propagation, NFPA 285: meets requirements for use on noncombustible (Types I,II,III, and IV) construction as part of a stucco wall assembly.
- C. Stucco Base
1. Stucco scratch and brown coat material in compliance with ASTM C 926 and manufactured or listed by Sto Corp. (see Addendum)
- D. Primers
1. Alkaline Resistant Primer for freshly placed (minimum 4 day old) stucco surfaces:
 - a. Resistant to alkaline surfaces with pH of 13 or less
 - b. Surface Burning, ASTM E 84: Flame Spread less than 25, Smoke Developed less than 450, Class A building material
 - c. VOC: less than 50 g/L, compliant with South Coast AQMD Rule 1113 for architectural coatings – primers and sealers
- E. Finishes
1. Flexible Acrylic Finish (Sto Powerwall)
 - a. Accelerated Weathering, ASTM G154: 2000 hours, no blistering, checking cracking, crazing, or other deleterious effects
 - b. Water Vapor Permeability, ASTM E96, Method B: > 15 perms [(861 ng/(Pa·s·m²))]
 - c. Surface Burning, ASTM E84: Flame Spread less than 25, Smoke Developed less than 450, Class A building material

- d. VOC: less than 50 g/L, compliant with South Coast AQMD Rule 1113 for architectural coatings

1.06 SUBMITTALS

- A. Manufacturer's specifications, details, installation instructions and product data
- B. Manufacturer's code compliance report for air barrier and water-resistive barrier
- C. Manufacturer's code compliance report for stucco where ICC listed one coat stucco is used
- D. EPS board manufacturer's certificate of compliance with ASTM E2430-05
- E. Manufacturer's NFPA 285 assembly report or ICC ESR indicating compliance of air and water-resistive barrier and drainage mat with requirements of NFPA 285 for use on Types I, II, III, and IV construction
- F. Manufacturer's standard warranty
- G. Samples for approval as directed by architect or owner
- H. Fastener manufacturer's pull-out or withdrawal capacity testing for frame and solid substrates
- I. Prepare and submit project-specific details (when required by contract documents)

1.07 QUALITY ASSURANCE

- A. Manufacturer requirements
 - 1. Stucco and air barrier products manufacturer for a minimum of twenty (20) years.
 - 2. Stucco finish products and air barrier products manufactured under ISO 9001 Quality System and 14001 Environmental Management System.
- B. Contractor requirements
 - 1. Licensed, insured and engaged in application of portland cement stucco for a minimum of three (3) years.
 - 2. Knowledgeable in the proper use and handling of Sto materials.
 - 3. Employ skilled mechanics who are experienced and knowledgeable in portland cement stucco application, and familiar with the requirements of the specified work.
 - 4. Successful completion of minimum of three (3) projects of similar size and complexity to the specified project.
 - 5. Provide the proper equipment, manpower and supervision on the job site to install the system in compliance with Sto's published specifications and details and the project plans and specifications.
- C. EPS foam trim board requirements

1. Listed by an approved agency. Label foam trim board with information required by the applicable building code.

D. Testing

1. Construct full-scale mock-up of typical stucco/window wall assembly with specified tools and materials and test air and water infiltration and structural performance in accordance with ASTM E283, ASTM E331 and ASTM E330, respectively, through independent laboratory. Mock-up shall comply with requirements of project specifications. Where mock-up is tested at job site maintain approved mock-up at site as reference standard. If tested off-site accurately record construction detailing and sequencing of approved mock-up for replication during construction.
2. Conduct air barrier adhesion testing in accordance with ASTM D4541.
3. Conduct air barrier assembly testing in accordance with ASTM E783.
4. Conduct pull-out or withdrawal capacity testing of proposed fasteners for lath attachment into concrete or masonry and verify adequacy with respect to negative design wind pressure. Conduct sufficient tests such that reliable and predictable pull-out values are obtained. Verify adequacy of pull-out or withdrawal capacity of fasteners used for frame construction with manufacturer in relation to negative design wind pressures.
5. Conduct pH testing to check stucco surface alkalinity before application of primer or finish materials. Where alkaline resistant primer is used pH testing may be waived.
6. Conduct wet sealant adhesion testing in accordance with sealant manufacturer's field quality control test procedure.
7. Notify design professional minimum 7 days prior to testing.

E. Inspections

1. Provide independent third party inspection where required by code or contract documents.
2. Conduct inspections in accordance with code requirements and contract documents.

1.08 DELIVERY, STORAGE AND HANDLING

- A. Deliver all materials in their original sealed containers bearing manufacturer's name and identification of product.
- B. Protect EPS foam trim from prolonged UV exposure, keep away from sources of heat, sparks, flame, flammable or volatile materials. Store on a clean, flat surface, off the ground in a dry area.
- C. Protect coatings (pail products) from freezing and temperatures in excess of 90°F (32° C). Store away from direct sunlight.
- D. Protect portland cement-based materials (bag products) from moisture and humidity. Store under cover off the ground in a dry location.

- E. Handle all products as directed on labeling.

1.09 PROJECT/SITE CONDITIONS

- A. Maintain ambient and surface temperatures above 40°F (4°C) during application and for 24 hours after set of stucco, and after application of air and water-resistive barrier and finish materials.
- B. Provide supplementary heat for installation in temperatures less than 40°F (4°C) such that material temperatures are maintained as in 1.09A. Prevent concentration of heat on uncured stucco and vent fumes and other products of combustion to the outside to prevent contact with stucco.
- C. Prevent uneven or excessive evaporation of moisture from stucco during hot, dry or windy weather. For installation under any of these conditions provide special measures to properly moist cure the stucco. Do not install stucco if ambient temperatures are expected to rise above 100°F (38°C) within a 24-hour period.
- D. Provide protection of surrounding areas and adjacent surfaces from application of materials.

1.10 COORDINATION/SCHEDULING

- A. Protect sheathing from climatic conditions to prevent weather damage until the installation of the air and water-resistive barrier.
- B. Install diverter flashings wherever water can enter the wall assembly to direct water to the exterior.
- C. Coordinate installation of foundation waterproofing, roofing membrane, windows, doors and other wall penetrations to provide a continuous air barrier and continuous moisture protection. Provide protection of rough openings before installing windows, doors, and other penetrations through the wall and provide sill flashing. Coordinate installation of air and water-resistive barrier components with window and door installation to provide weather proofing of the structure and to prevent moisture infiltration and excess air infiltration.
- D. Install window and door head flashing immediately after windows and doors are installed.
- E. Protect paper or felt water-resistive barrier with drainage mat within 30 days of installation.
- F. Protect drainage mat with stucco cladding within 30 days of installation.
- G. Commence the stucco installation after completion of all floor, roof construction and other construction that imposes dead loads on the walls to prevent excessive deflection (and potential cracking) of the stucco.
- H. Sequence interior work such as drywall installation prior to stucco installation to prevent stud distortion (and potential cracking) of the stucco.

- I. Provide site grading such that the stucco terminates above earth grade minimum 4 inches (100 mm) and above finished grade (pavers/sidewalk) minimum 2 inches (51 mm). Provide increased clearance in freeze/thaw climate zones.
- J. Install copings and sealant immediately after installation of the stucco and when finish coatings are dry.
- K. Attach penetrations through stucco to structural support and provide air tight and water tight seals at penetrations.

1.11 WARRANTY

- A. Provide manufacturer's standard warranty.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Air and water-resistive barrier, Drainage Mat, Portland Cement Stucco, Stucco Primers, Stucco Finishes, Joint Sealant
 - 1. Sto Corp., 3800 Camp Creek Parkway, Building 1400, Suite 120. Atlanta, GA 30331

2.02 AIR & WATER-RESISTIVE BARRIER

- A. StoGuard Detail Components
 - 1. Sto Gold Fill -- ready mixed acrylic based flexible joint treatment for rough opening protection, joint treatment of wall sheathing, CMU crack repair, and detail component for shiplap connections with flashing, weep screed, and similar ship lap details.
 - 2. StoGuard Mesh-- nominal 4.2 oz/yd² (142 g/m²), self-adhesive, flexible, symmetrical, interlaced glass fiber mesh, with alkaline resistant coating for compatibility with Sto materials, used with Sto Gold Fill to reinforce rough openings, inside and outside corners, sheathing joints, and detail component for shiplap connections with flashing, weep screed, and similar shingle lap details
 - 3. StoGuard Fabric – nonwoven cloth reinforcement used with Sto Gold Coat for rough opening protection, joint treatment of wall sheathing, and detail component for shiplap connections with flashing, weep screed, and similar shingle lap details
 - 4. StoGuard RediCorner – a preformed fabric piece used in the corners of rough openings in tandem with StoGuard Fabric for quicker installation
 - 5. StoGuard Conformable Membrane - self-adhered membrane flashing for use over prepared vertical above-grade concrete, concrete masonry, brick masonry, wood sheathing, glass mat gypsum sheathing, and cementitious sheathing used to:

- Seal joints and seams in wall sheathing
 - Seal static joints between dissimilar materials
 - Flash exterior wall openings and protect rough openings
 - Seal between window flange and wall sheathing
 - Connect to above grade foundation waterproofing
 - Connect to roof membrane
 - Seal around wall penetrations such as pipes, scuppers, vents
 - Back masonry wall ties
 - Seal dynamic joints in wall construction
6. Sto RapidGuard® - one component STPE rapid drying gun-applied treatment for sheathing joints, rough openings, seams, cracks, penetrations and other static transitions in above grade wall construction such as: shingle lap over flashing, wall to balcony floor slab or ceiling, and through wall penetrations – pipes, electrical boxes, and scupper penetrations

B. Air & Water-Resistive Barrier Coating

1. Sto Gold Coat: ready mixed vapor permeable air and water-resistive barrier coating applied,
 - a. By substrate as follows:
 - Glass Mat Gypsum: apply one coat at minimum 10 mils WFT
 - Plywood: apply one coat at minimum 10 mils WFT
 - Cement Board: apply one coat at minimum 10 mils WFT
 - OSB: apply one or two coats at minimum 20 mils WFT. If applied by roller, apply two coats. Touch up any bare spots and raised OSB strands.
 - CMU: apply two or three coats at minimum 20-60 mils WFT.
 - Concrete: apply one coat at minimum 10 mils WFT
 - b. To a Medium-Build in one or two coats to achieve minimum 20 mils WFT (if applied by roller apply two coats to achieve minimum 20 mils WFT. For CMU substrates apply two or three coats to achieve 20-60 mils WFT).
 - c. To a High-Build in two or three coats to achieve 40 mils WFT (if applied by roller apply three or more coats as needed. For CMU substrates apply multiple coats to achieve 40-60 mils WFT).

2.03 SHEET WATER-RESISTIVE BARRIER

- A. Minimum No. 15 asphalt saturated felt complying with ASTM D226, Type 1, or one layer of Grade D kraft building paper, or paper-backed stucco lath conforming to 2.5.

2.04 DRAINAGE MAT

Sto DrainScreen 6mm – nominal ¼" (6 mm) tangled filament nylon core drainage mat with fabric facing.

2.05 LATH

- A. Minimum 2.5 lb./yd² (1.4 kg/m²) self-furred galvanized steel diamond mesh metal lath in compliance with ASTM C847

2.06 MECHANICAL FASTENERS

- A. Non-corroding fasteners in compliance with AISI S200 – 2007 and ASTM C1513:
 1. Wood Framing--minimum 11 gauge, 7/16 inch (11 mm) diameter head galvanized roofing nails with minimum ¾ inch (19mm) penetration into studs or minimum #8 Type S wafer head fully threaded corrosion resistant screws with minimum ¾ inch (19 mm) penetration into studs.
 2. Steel Framing – minimum #8 Type S or S-12 wafer head fully threaded corrosion resistant screws with minimum 3/8 inch (10 mm) and three thread penetration into studs.
 3. Concrete or Masonry – minimum # 8 wafer head fully threaded corrosion resistant screws for masonry with minimum 1 inch (25 mm) penetration into substrate.
- B. Tie Wire – 18 gauge galvanized and annealed low-carbon steel in compliance with ASTM A641 with Class I coating.

2.07 ACCESSORIES

- A. Weep screed, casing bead, corner bead, corner lath, expansion and control joint accessories. All accessories shall meet the requirements of ASTM C1063 and its referenced documents
 1. PVC plastic in compliance with ASTM D1784, cell classification 13244C.
 2. Zinc in compliance with ASTM B69.
 3. Galvanized metal in compliance with ASTM A653 with G60 coating.
- B. All accessories shall have perforated or expanded flanges and shall be designed with grounds for the specified thickness of stucco.
- C. StoSeal STPE joint sealant in conformance with ASTM D920: Type S, Grade NS, Use NT, A, M, Class 100/50

2.08 JOB MIXED INGREDIENTS

- A. Water: clean and potable.
- B. Sand: in compliance with ASTM C897 or ASTM C144, for use with one coat and ASTM C926 stucco concentrates

2.09 STUCCO

- A. 102 StoPowerwall Stucco Pre-Blended: fiber reinforced one coat portland cement stucco pre-blended with graded sand, and in compliance with ICC AC 11. See ICC ESR 2323.
- B. 103 StoPowerwall Stucco: fiber reinforced one coat portland cement stucco concentrate in compliance with ICC AC 11. See ICC ESR 2323.
- C. 108 Powerwall Scratch and Brown: portland cement-based stucco concentrate in compliance with ASTM C926.
- D. Other code compliant portland cement stucco as listed by Sto Corp. (refer to Addendum)

2.10 FOAM TRIM AND BUILD-OUTS

- A. Adhesive and Base Coat
 - 1. Sto Primer/Adhesive-B – one component polymer modified cement-based base coat material
- B. Foam Insulation Board for Trim

Sto EPS Insulation Board--nominal 1.0 lb/ft³ (16 kg/m³) Expanded Polystyrene (EPS) Insulation Board in compliance with ASTM C578 Type I requirements, and ASTM E2430
- C. Reinforcing Mesh
 - 1. Sto Mesh--nominal 4.5 oz./yd² (153 g/m²), symmetrical, interlaced open-weave glass fiber mesh treated with alkaline resistant coating for compatibility with Sto materials (achieves Standard Impact Classification over foam insulation board).
 - 2. Sto Detail Mesh--nominal 4.2 oz/yd² (143 g/m²), flexible, symmetrical, interlaced open-weave glass fiber fabric treated with alkaline resistant coating for compatibility with Sto materials

2.11 PRIMER

StoPrime Hot – acrylic based primer/sealer for freshly placed (minimum 4 day old) and high pH stucco surfaces.

2.12 FINISH

StoPowerwall Finish – integrally colored, factory blended, flexible acrylic textured wall finish with graded marble aggregate.

2.13 MIXING

A. StoGuard

1. Sto Gold Fill – mix with a clean, rust-free electric drill and paddle to a uniform consistency. Do not thin or dilute with water.
2. Sto AirSeal -- mix with a clean, rust-free electric drill and paddle to a uniform consistency. Do not thin or dilute with water.
3. Sto Gold Coat – mix with a clean, rust-free electric drill and paddle to a uniform consistency. Do not thin or dilute with water.
4. StoGuard VaporSeal - mix with a clean, rust-free electric drill and paddle to a uniform consistency. Do not thin or dilute with water.

B. StoPowerwall Stucco

1. Refer to mix instructions on packaging. USE ONLY THE AMOUNT OF WATER NECESSARY FOR A WORKABLE MIX. Use of excess water is detrimental to performance.

C. Adhesive and Base Coats for Sto Crack Defense and EPS Foam Build-outs:

1. Refer to applicable Sto [Product Bulletin](#) for selected adhesive/base coat material(s).

D. Primer--mix with a clean, rust-free high speed mixer to a uniform consistency.

E. Finish--mix with a clean, rust-free high speed mixer to a uniform consistency. A small amount of water (up to 12 ounces [0.4 L]) may be added to adjust workability. Limit addition of water to amount needed to achieve the finish texture.

F. Mix only as much material as can readily be used.

G. Do not add lime, anti-freeze compounds, or other additives to any of the materials.

PART 3 EXECUTION

3.01 ACCEPTABLE INSTALLERS

- A. Pre-qualify under Quality Assurance requirements of this specification (section 1.7.B).

3.02 EXAMINATION

- A. Inspect surfaces for:
- B. Contamination – algae, chalkiness, dirt, dust, efflorescence, form oil, fungus, grease, laitance, mildew or other foreign substances.
- C. Surface absorption and chalkiness.
- D. Crack – measure crack width and record location of cracks.
- E. Damage and deterioration.
- F. Moisture damage – record any areas of moisture damage.
- G. Inspect sheathing application for compliance with applicable requirement:
- H. Glass Mat Faced Gypsum Sheathing in compliance with ASTM C1177 – refer to manufacturer's instructions and/or ICC evaluation report
- I. Exterior Grade and Exposure 1 wood based sheathing – APA Engineered Wood Association E 30.
- J. Report deviations from the requirements of project specifications or other conditions that might adversely affect the air and water-resistive barrier or stucco installation to the General Contractor. Do not proceed with air and water-resistive barrier or stucco installation until deviations are corrected.

3.03 SURFACE PREPARATION

- A. Concrete and Concrete Masonry (CMU)
 - 1. Remove surface contamination such as oil, grease, dust, dirt, algae, mildew, salts, paint or coatings. Correct weak surface conditions such as laitance. Use chemical cleaners such as TSP (trisodium phosphate) detergent to remove oil and grease and rinse with potable water. Use chemical cleaners to remove efflorescence or other surface contamination in accordance with manufacturer's written instructions. Use mechanical methods such as waterblasting, sandblasting, and wire brushing to remove weak surface conditions.
 - 2. Repair cracks up to 1/8 inch (3 mm) wide by raking with a sharp tool to remove loose, friable material and blow clean with oil-free compressed air. Apply joint treatment material over crack, embed reinforcement (where applicable), and smooth joint treatment material with a trowel, drywall or putty knife to cover the reinforcement.
 - 3. Remove projecting fins, ridges, and mortar by mechanical means.
 - 4. Fill honeycombs, aggregate pockets, holes and other voids with Sto patching material.
 - 5. Where the surface is excessively "rough" or out of plane, skim coat the wall surface with Sto base coat material to provide a smooth, level surface.

B. Sheathing

1. Remove surface contaminants and replace damaged sheathing.
2. All sheathing must be handled and installed in compliance with applicable building code and/or manufacturer requirements. Installed sheathing must be clean, dry and free from damage, frost, and all bond-inhibiting materials. Abut gypsum sheathing joints. Gap wood sheathing 1/8 inch (3 mm) at joints. Should gaps exceed 1/8 inch (3 mm) up to 1/2 inch (13 mm) wide, use Sto RapidGuard to fill joints, or apply low expanding urethane foam into joints and rasp or shave flush with sheathing surface in preparation for installation of StoGuard joint treatment.
3. Spot surface defects in sheathing with joint treatment (Sto Gold Fill, Sto RapidGuard, or Sto Gold Coat).

3.04

AIR AND WATER-RESISTIVE BARRIER INSTALLATION

A. The following instructions are applicable to:

1. Exterior or Exposure I Plywood in compliance with PS-1
2. OSB (Oriented Strand Board) in compliance with PS-1 or PS-2
3. Glass Mat Faced Gypsum Sheathing in compliance with ASTM C1177
4. Concrete and Concrete Masonry surfaces

B. Transition Detailing

1. Detail transition areas with Sto RapidGuard (static joints and seams) or StoGuard Conformable Membrane (dynamic joints and seams) to achieve air barrier continuity. For illustrations of installation, refer to Sto Guide Details, RapidGuard Installation Guide and StoGuard Conformable Membrane Installation Guide at (www.stocorp.com).

C. Rough Opening Protection

1. Sto Gold Fill with StoGuard Mesh: apply 9 inch (229 mm) wide StoGuard Mesh at rough openings. Immediately apply Sto Gold Fill by spray or trowel over the mesh and spread with a trowel to create a smooth surface that completely covers the mesh (refer to Sto Detail 20.20M).
2. Sto Gold Coat, Sto AirSeal, or StoGuard VaporSeal with StoGuard Fabric: apply coating liberally by spray or roller to corners of openings, immediately place StoGuard RediCorners in the wet coating, and apply additional coating over the RediCorners to completely embed them. After all corners have been completed apply coating liberally to the entire rough opening, immediately place StoGuard Fabric in the wet coating, smooth any wrinkles with a brush or roller, and apply additional coating over the fabric to completely embed it. Overlap all seams minimum 2 inches (51 mm). Once completed top coat with additional coating as needed to completely seal the surface. Allow to dry and inspect for pinholes or voids. If pinholes or voids are present, seal with additional coating or Sto RapidGuard.
3. Sto RapidGuard: apply a fillet bead of material with a caulking gun at interior corners inside the opening to seal jamb/sill and jamb/head seams.

Apply material in a zig-zag pattern along sill, jambs, and head to form a generous bead of material along the surface to be covered. Use a 6 inch (152 mm) wide plastic drywall knife to spread the material to a uniform thickness of 12-20 mils (0.3-0.5 mm) before the material skins. Treat the entire rough opening surface in this manner and overlap onto the face of the sheathing 2 inches (51 mm) minimum all the way around

4. StoGuard Conformable Membrane: install the membrane in conformance with manufacturer's written installation instructions

D. Sheathing Joint Treatment (*select one*)

1. Sto Gold Fill with StoGuard Mesh: place 4 inch (102 mm) wide mesh centered along sheathing joints and minimum 9 inch (229 mm) wide mesh centered and folded at inside and outside corners. Immediately apply Sto Gold Fill by spray or trowel and spread with a trowel to create a smooth surface that completely covers the mesh.

E. Air and Water-Resistive Barrier Coating Installation

1. Install the specified coating to the required wet film thickness as specified by Substrate, Medium-Build, or High-Build (refer to Section 2.2B)

F. Air and Water-Resistive Barrier Connections and Shingle Laps

1. Coordinate installation of connecting air barrier components with other trades to provide a continuous air tight membrane.
2. Coordinate installation of flashing and other moisture protection components with other trades to achieve complete moisture protection such that water is directed to the exterior, not into the wall assembly, and drained to the exterior at sources of leaks (windows, doors and similar penetrations through the wall assembly).
3. Splice-in head flashings above windows, doors, floor lines, roof/sidewall step flashing, and similar locations with StoGuard detail component to achieve shingle lap of the air and water-resistive barrier such that water is directed to the exterior.

3.05 SHEET WATER-RESISTIVE BARRIER INSTALLATION

- A. Install in compliance with the applicable building code requirements for building paper. Lap paper over foundation weep screed attachment flange, floor line flashing, and window/door head flashings. Refer to Sto Guide Details at www.stocorp.com

3.06 DRAINAGE MAT INSTALLATION

- A. Place drainage mat against the wall surface over the insulation and unroll horizontally with the fabric facing out. Hammer-tack or staple into sheathing with corrosion-resistant fasteners. Use as few fasteners as needed to hold the mat in place, starting from the bottom of the wall at base flashing or weep screed and working up. Do not fasten through flashing. Shingle lap fabric at horizontal courses. Shingle lap drainage mat over flashing at floor lines, decks, roof lines, window heads, and other areas where flashing is required, to direct

water to the exterior. Butt ends of rolls and vertical seams. Trim around windows, doors, vents, or other penetrations through the wall. Do not install behind window nail flanges. Immediately follow installation of drainage mat with stucco lath installation. Where stucco lath installation will not immediately follow installation of drainage mat, use corrosion-resistant cap nails, cap staples, or cap screws every 16 inches (406 mm) on center along framing for more secure attachment. Cover drainage mat with stucco within 30 days of installation.

3.07 STUCCO INSTALLATION

General information: apply the stucco in discrete panels without interruption to avoid cold joints and differences in appearance. Abut wet stucco to set stucco at natural or architectural breaks in the wall such as expansion joints, pilasters, terminations, or changes in plane. Hot or dry conditions accelerate drying and moisture loss from stucco which can diminish strength and resistance to cracking. Under these conditions, adjustments in the application, scheduling and curing of stucco to prevent rapid loss of moisture are necessary to achieve a satisfactory stucco installation. Cold temperatures retard drying and strength gain and adjustments may have to be made in the application, scheduling and curing of stucco to prevent damage from frost and other trades. Do not install stucco during extremely hot, dry and/or windy conditions. Do not install stucco during freezing conditions or on frozen substrates. Do not install stucco onto grounds of accessories. Completely embed lath and flanges of accessories and completely cover fastener attachments with stucco. Moist cure stucco minimum 48 hours for optimum strength gain and resistance to cracking. Allow final stucco application to completely dry (28 days) before applying primer or finish (except in the case of StoPrime Hot which can be applied 48 hours after completing moist cure of stucco). The finished installation must be true, plumb and square. Should stucco get into control or expansion joints, remove the stucco from within the joint before the stucco sets.

After satisfactory inspection of surfaces and correction of any deviations from specification requirements commence the stucco installation as described below:

- A. Installation over StoGuard/Sto DrainScreen
 1. Weep Screed Installation
 - a. Install foundation weep screed at the base of the wall securely to solid substrate or framing with the appropriate fastener. Locate foundation weep screed so that it overlaps the joint between the foundation and framing by a minimum of 1 inch (25 mm). Locate the foundation weep screed nosing minimum 4 inches (100 mm) above earth grade, 2 inches (51 mm) above finished grade (paved surfaces, for example). Lap air and water-resistive barrier, sheet water-resistive barrier, and drainage mat over the weep screed attachment flange.
 2. Casing Bead and Two Piece Expansion Joint Installation
 - a. Install casing beads at stucco terminations – doors, windows and other through wall penetrations. Install two piece expansion joints (or back-to-back casing beads) at building expansion joints, thru-wall joints in concrete or CMU, where the stucco is to be installed over dissimilar construction or substrates, at changes in building height, at

floor lines, columns, and cantilevered areas. Install full accessory pieces where possible and avoid small pieces. Seal adjoining pieces by embedding ends in sealant. Abut horizontal into vertical joint accessories (except where horizontal movement joints exist that prevent continuous vertical runs of accessories). Attach at no more than 7 inches (178 mm) into solid substrate/framing with appropriate fasteners.

3. Lath Installation

a. Diamond Mesh Metal Lath – conform to ASTM C1063

- i.* General – install metal lath with the long dimension at right angles to structural framing (horizontally on solid substrates). Terminate lath at expansion joints. Do not install continuously at joints.
- ii.* Seams/Overlaps--overlap side seams minimum 1/2 inch (13 mm) and end seams minimum 1 inch (25 mm). Stagger end seams. Overlap casing beads and expansion joints minimum 1 inch (25 mm) over narrow wing accessories, minimum 2 inches (51 mm) over expanded flange accessories. Do not install lath continuously beneath expansion joints.
- iii.* Attachment--fasten securely into solid substrates or through sheathing into structural framing at 7 inches (178 mm) on center maximum vertically and 16 inches (406 mm) on center horizontally*. Wire tie at no more than 9 inches (225 mm) on center at: side laps, accessory overlaps, and where end laps occur between supports.
- iv.* Paper-backed lath – follow installation as for diamond mesh metal lath. Lap lath over lath, not paper to lath overlap. For horizontal overlaps the paper backing must lap shingle style behind the lath-to-lath overlap.

4. One Piece Expansion Joint Installation

- a. Install one piece expansion joints at through wall penetrations, for example, above and below doors and windows. Install one piece expansion joints at every 144 ft² (13 m²). Wire tie one piece expansion joints to lath at no more than 7 inches (178 mm) on center. Seal adjoining pieces by embedding ends in sealant. Make certain lath is DISCONTINUOUS at or beneath joints.

5. Inside and Outside Corners

- a. Install corner lath at inside corners and corner bead at outside corners over lath. Attach through lath into solid substrate or framing at no more than 7 inches (178 mm) on center with appropriate fasteners.

6. Stucco Installation

- a. Scratch Coat: apply stucco with sufficient pressure to key into and embed the metal lath. Apply sufficient material, 3/8 or 1/2 inch (9 or 12 mm), to cover the metal lath and to permit scoring the surface. Score the stucco upon completion of each panel in preparation for a second coat. Score horizontally.

- b. Brown Coat: as soon as the first coat is firm enough to receive the second coat without damage, apply the second coat. Alternatively, moist cure the first coat up to 48 hours and dampen the scratched surface with water immediately before applying the second coat. Apply the second coat with sufficient pressure to ensure intimate contact with the first coat and as needed to bring the stucco to a uniform thickness that matches the grounds of the accessories. Use a rod or straight edge to bring the surface to a true, even plane. Fill depressions in plane with stucco. Final thickness of stucco shall be uniform throughout the wall area and shall be either 3/4 inch or 7/8 inch (19 or 22 mm), as required by construction documents, and shall not exceed 7/8 inch (22 mm).
- c. After the stucco has become slightly firm float the surface lightly with a darby or wood float to densify the surface and to provide a smooth, even surface. The proper time to float is when the wood float no longer sticks to the surface of the stucco.
- d. Moist cure after the stucco has set by lightly fogging for at least 48 hours. Fog as frequently as required during the 48-hour period to prevent loss of moisture from the stucco. Avoid eroding the stucco surface with excess moisture. If relative humidity exceeds 75% the frequency of moist curing can be diminished.

B. EPS Foam Trim and Build-Outs

- 1. Where foam build-outs terminate at a dissimilar material such as a window, door or other non-stucco surface, backwrap the foam build-out by installing detail mesh onto the terminating edge of the stucco. Embed the mesh in the foam adhesive. Allow the mesh to dangle until the backwrapping procedure is completed (B4).
- 2. Install foam build-outs directly over hardened stucco with foam trim adhesive. Apply adhesive with the appropriate size notched trowel to the back of the insulation board and immediately place build-out in the proper location on the wall. Press firmly into place and trim or tool excess adhesive from ends and edges of foam trim for a smooth void-free connection to the stucco substrate.
- 3. After the adhesive has cured sufficiently to hold the build-out firmly in place, rasp the entire foam surface smooth.
- 4. Complete the backwrapping procedure by applying the foam trim base coat to the exposed edges of the foam build-out and minimum 2-1/2 inches (64 mm) onto the face. Pull the backwrap mesh around the foam build-out and fully embed it into the base coat. Use a corner trowel for neat straight corners.
- 5. Apply the cementitious base coat to the foam build-out and approximately 3 inches (76 mm) onto the adjacent stucco surfaces to an approximate thickness of 1/8 inch (3 mm). Immediately embed the reinforcing mesh in the wet base coat. Trowel from the center to the edges of the mesh to avoid wrinkles and remove excess base coat. Overlap mesh seams minimum 2-1/2 inches (64 mm). Overlap mesh onto adjacent stucco wall surfaces minimum 2-1/2 inches (64 mm) at terminations of the foam build-out and feather onto the stucco wall surface. Alternatively, If Sto Crack

Defense is used apply Sto Crack Defense with its reinforcing mesh continuously from the stucco wall surface over foam build-outs (refer to 3.07 C).

C. Primer Installation

1. StoPrime Hot – Moist cure stucco for a minimum of 48 hours. Allow stucco to dry an additional 48 hours, then apply primer evenly with brush, roller or proper spray equipment over the clean, dry stucco and foam build-outs, and allow to dry. Final age of primed stucco application must be minimum 7 days before application of finish.
2. StoPrime Sand – Moist cure stucco for a minimum of 48 hours. Wait until stucco is 28 days old or the pH level of the surface is below 10 before applying primer. Final age of primed stucco application must be minimum 28 days before application of finish or pH must be below 10.
3. StoPrime – Moist cure stucco for a minimum of 48 hours. Wait until stucco is 28 days old or the pH level of the surface is below 10 before applying primer. Final age of primed stucco application must be minimum 28 days before application of finish or pH must be below 10.

D. Textured Finish Installation

1. Apply finish to minimum 28-day old stucco or primed stucco and foam build-outs, or apply when pH of stucco surface is less than 10. If StoPrime Hot is used as the primer the primed stucco/foam build-out surfaces need only be minimum 7 days old. Apply finish by spraying or troweling with a stainless steel trowel, depending on the finish specified. Follow these general rules for application of finish:
 - a. Avoid application in direct sunlight.
 - b. Apply finish in a continuous application and work a wet edge towards the unfinished wall area. Work to an architectural break in the wall before stopping to avoid cold joints.
 - c. Weather conditions affect application and drying time. Hot or dry conditions limit working time and accelerate drying. Adjustments in the scheduling of work may be required to achieve desired results; cool or damp conditions extend working time and retard drying and may require added measures of protection against wind, dust, dirt, rain and freezing. Adjust work schedule and provide protection.
 - d. Float "R" (rilled or swirl texture) finishes with a plastic float to achieve their rilled texture
 - e. Do not install separate batches of finish side-by-side.
 - f. Do not apply finish into or over sealant joints. Apply finish to outside face of wall only.
 - g. Do not apply finish over irregular or unprepared surfaces or surfaces not in compliance with the requirements of the project specifications.
 - h. Do not install finish over high pH (≥ 10) stucco surfaces or surfaces that have not been fully cured.
2. Sto Signature or Specialty Finish Installation

- a. Refer to applicable Installation Guide and/or Product Bulletin for selected finish.
- 3. StoCast Finish Installation
 - a. Refer to applicable Application Guide and/or Product Bulletin for selected finish.

3.08 PROTECTION

- A. Provide protection of installed materials from water infiltration into or behind them.
- B. Provide protection of installed stucco from dust, dirt, precipitation, and freezing.
- C. Provide protection of installed primer and finish from dust, dirt, precipitation, freezing and continuous high humidity until fully dry.
- D. Provide sealant and backer material at stucco terminations and at fixture penetrations through the stucco to protect against air, water and insect infiltration. Provide weeps at floor lines, window and door heads, and other areas to conduct water to the exterior.

3.09 CLEANING, REPAIR AND MAINTENANCE

- A. Clean and maintain the stucco finish for a fresh appearance and to prevent water entry into and behind the stucco. Repair cracks, impact damage, spalls or delamination promptly.
- B. Maintain adjacent components of construction such as sealants, windows, doors, and flashing, to prevent water entry into the wall assembly.
- C. Refer to Sto reStore Repair and Maintenance Guide ([reStore Program](#)) for detailed information on stucco restoration – cleaning, repairs, recoating, resurfacing and refinishing, or re-cladding.

END OF SECTION

SECTION 09 29 00 –GYPSUM BOARD

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide gypsum drywall work including metal support systems:
 - 1. Interior walls, partitions, and ceilings.
 - 2. Special treatment with WR gypsum board at wet areas

1.02 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Tolerances: Not more than 1/16" difference in true plane at joints between adjacent boards before finishing. After finishing, joints shall be not be visible. Not more than 1/8" in 10' deviation from true plane, plumb, level and proper relation to adjacent surfaces in finished work.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Gypsum board: All gypsum wallboard products shall comply with ASTM C 1396 and as follows:
 - 1. WALLS: Interior Dry Area Use: ASTM C 36, Type 'X', 5/8" thick gypsum wallboard, fire resistant; U. S. Gypsum, Gold Bond Div. National Gypsum,
 - 2. WALLS: Interior Wet Area Use; Drinking Fountain and Toilet Wainscot (Tile) Backing: ASTM C 630, Type 'X', 5/8" thick 'WR' gypsum backing board, fire resistant and water resistant; U. S. Gypsum, Gold Bond Div. National Gypsum,
 - 3. CEILINGS: Applied to underside of manufactured roof trusses and furred ceilings: Use: ASTM C 36, Type 'X', 5/8" thick gypsum wallboard, fire resistant; U. S. Gypsum, Gold Bond Div. National Gypsum.
- B. Fasteners: ASTM C 954 and ASTM C 1002. Provide 1-1/8 inch long, Type S-12 bugle head screws at interior areas. Provide additional anchors and fasteners as required.
- C. Ceiling suspension and furring materials: Steel runners and galvanized hanger wire.
- D. Joint reinforcement: ASTM C 587 paper or fiberglass tape and ready-mixed vinyl compound.
- E. Accessories: Galvanized steel corner beads, casing beads, control joints; U. S. Gypsum 800 series as applicable.

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Goddard KYLE, TX

Issue Date 11.21.23
Version 7.0

GYPSUM BOARD

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Extend all loadbearing and non-loadbearing partitions to the underside of manufactured roof trusses, and apply gypsum wallboard full height.
- B. Install boards vertically. Do not allow butt-to-butt joints and joints that do not fall over framing members.
- C. Install WR drywall (greenboard) described above, as follows:
 - 1. All toilet room walls, three (3) walls adjacent to drinking fountain alcoves and all walls adjacent to classroom handwashing sinks, apply water resistant drywall from the floor to a height of 4 feet above the floor and 2 feet on both sides of the lavatory.
 - 2. In janitor closet and mechanical room, apply water resistant drywall for full height and on ceilings.
- D. Provide insulation full height and thickness in partitions at toilet rooms, between classrooms, in office walls, and in kitchen walls.
- E. Provide acoustical sealant at both faces at top and bottom runner tracks, wall perimeters, openings, expansion and control joints.

3.02 FINISH

- A. Comply with ASTM C 840 *Standard Specification for Application and Finishing of Gypsum Board*; GA 214 *Recommended Levels of Gypsum Board Finish*; and GA 216-2000 *Application and Finishing of Gypsum Board*;
- B. Provide gypsum wallboard minimum finish levels meeting the criteria established in GA 214 as follows:
 - 1. LEVEL 1 Wallboard applied to the underside of roof trusses and concealed from view by lay-in suspended ceiling system
 - 2. LEVEL 2 Walls behind FRP covering in Janitor Closet, Kitchenette, and Kitchen. Ceilings in Janitor Closet and Mechanical Room
 - 3. LEVEL 4 Interior walls for all Classrooms, Offices, Toilet Rooms, Corridor bulkheads and attic stair ceiling bulkhead. Closets, and Staff Room
 - 4. LEVEL 5 Gypsum wallboard ceilings in Foyer and Entry and all walls in Corridors and Foyer.

END OF SECTION

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GYP SUM BOARD

SECTION 09 30 13 - CERAMIC TILING

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide ceramic tile wainscot in toilet rooms and around drinking fountains where shown on drawings and described herein.
 - 1. Install wainscot as shown on the drawings
 - 2. Install wainscot on sides and back walls of interior drinking fountains
 - 3. Use color accent tiles where shown on Drawings
- B. Install access panels in tile work where applicable.
- C. Color is to be determined by the owner and pattern is detailed on the drawings.

1.02 SUBMITTALS

- A. Submit for approval samples, product data, mock-ups.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Glazed wall tile wainscot, 4 1/4" by 4 1/4" by 5/16" typ, or 6" by 6" by 5/16" alternative size, thick plain with modified square edges, factory mounted; Bright Glazed Tile by Daltile or approved equal.
- B. Trim: Match field tile color, size, texture;
- C. Bases: Turned up Sheet Vinyl Flooring. See Section 09 65 00
- D. Setting Methods:
 - 1. Walls: Thin set latex Portland cement mortar.
 - 2. Grout: Colored latex Portland cement grout.
 - 3. Edges: All exposed edges to be bullnose
- E. Color:
 - 1, Field: White or [Group 1 \(as listed within the Look Book\)](#)
 - 2, Accent: [Group 3, \(as listed within the Look Book\)](#)
 - 3. Patten: Pattern shown on drawings

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CERAMIC TILING

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Comply with Tile Council of America and ANSI Standard Specifications for Installation for substrate and installation required. Comply with manufacturer's instructions and recommendations.
- B. Lay tile in grid pattern with alignment grids. Layout to provide uniform joint widths and to minimize cutting; do not use less than 1/2 tile units.
- C. Provide sealant joints where recommended by TCA and approved by Architect.
- D. Grout and cure, clean and protect.

END OF SECTION

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CERAMIC TILING

SECTION 09 51 00 - ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide acoustical ceilings, trim and metal suspension system.

1.02 SUBMITTALS

- A. Submit for approval samples, product data, extra stock.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 NATIONAL ACCOUNT VENDOR

- A. Acoustical ceiling and components described in these Specifications shall be obtained from Goddard System Inc. National Account Program with:

1. Armstrong World Industries.
2500 Columbia Avenue
PO Box 3001
Lancaster, Pennsylvania 17604
Contact: Sherry Brunt
Toll free: 800.442.4212
Email: Armstrongcsa@armstrongceilings.com
Account Mgr: Maureen Cone
Phone: 703-389-2701
Email: mmcone@armstrongceilings.com
Website: <http://www.armstrongceilings.com>

2.02 MATERIALS

- A. **AT-1** Acoustical Ceiling Panels in Dry Areas: 5/8" thick, wet-formed mineral fiber, non-directional texture mineral tile; with HumiGuard Plus treatment to inhibit panel sag; 10-year warranty; Fire Class A, ASTM E 1264, Type III, Form 2, Pattern C E; Armstrong Fine Fissured #1733.
 1. Panel size: 24" by 48".
 2. Panel edge: Angled Tegular
 3. Color: White
 4. Thickness: 5/8"

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ACOUSTICAL CEILINGS

- B. **AT-2** High Performance Non-Perforated Ceiling Panels in Wet Areas (See Finish Schedule on Drawings): No. 870, wet-formed mineral fiber, vinyl-faced membrane; with HumiGuard Plus treatment to inhibit panel sag; 10-year warranty; washable scrubbable, soil-resistant finish; USDA Approval; Clean Room Class 1000 Rating; Fire Class A, ASTM 1264, Type IV, Form 2, Pattern E; Armstrong Clean Room VL Nonperforated. #870
1. Panel size: 24" by 48".
 2. Panel edge: Square edge; flush mount with grid.
 3. Color: White
 4. Thickness: 5/8"
- C. Exposed grid suspension system: ASTM C 635, intermediate duty painted steel, white color; Armstrong,.
1. 15/16 inch, exposed tee grid system

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install materials and suspension systems in accordance with manufacturer's instructions and recommendations, and ASTM C636. Coordinate installation with location of mechanical and electrical work to ensure proper locations.
- B. Level ceiling to within 1/8" in 10' in both directions. Scribe and cut panels to fit accurately. Measure and layout to avoid less than half panel units.
- C. Provide full edge support for all panel edges.
- D. Removal and reinstallation at existing ceilings: Remove and store materials for reuse. Handle with white gloves and avoid damaging corners and edges. Clean tiles and grid system which have been removed. Provide additional materials to complete the work and to replace damaged existing materials. New materials shall exactly match existing materials as approved.
- E. Adjust, clean, and touch-up all system components.
- F. Provide wrapped and labeled maintenance stock of new material equal to five percent (5%) of each installed type of acoustic ceiling tile and suspension track members.

END OF SECTION

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ACOUSTICAL CEILINGS

SECTION 09 65 00 – RESILIENT FLOORING

PART 1 - GENERAL

1.1 SUMMARY

- A. Provide resilient flooring.
- B. Provide wall base.
- C. Provide adaptors, binders, cove caps, and other accessories as required.
- D. Adhesives, glues, solvents, and other compounds required for installation.

2.2 SUBMITTALS

- A. Submit for approval samples, product data, extra stock. Include Material Safety Data Sheets (MSDS) with material submittals

3.3 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

4.4 PROJECT CONDITIONS

- A. Maintain a minimum temperature of 70 deg F in spaces to receive flooring for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. After this period, maintain a temperature of not less than 55 deg F.
- B. Do not install flooring materials until they are at the same temperature as the space where they are to be installed.
- C. Close spaces to traffic during flooring installation.
- D. Moisture Testing Results: Should testing indicate moisture and/or pH levels in concrete slabs exceed the limits acceptable to manufacturer of the floor finish, the contractor shall take necessary means to correct the deficiency. Corrective action shall not require extension of the contract or additional cost to the Owner. Proposed corrective action other than the method specified herein shall be submitted to the Architect for approval.

5.5 EXTRA MATERIALS

- A. Deliver extra materials to Owner. Furnish extra materials matching products installed as described below, packaged with protective covering for storage and identified with labels clearly describing contents.
 - 1. Tile: Furnish not less than one box for each 50 boxes or fraction thereof, of each class, wearing surface, color, pattern and size of resilient floor tile installed.
 - 2. Sheet Flooring: Furnish not less than 10 linear feet for each 100 linear feet or fraction thereof, in roll form of each different composition, wearing surface, color, and pattern of sheet floor covering installed.

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RESILIENT FLOORING

SECTION 09 65 00 – RESILIENT FLOORING

EXTRA MATERIALS

3. Wall Base and Accessories: Furnish not less than 10 linear feet for each 200 linear feet or fraction thereof of each different type and color of resilient wall base and accessory strips installed.

PART 2 - PRODUCTS

2.1 STANDARD FLOORING MATERIALS

A. LVT Flooring

Materials and other components described in these Specifications shall be obtained from Goddard System Inc. National Account Program with:

Tarkett (Formerly Tandus Centiva)

Contact: Melissa Carnival
Phone: (267) 432-8702
Email: melissa.carnival@tarkett.com

1. For wear layer thickness: Specify 30mil
2. See Look Book for manufacturer / style and color

B. Sheet Flooring:

Materials and other components described in these Specifications shall be obtained from Goddard System Inc. National Account Program with:

Tarkett (Formerly Johnsonite)

Contact: Melissa Carnival
Phone: (267) 432-8702
Email: melissa.carnival@tarkett.com

1. Inlaid homogeneous sheet flooring (SF): 0.080" overall gage, 0.080" wear layer, ASTM F410 surface treatment, Type II, Grade 1
2. See Look Book for manufacturer/ style and color.
3. Base: use integral base by turning up flooring 4 to 6 inches and heat forming as base, and heat welding corners. Follow manufacturer's recommendations for this work.
4. Terminate top of turned up base with a cove cap described below.
5. ****Must USE NPN#648525 when placing your order to receive National Account level pricing****

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RESILIENT FLOORING

SECTION 09 65 00 – RESILIENT FLOORING

C. Rubber Gym Flooring:

Materials and other components described in these Specifications shall be obtained from Goddard System Inc. National Account Program with:

Tarkett (Formerly Johnsonite)

Contact: Melissa Carnival
Phone: (267) 432-8702
Email: melissa.carnival@tarkett.com

1. For thickness specify: 0.125 inch (3.17 mm)
2. For size specify: [24 in. x 24 in. (61cm x 61 cm)]
3. See Look Book for manufacturer / style and color
4. ****Must USE NPN#648525 when placing your order to receive National Account level pricing****

D. Stairwell Management:

Materials and other components described in these Specifications shall be obtained from Goddard System Inc. National Account Program with:

Tarkett (Formerly Johnsonite)

Contact: Melissa Carnival
Phone: (267) 432-8702
Email: melissa.carnival@tarkett.com

1. Round Raised Disk Pattern Rubber Stair Tread with Integrated Riser (RNRDTR), 19"(48.3 cm) overall width, 1.8" (4.57 cm) square nose configuration (inside measurement).
2. Available Lengths: 3', 3-1/2', 4', 4-1/2', 5', and 6'
3. Colors and Patterns: Color Splash pattern choose from manufacturer's full line of color
4. ****Must USE NPN#648525 when placing your order to receive National Account level pricing****

6.6 VINYL BASE, TRANSITIONS & ACCESSORIES

A. Vinyl base, transitions and accessories described in these Specifications shall be obtained from Goddard System Inc. National Account Program with

Tarkett (Formerly Johnsonite)

Contact: Melissa Carnival
Phone: (267) 432-8702
Email: melissa.carnival@tarkett.com

B. Accessories:

1. Vinyl Wall base For Carpet: ASTM F 1861-98, Type TP and TV; Group I a
2. a. Size: 4-1/4" high

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SECTION 09 65 00 – RESILIENT FLOORING

- b. Style: See Look Book for manufacturer/ style and color.
- c. Corners: Install corner guards to the floor.
- d. Adhesive: Johnsonite #960 Wall Base Adhesive.
3. Vinyl Wall base For Resilient Flooring: ASTM F 1861-98, Type TV; Group I
 - a. Size: 4-1/4" high, 1/4" thick tapered wedge
 - b. Style: See Look Book for manufacturer/ style and color.
 - c. Corners: Pre-Formed
 - d. Adhesive: Johnsonite #960 Wall Base Adhesive.
4. Vinyl Adaptor Carpet-to-Resilient:
 - a. Size: 1/4" carpet to 1/8" resilient flooring
 - b. Style: Johnsonite Type CTA-XX-A
 - c. Adhesive: Johnsonite #946 Contact Bond Adhesive.
5. Vinyl Binder-Bar - Sheet flooring-to-Resilient:
 - a. Size: resilient flooring to 0.08" sheet flooring
 - b. Style: Johnsonite Type SSR-XX-C
 - c. Adhesive: Johnsonite #946 Contact Bond Adhesive.
6. Vinyl Cove Cap for turned-up Sheet Vinyl Base with no Wainscot:
 - a. Type: Rounded or square cove cap
 - b. Style: Johnsonite Type SCC-XX-A or Type SC-XX-B
 - c. Adhesive: Johnsonite #946 Contact Bond Adhesive.
7. Vinyl Resilient Adaptor: Resilient-to-resilient
 - a. Size: 2-1/2" sill for tile coursing changes
 - b. Style: Johnsonite Type CTA-XX-N
 - c. Adhesive: Johnsonite #946 Contact Bond Adhesive.
8. Color of vinyl accessories as selected from Look Book

C. Adhesives:

Manufacturer's recommended adhesives with low VOC. Provide MSDS documentation with submittals

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install flooring and wall base to color selected by architect and owner specifications selected from manufacturer standard color selections.
- B. Comply with manufacturer's instructions and recommendations. Moisture testing is required. Ensure moisture in the slab does not exceed manufacturer's tolerances.
- C. Prepare surfaces by cleaning, leveling and priming as required. Test adhesive for bond before general installation. Level to 1/8" in 10' tolerance.
- D. Plank flooring: Match tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed planks
- E. Sheet flooring: Install sheets to avoid joints wherever possible. If joints are unavoidable, create weld joints that are tight and continuous with pattern.

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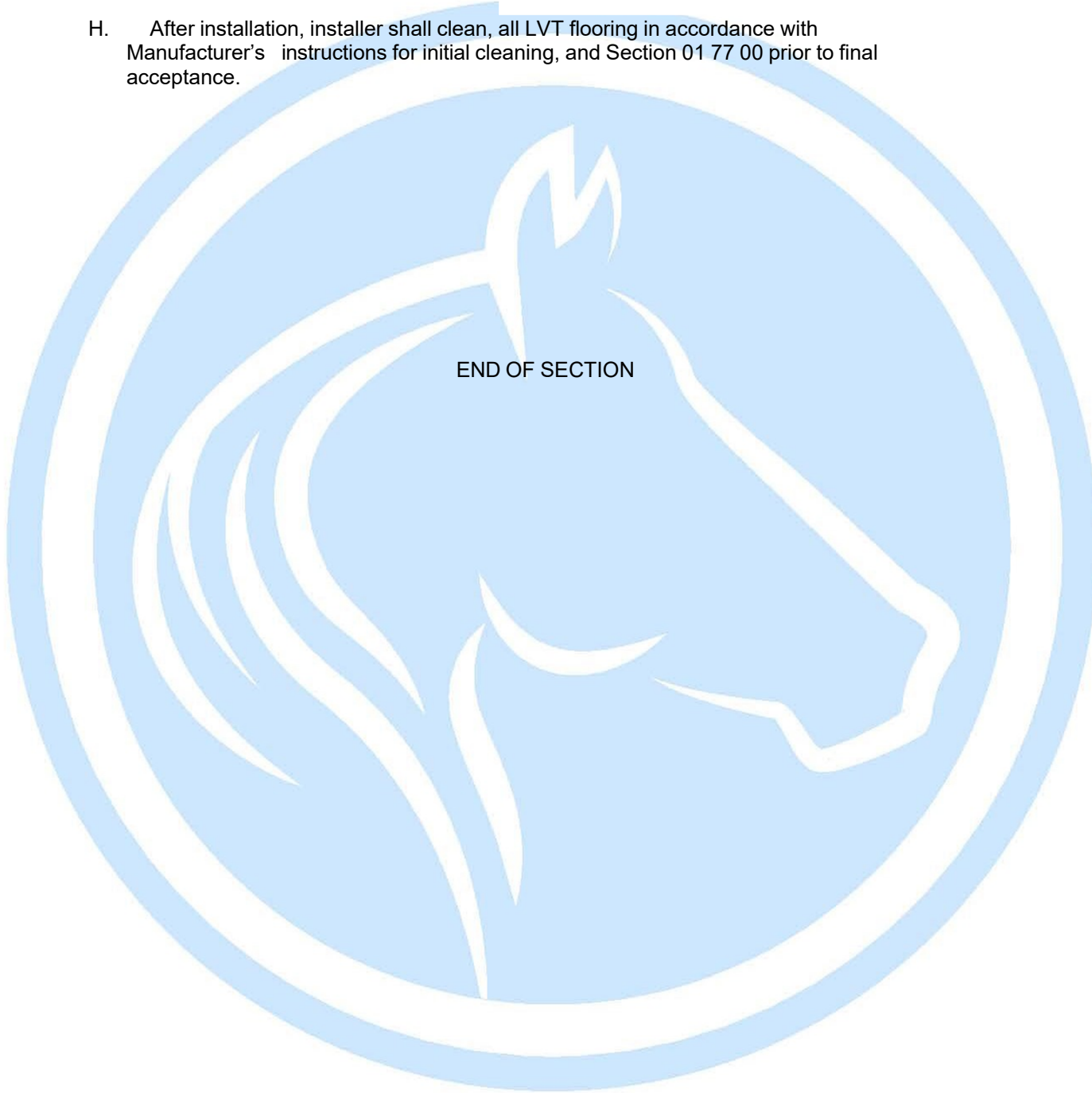
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RESILIENT FLOORING

SECTION 09 65 00 – RESILIENT FLOORING

- F. Install base and accessories to minimize joints. Install base with joints as far from corners as practical.
- G. Install transition strips between Carpet and LVT; and between Sealed Concrete and LVT.
- H. After installation, installer shall clean, all LVT flooring in accordance with Manufacturer's instructions for initial cleaning, and Section 01 77 00 prior to final acceptance.



END OF SECTION

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RESILIENT FLOORING

SECTION 09 68 00 - CARPET

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide carpeting: for glued-down installation.
- B. Color and pattern as selected by Architect and owner. See Look Book for manufacturer / style and color

1.02 SUBMITTALS

- A. Submit for approval samples, product data, warranty, maintenance data, extra stock, proposed seaming layout. Include Material Safety Data Sheets (MSDS) with material submittals.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 NATIONAL ACCOUNT VENDOR

Tarkett (Formerly Tandus Centiva)
Contact: Melissa Carnival
Phone: (267) 432-8702
Email: Melissa.Carnival@tarkett.com

- A. Carpet and other components described in these Specifications shall be obtained from Goddard System Inc. National Account Program with:
 - 1. Manufacturer: Tarkett. No substitutions.

2.01 MATERIALS

- A. Provide carpet meeting the following requirements:
 - 1. Backing: Ethos backing
 - 2. See Look Book for manufacturer / style and color
- B. Mounting:
 - 1. Direct glue down: Manufacturer's recommend adhesive. Use low VOC adhesives only. Provide MSDS documentation with submittals
- C. Accessories:
 - 1. Edge guard: Heavy-duty rubber.
 - 2. Reducer strip: Vinyl or rubber.

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CARPET

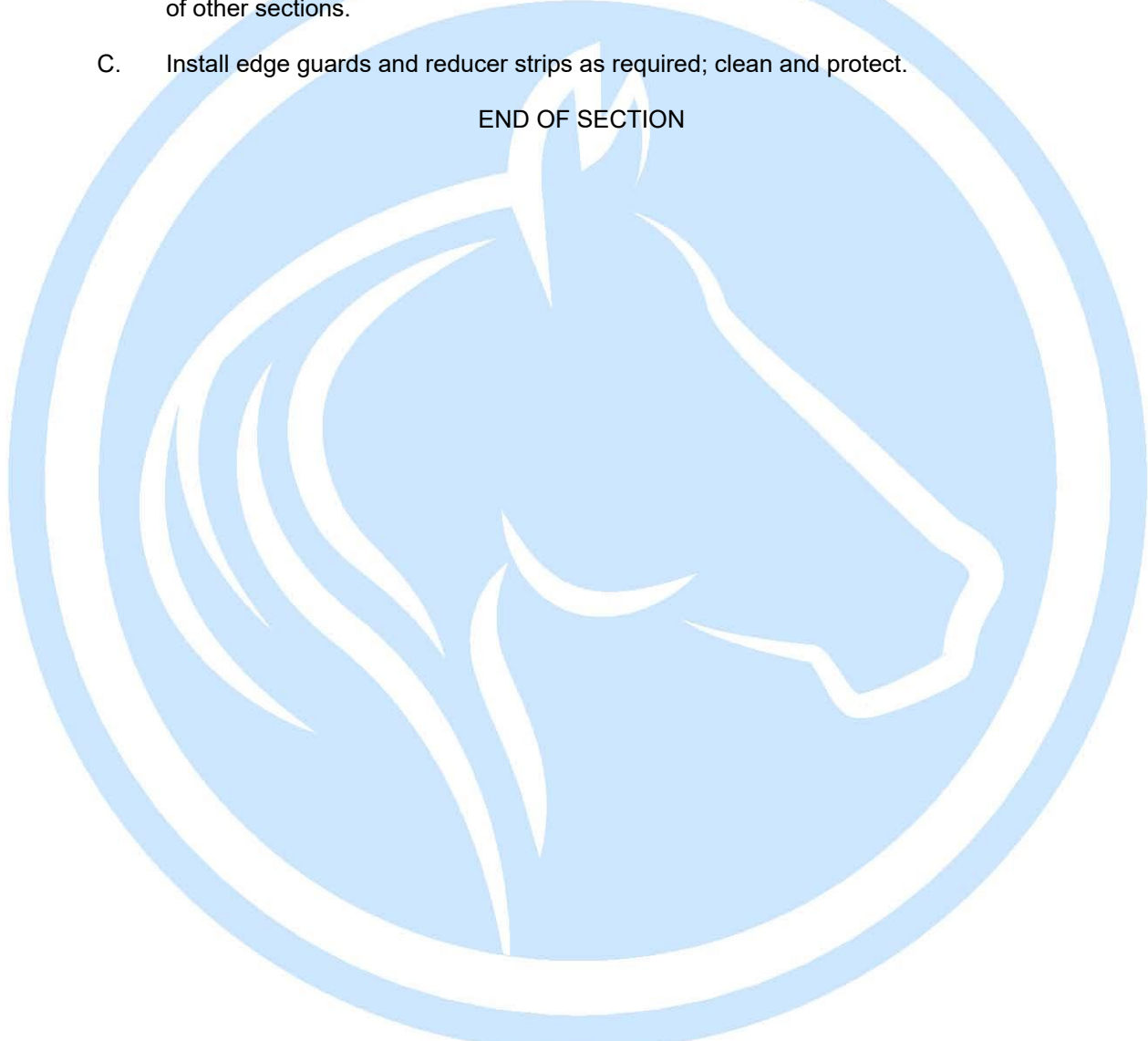
SECTION 09 68 00 - CARPET

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install carpet as selected by Architect and owner from Look Book.
- B. Prepare surfaces and install materials in accordance with manufacturer's instructions and approved submittals. Clean, patch, and level substrate. Install materials in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.
- C. Install edge guards and reducer strips as required; clean and protect.

END OF SECTION



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CARPET

SECTION 09 91 00 – PAINTING

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide surface preparation and painting for all unfinished interior surfaces, including electrical and mechanical equipment with shop primed surfaces.
- B. Color and pattern Selected by owner
- C. Interior Wood Door Finishes are specified in Section 08210

1.02 SUBMITTALS

- A. Submit for approval samples, product data.
- B. Provide coating mock-ups in accordance with Painting and Decorating Contractors Association (PDCA) Guidelines.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 NATIONAL ACCOUNT VENDOR

- A. Paint and other components described in these Specifications shall be obtained from Goddard System Inc. National Account Program with:
 - 1. **Sherwin-Williams**
Contact: Rica Suhanec, Architectural Account Executive
Email: Rica.Suhanec@Sherwin.com
Mobile: 215-806-3579

2.02 MATERIALS

- A. Manufacturer's "Best Grade" water-borne (WB) coating system products, **Sherwin-Williams**.
- B.. Interior paint systems:
 - 1. Drywall: ProMar 200 Zero VOC Interior Latex Primer, B28W2400, 1.5 Mils, each Finish Coat: Superpaint Air Purifying, Satin, MDF 1.7 mils per coat, 2 coats.
 - 2. Wood for opaque finish (Not including interior wood doors): Multi-Purpose Latex Primer, B51-450, MDF 1.4 mils, 1 coat; Each finish coat, Pro Industrial Acrylic Semi-Gloss, B66-650 series, MDF 3.0 mils per coat, 2 coats.

SECTION 09 91 00 – PAINTING

3. Wood for transparent finish: Wood Classics Interior Oil Stain, A49 series, 1 coat; Each finish coat, Wood Classics Waterborne Polyurethane Varnish Gloss, A68V91, MDF 1.0 mils per coat, 2 coats.
4. Ferrous metal: Pro Industrial Pro-Cryl Universal Metal Primer, B66-310 series, 1 coat MDF 3.0 mils; Each finish coat Pro Industrial Acrylic Semi-Gloss, B66-650 series, MDF 3.0 mils per coat, 2 coats.
5. Galvanized metal: Pro Industrial Pro-Cryl Universal Metal Primer, B66-310 series, 1 coat MDF 3.0 mils; Each finish coat Pro Industrial Acrylic Semi-Gloss, B66-650, B66-650 series, MDF 3.0 mils per coat, 2 coats.

C. Exterior paint systems:

1. Wood for opaque finish: (Not including wood doors): Finish coats, Duration Exterior Satin, K33 series, MDF 2.2-2.6 mils per coat, 2 coats. Note: Duration Exterior is self priming on wood.
2. CMU (Block): PrepRite Block Filler, B25W25, MDF 8.0 mils, 1 coat; Each finish coat, Duration Exterior Satin, K33 series, MDF 2.2-2.6 mils per coat, 2 coats.
3. Stucco/EIFS: Loxon Concrete & Masonry Primer, A24W8300, MDF 2.1-3.2 mils, 1 coat; Each finish coat, Duration Exterior Satin, K33 series, MDF 2.2-2.6 mils per coat, 2 coats.
4. Ferrous metal: Pro Industrial Pro-Cryl Universal Metal Primer, B66-310 series, 1 coat MDF 3.0 mils; Each finish coat Pro Industrial Acrylic Semi-Gloss, B66-650 series, MDF 3.0 mils per coat, 2 coats.
5. Galvanized metal: Pro Industrial Pro-Cryl Universal Metal Primer, B66-310 series, 1 coat MDF 3.0 mils; Each finish coat Pro Industrial Acrylic Semi-Gloss, B66-650, B66-650 series, MDF 3.0 mils per coat, 2 coats.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Painting schedule to match one of the color schemes listed in the *Interior Design Color Scheme & Selections* APPENDIX. Goddard Systems, Inc. will notify the contractor of the selection of one of the color schemes.
- B. Inspect surfaces, report unsatisfactory conditions in writing; beginning work means acceptance of substrate.
- C. Comply with manufacturer's instructions and recommendations for preparation, priming and coating work. Coordinate with work of other sections.
- D. Paint all unpainted metal, plastic, wood, or other unpainted items that penetrate roof or exterior walls, or that are otherwise visible from the ground. Color to match background unless otherwise directed by Architect.
- E. Minimum Dry Film Thickness (MDF) shall be maintained and verified in accordance with SSPC, PA-2 standards.
- F. Surface preparation, when noted on painting schedule or on drawings, shall comply with Surface Preparation Standards by SSPC as follows:
 1. SP-1 Solvent preparation
 2. SP-2 Hand tool preparation

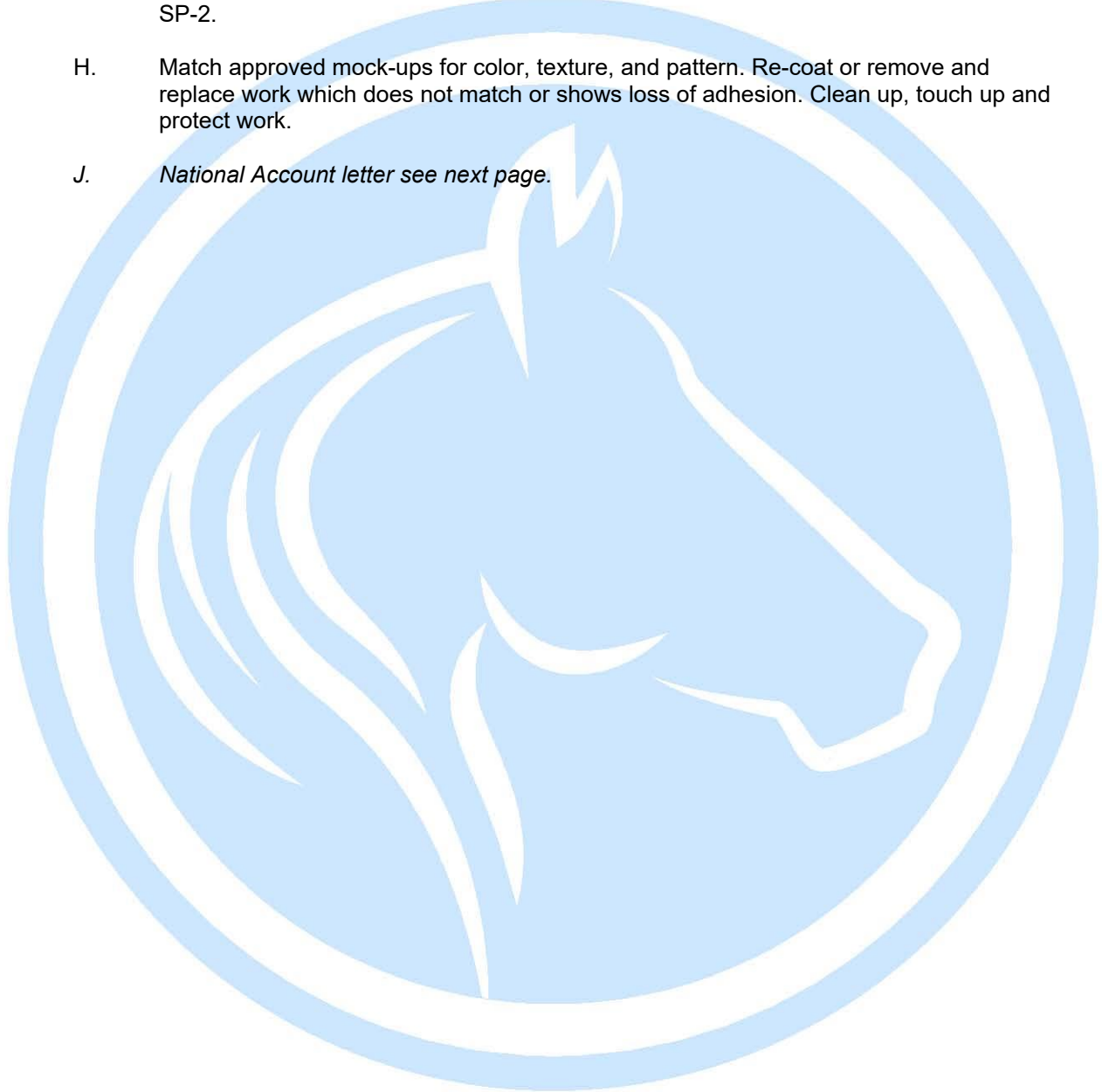
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PAINTING

SECTION 09 91 00 – PAINTING

3. SP-3 Power tool preparation
 4. SP-6/10 Abrasive blast preparation
 5. SP-12 Water cleaning, power washing
 6. SP-13 Abrading and/or scarifying surfaces
- G. In the absence of surface preparation standards shown on painting schedule or on drawings, the minimum surface preparation for any paint application shall comply with SP-2.
- H. Match approved mock-ups for color, texture, and pattern. Re-coat or remove and replace work which does not match or shows loss of adhesion. Clean up, touch up and protect work.
- J. *National Account letter see next page.*





Goddard Schools Paint Purchase Tracking Program

Painting Contractor – Sub Contractor

1. Please take this letter to any Sherwin Williams Store in your area.
2. Present this letter to the Store manager or Sales representative.
3. Once you have a job account established for Goddard Schools, it is required by Goddard Schools, that you use this job account for all paint and related items that you purchase for Goddard Schools.
4. This job account can only be used for Goddard Schools, projects.

Store Personnel

1. Open a regular charge account for this Painting Contractor; if they do not already have an account, and have them complete a Commercial Credit Application. If they have a charge account already established, go to Step 2 below.
2. Once verified the Painting Contractor has a charge account: Open a job account under the painting contractor's charge account called Goddard Schools / project name. At the bottom of the job account form use the drop down menu and enter yes for national account. Enter Goddard Schools and National Account #B261. **Create a PRC and attach only the products that the customer is using for this national account to this job account. Use national parent #B261 PRC to price the products.**
3. E-mail this account number and job number immediately to – Rick Vain – rick.vain@sherwin.com. It will be linked to the Goddard Schools national parent account #B261 for tracking sales.
4. This is required by Goddard Schools and must be adhered to for tracking purposes.
5. Any questions, please call – Rick Vain – national accounts – 301-440-6586

END OF SECTION

SECTION 10 14 00 - SIGNAGE

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide and install identification signs as noted herein.

1.02 SUBMITTALS

- A. Submit for approval samples, shop drawings, product data.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Comply with signage regulations, mounting heights, Braille requirements and other requirements of Americans With Disabilities Act (ADA).
- C. Comply with sign zoning ordinances and secure proper permits and approvals from authorities having jurisdiction.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Interior Room Identification Signs
1. Acrylic plastic fabrication, raised letters, with Braille.

2.02 NATIONAL ACCOUNT VENDOR

- A. Hardware and other components described in these Specifications shall be obtained from Goddard System Inc. National Account Program with:
1. Inpro Corporation
S80 W18766 Apollo Drive
Muskego, Wisconsin 53150
Contact: Anne Stuehn, Corporate Account Specialist
Toll free: 800.222.5556 Ex. 5327
Fax: 888.715.8407
Email: astuehn@inprocorp.com
Website: <http://www.inprocorp.com>
- B. Signs Required Letters or Pictogram:
1. SPRINKLER EQUIPMENT Door # 103
 2. Pictogram Sign (Men) Door # 120
 3. Pictogram Sign (Women) Door # 121
 4. JANITOR Door # 118
 5. LAUNDRY Door # 111
 6. DATA CLOSET Door # 118A

SECTION 10 14 00 - SIGNAGE

8. CLASSROOM DOORS *ROOM NUMBERS ONLY*
Door # 102
Door # 104
Door # 105
Door # 106
Door # 107
Door # 108
Door # 109
Door # 110
Door # 112
Door # 113
Door # 114

- C. NIC - Custom Goddard School Building and Site Permanent Signage and Logo;
provided, purchased and installed by Goddard School

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.
- B. Restore damaged finishes. Clean and protect work from damage.

END OF SECTION

SECTION 10 21 13 – METAL TOILET PARTITIONS

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide toilet partitions.
 - 1. Privacy screens, with floor mounted pilasters, unbraced
- B. Color selection by owner

1.02 SUBMITTALS

- A. Submit for approval and color selection; samples, shop drawings, product data.

1.03 QUALITY ASSURANCE

- A. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Manufacturer:
 - 1. [Bobrick](#)
 - 2. [Bradley](#)
 - 3. [Accurate](#)
 - 4. Hadrian
- B. Galvanized steel with powder coated baked enamel finish. Color to be selected from manufacturer's standard color chart
- C. Post supported screens: (Floor Mounted)
 - 1. Screen panel: 36 inches high by 36 inches deep
 - 2. Pilaster support Posts: 6 inches wide by 48 inches high
- D. Fittings: wall brackets, pilaster shoes, miscellaneous

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.

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METAL TOILET PARTITIONS

- B. Confirm location of solid wall blocking for wall support brackets. Do not proceed unless solid blocking at each wall bracket location is present.
- C. Adjust hardware, clean, and protect work.

END OF SECTION



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METAL TOILET PARTITIONS

SECTION 10 26 00 – Wall Protection

PART 1 - GENERAL

1.01 SUMMARY

- A. Corner guard system for wall protection

1.02 SECTION INCLUDES

- A. 160 BluNose® High Impact Surface Mount Corner Guard System

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Acceptable Manufacturer: IPC Door and Wall Protection Systems,
Inpro Corporation
S80 W18766 Apollo Drive
Muskego, Wisconsin 53150
Contact: CJ Reiels, Education National Account Sales Rep.
Toll free: 800.214.7749 Ex. 5191
Fax: 262-679-9127
Email: creiels@inprocorp.com
Website: <http://www.inprocorp.com>

- B. Substitutions: Not permitted

- C. Provide all corner guards and wall protection from a single source.

2.02 MANUFACTURED UNITS

- A. Corner Guard System
160BN BluNose® High Impact Corner Guard Profile
2" (51mm) x 2" (51mm), 90 degree
4' (1.22m), 8' (2.44m) and 9' (2.74m) standard heights
Custom heights available
Custom Angles – Provide vinyl covers and retainers with custom angles. Custom angles shall be between 112.5° and 157.5°. Provide flexible top caps to bend to retainer angle.

2.03 MATERIALS

- A. Vinyl Covers: Snap on cover of .080" (2mm) thickness shall be extruded from chemical and stain resistant polyvinyl chloride with the addition of impact modifiers. No plasticizers shall be added

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(plasticizers may aid in bacterial growth).

B. Vinyl Retainers: Continuous vinyl retainers of .070" (1.8mm) thickness with a Biopolymer Flex PVC apex shall be fabricated from polyvinyl chloride with the addition of impact modifiers.

2.04 COMPONENTS

A. Top caps and bottom caps shall be made of injection molded thermoplastics.

B. Fasteners: All mounting system accessories appropriate for substrates indicated on the drawings shall be provided.

C. Optional flexible top caps shall be made of injection molded Biopolymer Flex PVC.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions in which the corner guard systems will be installed.

1. Complete all finishing operations, including painting, before beginning installation of corner guard system materials.

B. Wall surface shall be dry and free from dirt, grease and loose paint.

3.02 PREPARATION

A. General: Prior to installation, clean substrate to remove dust, debris and loose particles.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

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A. Rigid vinyl sheet for wall protection and decoration

1.02 SECTION INCLUDES

A. Palladium® Rigid Vinyl Sheet

1.03 REFERENCES

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in unopened factory packaging to the jobsite
- B. Inspect materials at delivery to assure that specified products have been received.
- C. Store in original packaging in a climate controlled location away from direct sunlight.

1.05 PROJECT CONDITIONS

- A. Environmental Requirements: Products must be installed in an interior climate controlled environment.

1.08 WARRANTY

- A. Standard IPC Limited Lifetime Warranty against material and manufacturing defects.

PART 2 - PRODUCTS

A. Rigid Vinyl Sheet

1. Palladium® Rigid Vinyl Sheet Options

Item #, Dimensions, Thickness

405, 4'x8' (1.22m x 2.44m), .040" = 3/64" (1mm), standard

406, 4'x8' (1.22m x 2.44m), .060" = 1/16" (1.5mm),

standard

2. Accessories:

a. Vinyl 407 Top Cap; Length: 8' (2.44m) standard, 10' (3.04m) available

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WALL PROTECTION

408 Vertical Divider Bar; Length: 8' (2.44m) standard, 10'
(3.04m) available
409 Inside Corner; Length: 8' (2.44m) standard, 10' (3.04m)
available

f. Color Matched Caulk
Color Matched Caulk

2.03 MATERIALS

- A. Vinyl: Palladium® Rigid Vinyl Sheet shall be manufactured from chemical and stain resistant polyvinyl chloride with the addition of impact modifiers. No plasticizers shall be added (plasticizers may aid in bacterial growth).

2.05 FINISHES

- A. Color or pattern of Palladium® Rigid Vinyl Sheet to be selected by the architect from the IPC Sheet finish selection. Surface shall have a velvet texture.
- B. Vinyl Accessories: Top caps, inside corners, divider bars and outside corners shall be of a color matching the IPC.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas and conditions in which the rigid vinyl sheet will be installed.
1. Complete all finishing operations, including painting, before beginning installation of rigid vinyl sheet materials.
- B. Wall surface shall be dry and free from dirt, grease and loose paint.

3.02 PREPARATION

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WALL PROTECTION

A. General: Prior to installation, clean substrate to remove dust, debris and loose particles.

3.03 INSTALLATION

A. General: Locate the Palladium® Rigid Vinyl Sheet as indicated on the approved detail drawing for the appropriate substrate and in compliance with the IPC installation instructions. Install level and plumb at the height indicated on the drawings.

B. Installation of Palladium® Rigid Vinyl Sheet

1. Adhere to substrate with InPro Bond, a freeze-thaw stable, nonflammable, high strength, water based adhesive that trowels on and allows approximately 20 minutes working time before firming.

3.04 CLEANING

A. At completion of the installation, clean surfaces in accordance with the IPC clean-up and maintenance instructions.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

A. Digitally printed sheet for wall protection and decoration

1.02 SECTION INCLUDES

A. IPC Aspex™ Wall Protection

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Acceptable Manufacturer:
IPC Door and Wall Protection Systems™,
InPro Corporation,
PO Box 406, Muskego,

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WALL PROTECTION

WI 53150, USA; Telephone: 800.222.5556, Fax: 888.715.8407,
www.inprocorp.com
Provide all Aspex™ Wall Protection from a single source.

2.02 MANUFACTURED UNITS

A. Digitally Printed Sheet

1. IPC Aspex™ Wall Protection

Dimensions Thickness

48"x 96" (1.22m x 2.44m) .040 (1mm), standard

48" x 120" (1.22m x 3.04m) .040" (1mm), standard

Backing – Digitally reverse printed with adhesive

2. Accessories:

A. Vinyl

1. 407 Top Cap; Length: 8' (2.44m) standard, 10' (3.04m) available

2. 408 Vertical Divider Bar; Length: 8' (2.44m) standard, 10' (3.04m) available

3. 409 Inside Corner; Length: 8' (2.44m) standard, 10' (3.04m) available

B. Clear or Color Matched Caulk

2.03 MATERIALS

A. PETG sheet material shall be extruded from chemical and stain-resistant PETG with a matte finish. Rigid sheet shall be reverse printed by Inpro with customer supplied digital graphics. Printed sheet shall have a protective backing.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions in which the sheet will be installed.

1. Complete all finishing operations, including painting, before beginning installation of Non PVC sheet materials.

B. Wall surface shall be dry and free from dirt, grease and loose paint.

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WALL PROTECTION

3.02 PREPARATION

A. General: Prior to installation, clean substrate to remove dust, debris and loose particles.

3.03 INSTALLATION

A. General: Locate the Aspex™ Wall Protection as indicated on the approved detail drawing for the appropriate substrate and in compliance with the InPro installation instructions. Install level and plumb at the height indicated on the drawings. Field trimming is not recommended or supported.

B. Installation of Aspex™ Wall Protection

1. Adhere to substrate with InPro Bond, a freeze-thaw stable, nonflammable, high strength, water based adhesive that trowels on and allows working time before firming.
2. Adhere to substrate with Fastbond 30, a nonflammable, high strength, water dispersed contact adhesive, with very little odor. Smooth roll surface.

3.04 CLEANING

A. At completion of the installation, clean surfaces in accordance the InPro cleanup and maintenance instructions.

Sani-Surface Wall Cladding for Kitchen/Kitchenettes & Janitor Closets Only

PART 1 GENERAL

1.01 SUMMARY

A. Sani-Surface™ Hygienic Wall Cladding for wall protection and decoration

1.02 SECTION INCLUDES

A. Sani-Surface™ Hygienic Wall Cladding

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM)
- B. International Standards Organization for Standardization (ISO)
- C. National Fire Protection Association (NFPA)
- D. National Sanitation Foundation (NSF)
- E. Society of Automotive Engineers (SAE)
- F. International Standards Organization for Standardization (ISO)

1.04 SYSTEM DESCRIPTION

A. Performance Requirements: Provide Sani-Surface™ Hygienic Wall Cladding systems that conform to the following requirements of regulatory agencies and the quality control of IPC Door and Wall Protection Systems™, InPro Corporation.

1. Fire Performance Characteristics: Provide SaniSurface™ Hygienic Wall Cladding conforming with NFPA Class A fire rating. Surface burning characteristics as determined by ASTM E84 shall be flame spread of 25 or less and smoke development of 450 or less.
2. Chemical and Stain Resistance: Provide material that shows resistance to stain when tested in accordance with ASTM D543. Sani-Surface™ Hygienic Wall Cladding shall show “No Change” from reagents.
3. Effect of Household Chemicals: Provide material that is effective against reaction to household chemicals when tested in accordance with ASTM D1308. Sani-Surface™ Hygienic Wall Cladding shall show “No Change” from reagents.
4. Mold Growth Resistance: Provide material that is resistant to mold growth when tested in accordance with ASTM D3273. Sani-Surface™ Hygienic Wall Cladding shall show no growth.
5. Abrasion Resistance: Provide material that is resistant to abrasion when tested in accordance with ASTM D4060. Sani-Surface™ Hygienic Wall Cladding shall have a 0.01 % weight loss; CS-17 wheels 1,000 gram weight at 25 cycles.
6. Impact Resistance: Provide material that is resistant to impact when tested in accordance to ASTM D4226. Sani-Surface™ Hygienic Wall Cladding shall show a mean failure energy of 11.5 in-lbs.
7. Fungi Resistance: Provide material that is resistant to fungi when tested in accordance to ASTM G21 and ISO 846 method A. Sani-Surface™ Hygienic Wall Cladding shall show no fungal growth.
8. Bacterial Resistance: Provide material that is resistant to bacteria when tested in accordance to ASTM G22 and ISO 846 method C. Sani-Surface™ Hygienic Wall Cladding shall show no bacterial growth.
9. Effect of Liquids: Provide material that is effective against reaction to liquids when tested in accordance with ISO 2812. Sani-Surface™ Hygienic Wall Cladding shall have a “0” rating (no effect) from reagents.
10. Cleanroom Particle Concentration: Provide SaniSurface™ Hygienic Wall Cladding that achieved an ISO class number of “Class 6” when evaluated using the test procedure outlined in VDI 2083-17 2013 section 6.2 (Particle Emission) and classified using ISO 14644.1-2015. Provide Sani-Surface™ Hygienic Wall Cladding that achieved a classification of "Class 5" when utilizing Federal Standard 209E for the determination for classification.

11. Indoor Air Quality: Provide material that passes the test requirements of ISO 16000-9. SaniSurface™ Hygienic Wall Cladding shall have a TVOC concentration of <5 µg/m³ and Styrene concentration was <1 µg/m³.

12. GREENGUARD Certified: Provide Sani-Surface™ Hygienic Wall Cladding that has a GREENGUARD Gold Certification.

13. Color Consistency: Provide components matched in accordance with SAE J-1545 - (Delta E) with a color difference no greater than 1.0 units using CIE Lab, CIE, CMC, CIE LCh, Hunter Lab or similar color space scale systems.

14. NSF Certified: Provide Sani-Surface™ Hygienic Wall Cladding that is NSF certified.

1.05 SUBMITTALS

- A. Product Data: Manufacturer's printed product data for each type of Sani-Surface™ Hygienic Wall Cladding specified.
- B. Detail Drawings: Mounting details with the appropriate adhesives for specific project substrates.
- C. Samples: Verification samples of Sani-Surface™ Hygienic Wall Cladding, 5" x 8" (127mm x 203mm) piece, of each type and color indicated.
- D. Manufacturer's Installation Instruction: Printed installation instructions for Sani-Surface™ Hygienic Wall Cladding.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in unopened factory packaging to the jobsite
- B. Inspect materials at delivery to assure that specified products have been received.
- C. Store in original packaging in a climate-controlled location away from direct sunlight.

1.07 PROJECT CONDITIONS

- A. Environmental Requirements: Products must be installed in an interior climate-controlled environment.

1.08 WARRANTY

- A. Standard IPC Limited Lifetime Warranty against material and manufacturing defects.

PART 2 – PRODUCTS

2.01 MANUFACTURER

- A. Acceptable Manufacturer:
IPC Door and Wall Protection Systems

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WALL PROTECTION

InPro Corporation
PO Box 406
Muskego, WI 53150 USA
Telephone: 800.222.5556
Fax: 888.715.8407
www.inprocorp.com

- B. Substitutions: Not permitted
- C. Provide all Sani-Surface Hygienic Wall Cladding and wall protection from a single source.

2.02 MANUFACTURED UNITS

A. Sani-Surface™ Hygienic Wall Cladding

1. Sani-Surface™ Hygienic Wall Cladding Options
Item # Dimensions
Thickness 610-XXXX: 4'x8' (1.22m x 2.44m) .080" = 5/64" (2mm)
standard 61010-XXXX: 4'x10' (1.22m x 3.04m) .080" = 5/64" (2mm)
available

B. Accessories:

1. Trim

- 61710 Top Cap; Length: 10' (3.04m)
- 61810 Vertical Divider Bar; Length: 10' (3.04m)
- 61910 Inside Corner; Length: 10' (3.04m)
- 62010 Outside Corner; Length: 10' (3.04m)

2. Color Matched Caulk

3. Two-Part Urethane Waterproof Sealant (Bright White)

2.03 MATERIALS

- A. Vinyl: Sani-Surface™ Hygienic Wall Cladding shall be manufactured from 100% chemical and stain resistant polyvinyl chloride. No plasticizers shall be added (plasticizers may aid in bacterial growth).

2.04 ACCESSORIES

- A. Top caps, inside corners, divider bars and outside corners shall be made of extruded PVC.

2.05 FINISHES

- A. Sani-Surface™ Hygienic Wall Cladding colors to be selected by the architect. Surface shall have a velvet texture.
- B. Vinyl Accessories: Top caps, inside corners, divider bars and outside corners shall be of a color matching the IPC.

PART 3 – EXECUTION

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WALL PROTECTION

3.01 EXAMINATION

- A. Examine areas and conditions in which the SaniSurface™ Hygienic Wall Cladding will be installed.
 - 1. Complete all finishing operations, including painting, before beginning installation of SaniSurface™ Hygienic Wall Cladding materials.
- B. Wall surface shall be dry and free from dirt, grease and loose paint.

3.02 PREPARATION

- A. General: Prior to installation, clean substrate to remove dust, debris and loose particles.

3.03 INSTALLATION

- A. General: Locate the Sani-Surface™ Hygienic Wall Cladding as indicated on the approved detail drawing for the appropriate substrate and in compliance with the IPC installation instructions. Install level and plumb at the height indicated on the drawings.
- B. Installation of Sani-Surface™ Hygienic Wall Cladding
 - 1. Adhere to substrate with Titebond GREENchoice Fast Grab FRP Construction, a freeze-thaw stable, nonflammable, high strength, water-based adhesive that trowels on and allows approximately 20 minutes working time before firming.
 - 2. Adhere to substrate with Titebond Advanced Polymer, a freeze-thaw stable, nonflammable, high strength, water-based adhesive that trowels on and allows approximately 20 minutes working time before firming.

3.04 CLEANING

- A. At completion of the installation, clean surfaces in accordance with the IPC clean-up and maintenance instructions.

SECTION 10 28 13 - TOILET ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide toilet accessories where shown on drawings.

1.02 SUBMITTALS

- A. Submit for approval samples, product data, accessory schedule.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Units: Stainless steel fabrications; ASI – American Specialties, Bobrick Washroom Equipment, Inc. Basco, or Bradley as noted below.
- B. Types, quantities, and locations shown on Drawings

2.02 ACCESSORY SCHEDULE

- A. **AC-3** - Mirror with Stainless Steel Channel Frame:
 - 1. Model Numbers:
 - a. American Specialties: 0620.
 - b. *Gamco* (Bobrick): *C-18 x 36*
 - c. Bradley: 781.
 - 2. Description: 18 inches wide x 36 inches high. 1/2" x 1/2" x 1/2" flat channel frame. Minimum 20 gauge stainless steel, all joints mitered, welded and ground smooth. Type 430 bright polished finish. Galvanized steel back with slots for mounting screws and integral screw-head lock. Back protected by shock-absorbing water-resistant padding. 1/4 inch polished tempered glass mirror.
- B. **AC-5** - Mop and Broom Holder:
 - 1. Model Numbers:
 - a. American Specialties: 8215-4.
 - b. *Gamco* (Bobrick): *MS-2*
 - c. Bradley: 9954.
 - 2. Description: 36 inches long, 3 inch projection, 4 holders. Minimum 20 gage, Type 304 stainless steel hat channel. Spring loaded rubber cam-type mop holders. No. 4 Satin finish. Mount above integral self-draining mop sink shelf.
- C. **AC-4** - Surface-Mounted Single-Roll Tissue Dispenser:

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TOILET ACCESSORIES

1. Model Numbers:
 - a. American Specialties: 0263-1.
 - b. Gamco (Bobrick): 813NRC
 - c. Bradley: 5071.
 2. Description: Heavy duty cast aluminum, satin finish. High-impact plastic spindles, with concealed locking device. Controlled delivery spindle.
- D. **AC-1 - Children's Grab Bar Set:**
1. Model Numbers:
 - a. Basco: *Model 5217H (36"), Model 5218H (42"), Model 5213H (18")*
 - b. Bradley: *Model 832 (36"), Model 832 (42"), 832 (18")*
 - c. Gamco (Bobrick): *Model 125S (36"), Model 125S (42"), 125S (18")*
 2. Description: 1 1/4 inch outside diameter (OD), *grab bar set consisting of one (1) 36 inch, one (1) 42 inch straight grab bar section, and one (1) 18 inch straight grab bar section.* Type 304, 18 gauge stainless steel. snap-on concealed *flange* mounting and anchorage. No. 4 satin finish. *Minimum supporting capacity shall meet requirements of ICC/ANSI A117.1, ADA, and ADAAG. 1-1/2 inch wall clearance. See drawings for mounting heights and offsets.*
- E. **AC-2 - Adult's Grab Bar Set:**
1. Model Numbers:
 - a. Basco: *Model 5217H (36"), Model 5218H (42"), Model 5213H (18")*
 - b. Bradley: *Model 832 (36") and Model 832 (42"), 832 (18")*
 - c. Gamco (Bobrick): *Model 125S (36"), Model 125S (42"), 125S (18")*
 2. Description: 1 1/4 inch outside diameter (OD), *grab bar set consisting of one (1) 36 inch, one (1) 42 inch straight grab bar section, and one (1) 18 inch straight grab bar section.* Type 304, 18 gauge stainless steel. snap-on concealed *flange* mounting and anchorage. No. 4 satin finish. *Minimum supporting capacity shall meet requirements of ICC/ANSI A117.1, ADA, and ADAAG. 1-1/2 inch wall clearance. See drawings for mounting heights and offsets.*

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.
- B. Install equipment at heights and locations shown on drawings and as otherwise directed by *ICC/ANSI A117.1, Americans With Disabilities Act, ADAAG, and Accessibility Codes of local or state jurisdiction*, relating to child care facilities.
- C. Coordinate with framing contractor to locate solid wood *or heavy gauge metal* blocking at required locations.
- D. Restore damaged finishes and test for proper operation. Clean and protect work from damage.

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TOILET ACCESSORIES

END OF SECTION



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TOILET ACCESSORIES

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SECTION 10 44 00 - FIRE PROTECTION SPECIALTIES

PART 1 – GENERAL

1.01 SUMMARY

- A. Provide portable fire extinguishers
- B. Provide semi-recessed cabinets for portable fire extinguishers

1.02 SUBMITTALS

- A. Submit for approval shop drawings, product data.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Comply with local Fire Marshall Requirements for number and location of fire extinguishers. Provide all extinguishers required at no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Fire extinguishers: UL listed and labeled units; J. L. Industries or approved equal:
 - 1. Type ABC, Multi-purpose dry chemical type, 10 pound.
- B. Cabinets: Enameled steel box with trim, frame, door, and accessories; J. L. Industries or approved equal. Noted as 'FEC' on Drawings
 - 1. Semi-recessed cabinet mounting with rounded corners.
 - 2. Door panel: 1/8 inch thick convex clear acrylic bubble.
 - 3. Finish: stainless steel
- C. Hangers: Extinguisher manufacturer's standard surface mounted wall hanging bracket and accessories. Noted as 'HFE' on Drawings.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install at locations and heights indicated and acceptable to authorities. GSI would like a fire extinguisher in the foyer, by the rear corridor door, in the kitchen, and in the mechanical room. Do not install on the foyer wall adjacent to the kitchen. A mural will be located there.
- B. Install cabinets plumb and level.
- C. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.

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- D. Restore damaged finishes and test for proper operation. Clean and protect work from damage.

END OF SECTION



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SECTION 11 68 13 – PLAYGROUND EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

- A. Prepare site for playground equipment in areas shown on civil engineering drawings for the following equipment and structures:
 - 1. Playground equipment
 - 2. Shade structures
 - 3. Poured-in place rubber surfacing
- B. Playground equipment, structures, and pour-in-place rubber surfacing are supplied and installed by Goddard School Playground Equipment Vendor.
- C. See Landscaping and Civil Engineering Contract Documents
 - 1. In the case of any deviation between this Specification Section and the Civil Engineering Contract Documents the Civil Engineering Contract Documents shall prevail.
- D. Equipment, installation, details, and photos of typical Goddard School Playgrounds are available from the Goddard Systems, Inc. Representative.

1.02 SUBMITTALS

- A. Compaction test results for subgrade of playground structures and surfacing.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Prepare site and compact subgrade to support installation of all playground equipment recessed and flush with finished sod elevation.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Prepare site and subgrade to permit installation of all playground equipment as follows:
 - 1. Prepare compacted pad on suitable subgrade with no slope in any direction to exceed 2 percent (2%). **Perform compaction tests on each pad and supply results to the GSI Project Manager prior to the installation of the playground equipment and surfacing. Minimum 97% compaction.**
 - 2. Soils must be suitable for "slab on grade" type installation or local design team to design footings according to site specific soil conditions.

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PLAYGROUND EQUIPMENT

SECTION 11 68 13 – PLAYGROUND EQUIPMENT

3. Elevation of playground subgrade surface to be 7 inches below finished elevation of sod.
 4. Coordinate dimensions of subgrade pad to match playground equipment ground pad.
 5. Coordinate location of playground equipment to assure it is not above or below any utilities
 6. Provide drainage swales, French drains, drainage mats, or storm water structures as shown on engineering drawings to provide for positive drainage on and around all playground equipment bases
 7. Provide a yard drainage pipe under the low corners of each playground equipment base area, from downspout collection system. Contractor to stub playground drainage pipe 12 inches above finished base elevation, 24" in from each side of low corners as shown on the drawings, for final inlet fitting to be supplied and installed by Goddard School Playground Equipment Vendor.
 8. Any excavation including playground drains within the play pad areas should be properly filled and compacted.
- B. Include playground equipment installation by Goddard School Playground Equipment Vendor in General Contractor's Critical Path Schedule.
- C. General Contractor to verify any permit requirements and coordinate approval with the owner prior to installation.
- D. Coordinate site storage to provide adequate area for 50 tons of crushed stone close to final playground locations for use by Goddard School Playground Equipment Vendor.
- E. Coordinate erection of fencing to permit free access of playground area by Goddard School Playground Equipment Vendor without dismantling fence.
- F. Areas with standing water in or around playground equipment areas, in surrounding sodded areas, or in any other sodded play areas shall be un-sodded, regraded, leveled, and/or otherwise repaired to the satisfaction of the Goddard Systems Inc. Project Manager, and at the contractor's expense.
- 3.02 PLAYGROUND INSTALLATION GUIDELINES
- A. Playground pad areas and detailed elevations at each corner are shown on the civil engineering plans.
- B. Playground dimensions shall be cut in at rough grade with box dug at 7" deep. Playground slopes in any direction shall not exceed a 2%.
- C. Contractor shall coordinate final playground location to assure that no underground or overhead utilities are above or below play areas.
- D. When requested by local jurisdiction, playground renderings and cut sheets from Little Tikes shall be presented to such jurisdiction by the Owner/Developer. Final decisions on color restrictions, height restrictions shall be coordinated with Goddard Systems, Inc.

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- E. Playgrounds are to be installed at rough grade after sidewalks are installed, Project Scheduling errors and omissions relating to Playground Equipment, resulting in additional travel charges or shipping charges by Goddard School Playground Equipment Vendor will be the responsibility of the Contractor.
 - F. Contractor shall advise Goddard Systems, Inc. if excessive amounts of rock are encountered during initial earthwork operations. If excessive rock is present, Goddard Systems Inc. will make arrangements for alternative equipment installation such as surface mounting.
 - G. Contractor shall prevent the use of unsuitable fill in and around playground areas, such as cinder blocks, bricks, wood, etc.
 - H. Contractor shall stage an area on the site for the Goddard School Playground Equipment Vendor to receive approximately 50 tons of crushed stone preferably close to the playground pads. Locate stockpile area to prevent damage to surrounding soil pads, landscaping, sod, sidewalks, etc. Provide an area for waste soil from playground excavations.
 - I. Fencing installation shall be schedule after completion of playgrounds. If fencing is installed prior to playground equipment, the Contractor shall be responsible for the cost of removal and replacement of all fencing necessary for removal to accommodate playground installation.
 - J. Goddard School Playground Equipment Vendor shall remove all trash from the site, unless Contractor permits use of site dumpster.
 - K. Contractor shall provide a concrete clean out location.
 - L. Goddard School Playground Equipment Vendor shall inform a representative of Goddard Systems, Inc. on their daily activity, including arrival and departure from the site, delays in the work due to weather; and final completion of the work.
- 3.03 POUR IN PLACE RUBBER SURFACING
- A. Contractor shall coordinate location and installation details with Goddard Systems, Inc.
 - B. Contractor shall stage an area on the site for the Goddard School Pour –in – Place Vendor to receive approximately 5-8 pallets of materials preferably close to the playground pads.
- 3.04 SHADE STRUCTURES
- A. Contractor shall coordinate location and installation details with Goddard Systems, Inc.

END OF SECTION

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PLAYGROUND EQUIPMENT

SECTION 12 21 13 – ROLLER SHADES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Sunscreen roller shades.

1.02 REFERENCES

- A. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
- B. NFPA 70 - National Electrical Code.
- C. NFPA 701 - Fire Tests for Flame-Resistant Textiles and Films.
- D. GREENGUARD - Indoor Air Quality Certified
- E. GREENGUARD Children & Schools - Indoor Air Quality Certified

1.03 SUBMITTALS

- A. Submit for approval samples, color selection choices, shop drawings, product data, mock-ups, warranty, and extra stock.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 NATIONAL ACCOUNT VENDOR

- A. Roller Shades and other components described in these Specifications shall be obtained from Goddard System Inc. National Account Program with:
 - 1. Inpro Corporation
580 W. 18766 Apollo Drive
Muskego, WI 53150
Contact: Kevin Macoubrie | Commercial Window Treatments Sales Rep
Toll free: (800) 222-5556 Ex. 5290
Email: kmacoubrie@inprocorp.com
Website: www.inprocorp.com

Substitutions: Not permitted

- B. Provide all roller shades from a single source.

2.02 ROLLER SHADE TYPE

- A. Manually Operated Cordless Shades:
 - 1. Mounting: Inside or Outside (dependent on site conditions)
 - 2. Configuration: Single solar shade cloth.
 - 3. Fabric Type: Alkenz Shade Cloth, 3000HT, 3%
 - 4. Fabric Color (select one): [HT01-White/White], [HT02-White/Beige] or [HT03-White/Light Grey]
 - 5. Valance (select one): [Feather], [Dove Grey] or [Black]
 - 6. Side Track (optional) (select one): [Feather], [Dove Grey] or [Black]

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ROLLER SHADES

2.03 SHADE BAND

- A. Shade Bands: Construction of shade band includes the fabric, the hem weight, hem-pocket, shade roller tube, and the attachment of the shade band to the roller tube. Sewn hems are not acceptable.
 - 1. Hem Pockets and Hem Weights: Fabric hem pocket with RF-welded seams and concealed hem weights. Hem weights shall be of appropriate size and weight for shade band. Hem weight shall be continuous inside the hem pocket. Hem pocket construction and hem weights shall be similar, for all shades within one room.
 - 2. Shade Band and Shade Roller Attachment:
 - a. Use extruded aluminum shade roller tube of a diameter and wall thickness required to support shade fabric without excessive deflection. Roller tubes less than 1.55" (39.37 mm) in diameter for manual shades are not acceptable.
 - b. Provide for neutral mechanical engagement with drive / brake mechanism.
 - c. Provide for positive mechanical attachment of shade band to roller tube; shade band shall be made removable / replaceable with 0.625" x 0.3125" extruded ABS guide slats.

2.04 SHADE FABRICATION

- A. Fabricate units to completely fill existing openings from head to sill and jamb-to-jamb, unless specifically indicated otherwise.
- B. Fabricate shade cloth to hang flat without buckling or distortion. Fabricate with trimmed edges to hang straight without curling or raveling.
- C. Fabricate units for manual operation without the use of cords or chains using an internal lift spring completely contained within the shade roller tube.
- D. For railroaded shadebands, provide seams in railroaded multi-width shadebands as required to meet size requirements and in accordance with seam alignment as acceptable to Architect. Seams shall be properly located.

2.05 COMPONENTS

- A. Access and Material Requirements:
 - 1. Provide shade hardware allowing for the removal of shade roller tube from brackets without removing hardware from opening and without requiring end or center supports to be removed.
 - 2. Use only PVC/ABS with UV inhibitors or Styrene based plastics for all plastic components of shade hardware.
- B. Manually Operated, Cordless WebbGlide Hardware and Shade Brackets
 - 1. Shade Roller:
 - a. Tube: Provide extruded aluminum alloy 6061 or 6063, 1.75" diameter with exterior 0.15" x 0.84" slot for attaching shade fabric using 0.625" x .3125" extruded ABS guide slats to provide horizontal adjustment of shade fabric while preventing removal of fabric after installation.
 - b. Lift Mechanism: Inner lift spring shall be constructed of .058" blue spring steel. Drive pins shall be heat-treated 1" x .024" steel.
 - 2. Bottom Rail:
 - a. Provide Bottom rail of proper size and weight to properly balance lifting mechanism. Bottom rail shall be 0.625" OD. steel tube, lightweight and corrosion resistant. It shall be applied to shade inside a bar-welded (radio-wave molecular bond) self-fabric pocket sized so the bottom rail shall slide smoothly and snugly inside. 0.375" OD. steel rod shall be inserted into the tube acting as weight. When side tracks are used, injection-molded thermoplastic guide tips shall be attached at each end with stainless steel compression springs and aluminum rivets, and shall fit easily in side tracks to provide braking system for shade.
 - 3. Bracket Plates:
 - a. Provide mounting bracket plates constructed of 18 gauge galvanized steel with embossed drive pin slots, and 0.25" x 0.562" nylon bushing inserts pressed into each idler pin

aperture. Shall be corrosion resistant and will not buckle, bend or break under the shear forces created by the roller tension, shade material, or normal operation.

i. When fabric valance is, each bracket shall have a lip for attachment.

4. Privacy Track (when used)

- a. Provide vertical guide tracks extruded from PVC with UV inhibiting colorant, 1" x 1" with flanges on both sides to maintain privacy and reduce light leaks. Tracks shall be attached using double-coated foam adhesive PSA tape.

2.06 ACCESSORIES

A. Valance:

1. Shall be continuous removable extruded PVC fascia, with UV inhibiting colorant, that attaches to 4" x 4.155" x 0.5" molded PVC end caps without the use of adhesives, magnetic strips, or exposed fasteners for single shades only. The end caps are placed over 18 gauge galvanized steel mounting plates
OR
2. Shall be self-fabric made from the privacy or blackout fabric, attached to standard 0.875" x 1.5" wood headrail, 8" in length with bar-welded (not sewn) hem. Returns, if required, shall have a heat sealed corner and can be attached to headboard with staples. Headboard shall be attached to lip on bracket plate using #8 x 0.5" stainless steel pan head screws for both single and dual shades.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared
B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPERATION

- A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

- A. Install roller shades level, plumb, square, and true according to manufacturer's written instructions, and located so shade band is not closer than 0.75" to interior face of glass. Allow proper clearances for window operation hardware.
B. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.
C. Clean roller shade surfaces after installation, according to manufacturer's written instructions.
D. Engage Installer to train Owner's maintenance personnel to adjust, operate and maintain roller shade systems.

3.04 PROTECTION

- A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 12 40 00 – FURNISHINGS AND ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

- A. From National Account Vendor, provide manufactured cabinets and casework in sizes, configuration, and arrangements shown on the Drawings.
- B. From National Account Vendor, provide solid surface countertops & window stools and half wall caps. Provide shelving in sizes, configuration, and arrangements shown on the Drawings.
- C. National Account Vendor: Advanced Cabinet Systems (ACS), 1620 S. Joaquin Drive Marion IN 46953, Ph. (765)-677-8000. Contact: Phil Bowers estimating@advancedcabinetsystems.com

1.02 SUBMITTALS

- A. Manufacturer: Submit both a published catalog with specifications and construction details [updated within previous 12 months] and a REVIT Families catalog.
- B. Shop Drawings: Indicate dimensions, description of materials and finishes, general construction, specific modifications, component connections, anchorage methods, hardware, and installation procedures, plus the following specific requirements.
 - 1. Include section drawings of typical and special casework, work surfaces and accessories.
 - 2. Include Advanced Cabinet Systems (ACS) catalog numbers and specifications.
 - 3. Construction Project Manager to compare casework submittal drawings to Owner provided Prototype Shop Drawing set produced by Advanced Cabinet Systems, to ensure consistency and accuracy.
 - 4. Owner and Construction Project Manager must approve all items prior to fabrication and delivery.
- C. LEED Submittals:
 - 1. Provide FSC certification and audit documentation of most recent facility audit.
 - 2. Provide certificate for Credit MR 7 for products that apply to the chain-of-custody program certifying that the core material used complies with FSC requirements.

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3. Provide certificate from GREENGUARD Environmental Institute certifying that materials used are in compliance with the Indoor Air Quality Certification Program.

1.03 QUALITY ASSURANCE

- A. Manufacturer: Minimum of 5 years' experience in providing manufactured casework systems for similar types of projects, produce evidence of financial stability, bonding capacity, and adequate facilities and personnel required to perform on this project.
- B. Manufacturer: Certified for chain of custody by a third-party certification group approved by FSC. Audit by third party certification group must have been completed within previous 12 months.
- C. Manufacturer: Provide products certified as meeting or exceeding Architectural Woodwork Standards (AWI) – 2nd Edition, October 1, 2014, Appendix A, Casework Integrity Standards.
- D. Manufacturer: Provide letter from AWI that manufacturer provides casework construction meeting Premium Grade from AWI Certification Program.
- E. Cabinet Standard: ANSI/AWI 0641-2019

PART 2 - PRODUCTS

2.01 NATIONAL ACCOUNT VENDOR

- A. Cabinets, casework, solid surface countertops, window stools, shelving, solid surface wall caps, and solid surface countertops with integral sink bowls described in these Specifications shall be obtained from Goddard System Inc.'s National Account Program from:
 1. Advanced Cabinet Systems (ACS), 1629 S. Joaquin Drive, Marion, IN, 46953

2.02 MANUFACTURER

- A. Products, drawings, and specifications for fixed casework, countertops, window stools, and accessories are based on standards of design and construction set by **Advanced Cabinet Systems (ACS)**
 1. Products of other manufacturers will be considered for acceptance provided they equal or exceed the material requirements and functional qualities of the specified product. Manufacturers must submit the following items to GSI at least 14 days prior to bid due date to be considered for approval:

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- a. Published catalog with specifications and construction details [updated within previous 12 months] fully describing the proposed product.
- b. List of at least ten projects of similar size, material, design, and extent to that indicated for this project; whose work has resulted in casework installations with a record of successful in-service performance, including names and phone numbers of Architect and Owner.
- c. Sample cabinet along with sample of shop drawings produced for similar project

2.03 MATERIALS

A. Core Materials:

- 1. NAUF/FSC Particleboard up to 7/8" thick: Industrial Grade average 47-pound density particleboard, ANSI A 208.1-1999, M-3. Casework core to be manufactured without the use of urea formaldehyde.
- 2. NAUF/FSC Particleboard 1" thick and thicker: Industrial Grade average 45-pound density particle-board, ANSI A 208.1-1999, M-2.
- 3. MR Moisture Resistant Particleboard: Average 47-pound density particleboard, ANSI A208.1 1-1999, M-3.
- 4. FSC M-3 Particleboard – Chain-of-Custody documentation must be provided.

Commented [PB1]: Combined item 6.

Commented [PB2]: Material not used.

B. Decorative Laminates & Melamine: GREENGUARD Indoor Air Quality Certified.

- 1. High-pressure decorative laminate VGS (.028), NEMA Test LD 3-2005.
- 2. High-pressure decorative laminate HGS (.048), NEMA Test LD 3-2005.
- 3. High-pressure cabinet liner CLS (.020), NEMA Test LD 3-2005.
- 4. High-pressure backer BKH (.048), (.039), (.028), NEMA Test LD3-2005.
- 5. Thermally fused melamine laminate, NEMA Test LD 3-2005, color matched with White.
- 6. Chemical resistant decorative laminate HGP (390), NEMA Test 390-60.

Commented [PB3]: Redundant from above

Commented [PB4]: Not used.

C. Laminate Color Selection: Maximum 1 color per unit face and 1 color per project. Colors are to be selected from standard Wilsonart or Formica color selections.

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D. Edging Materials:

1. 3mm PVC banding, machine applied and machine profiled to 1/8" radius on doors and drawer fronts.
2. .018 PVC banding, machine applied on cabinet body

2.04 CABINET HARDWARE

A. Hinges:

1. Concealed 120° Opening Radius, Snap-On, 35mm "European" style hinges, fitted with two 8mm Nylon insert dowels to increase the screw holding rating and added attachment strength. Hinge shall meet the requirements of ANSI/BHMA A156.9-2003.
 - a. Hinge shall be fully adjustable +/- 2mm for side depth and height.
 - b. Doors up to 35 1/2" or 20 pounds shall receive 2 hinges. Doors up to 63" or 40 pounds shall receive 3 hinges. Doors up to 78 3/4" or 60 pounds shall receive 4 hinges. Doors up to 94 1/2" shall receive 5 hinges.
 - c. Winged base plates attached with 5x13mm Euro screws and 2 #6-woodscrews.

B. Pulls:

1. Door and drawer front pulls are standard wire design, satin nickel finish, 96mm.
2. Pull design shall comply with the Americans with Disability Act (ADA).

C. Drawer Slides: Shall meet the requirements of ANSI/BHMA A156.9-2003 for specific grades and minimum requirements.

1. Regular and Knee Space:
 - a. Steel slides with ball bearing nylon rollers.
 - b. Load rated at 100 pounds.
2. File:
 - a. A metal integrated drawer side with built in slides fitted with 8mm dowelled system incorporating built-in drawer front adjustment and bumpers.

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b. Additionally, equipped with three part, full extension slides

D. Adjustable Shelf Supports:

1. Adjustable on 32mm centers.
2. Double pin, clear, locking shelf support. Constructed of injection molded polycarbonate resin with screw slot and integral snap latch to prevent shelf uplift of $\frac{3}{4}$ " of 1" thick shelving.
3. Able to withstand load levels of 300 pounds per support without failure.

E. Locks:

1. No locks on cabinets required

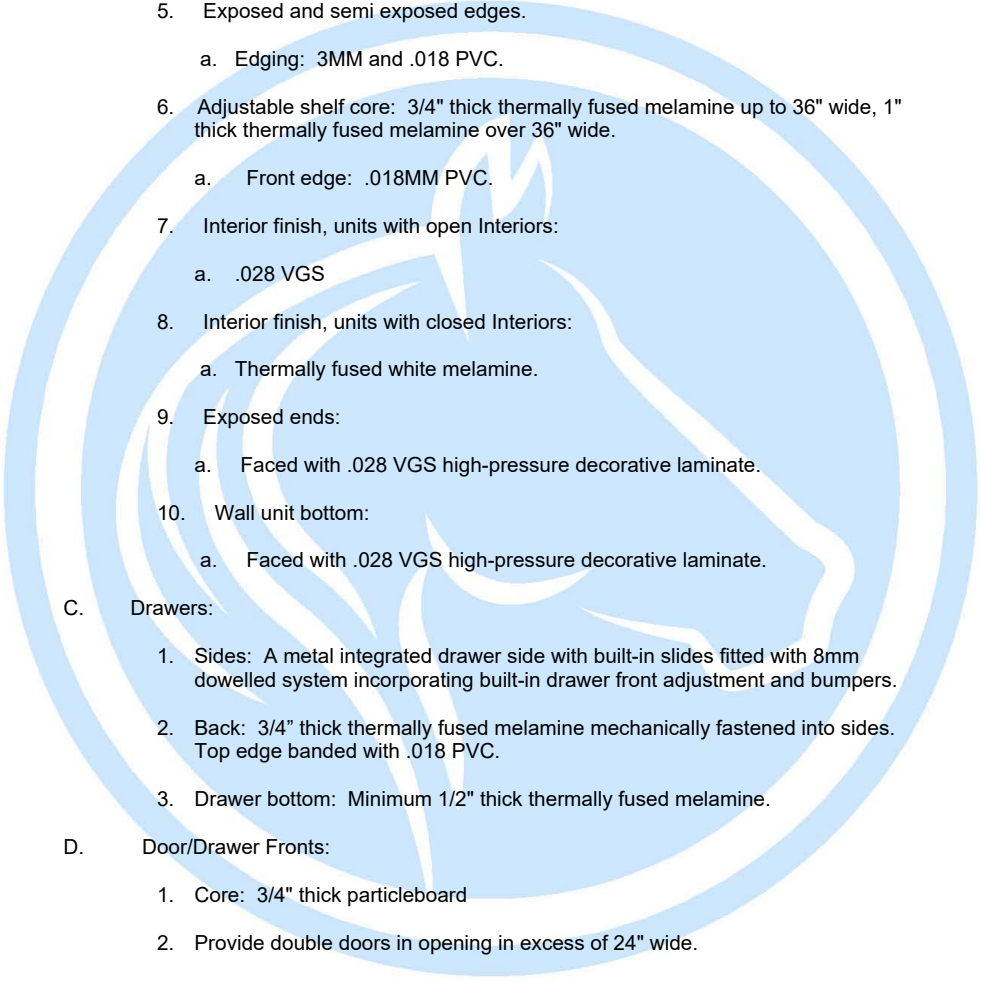
2.05 FABRICATION:

A. Fabricate casework, countertops and related products to dimensions, profiles, and details shown.

B. Cabinet Body Construction:

1. Tops and bottoms are doweled to cabinet sides and internal cabinet components such as fixed horizontals, rails and verticals. Minimum 8 dowels each joint for 24" deep cabinets and a minimum of 4 dowels each joint for 12" deep cabinets.
 - a. Tops, bottoms and sides of all cabinets are particleboard core.
 - b. Cabinet backs: 1/2" thick M-2 particleboard recessed into the cabinet top, bottom, and side panels with nailers doweled in to the top, bottom, and side panels. Finish to match cabinet interior.
 - c. Exposed back on fixed or movable cabinets: 3/4" thick thermally fused melamine with the exterior surface finished in VGS laminate as selected.
2. Fixed toe kick to have ladder type base construction consisting of continuous front and back with intermediate cross bracing.
 - a. Toe kick base to be 96mm (nominal 4") high unless otherwise indicated on the drawings.
 - b. Toe kick base to be laminated (black) by casework manufacturer on fronts and exposed sides of floor-mounted casework. Vinyl base molding will not be permitted.
3. Base units, except sink base units: Full sub-top. Sink base units are provided with open top and a stretcher at the front, dowelled to the sides.

Commented [PB5]: You'll want to check your flooring specs here to make sure you don't get double covered on the toe base. It is not too common for the casework manufacturer to finish the toe kicks so the GCs will need to watch out for this. If the manufacturer does not carefully read the specs, it could be missed.

- 
4. Side panels and vertical dividers shall receive adjustable shelf hardware at 32mm line boring centers. Mount door hinges, drawer slides and pull-out shelves in machined holes for consistent alignment.
 5. Exposed and semi exposed edges.
 - a. Edging: 3MM and .018 PVC.
 6. Adjustable shelf core: 3/4" thick thermally fused melamine up to 36" wide, 1" thick thermally fused melamine over 36" wide.
 - a. Front edge: .018MM PVC.
 7. Interior finish, units with open Interiors:
 - a. .028 VGS
 8. Interior finish, units with closed Interiors:
 - a. Thermally fused white melamine.
 9. Exposed ends:
 - a. Faced with .028 VGS high-pressure decorative laminate.
 10. Wall unit bottom:
 - a. Faced with .028 VGS high-pressure decorative laminate.
- C. Drawers:
1. Sides: A metal integrated drawer side with built-in slides fitted with 8mm dowelled system incorporating built-in drawer front adjustment and bumpers.
 2. Back: 3/4" thick thermally fused melamine mechanically fastened into sides. Top edge banded with .018 PVC.
 3. Drawer bottom: Minimum 1/2" thick thermally fused melamine.
- D. Door/Drawer Fronts:
1. Core: 3/4" thick particleboard
 2. Provide double doors in opening in excess of 24" wide.
 3. Faces:
 - a. Exterior: .028 VGS High-pressure decorative laminate.

- b. Interior: .028 VGS white laminate.
 - 4. Door/drawer edges: 3mm PVC, external edges and outside corners machine profiled to 1/8" radius.
- E. Closet Shelving:
- 1. Core material: 3/4" white thermally fused melamine.
 - 2. Edges: .3MM PVC, front edge
 - 3. Shelf Standards: Reeve #41-6 or equal
 - 4. Shelf Brackets: Reeve #40 or equal

2.06 SOLID SURFACE COUNTERTOPS AND WALL CAPS:

- A. Solid surface material: Homogeneous solid sheets of filled plastic resin complying with ISSFA-2. Product by Dupont Corian, color group "A" or "B" matte finish, only light color selections will be accepted.
- 1. Sinks: Integral sink bowl model # 810 P to be manufactured by Dupont Corian (16 1/2"x13"x5 1/2") and to be supplied by casework manufacturer at diaper changing stations only. Kitchen sinks by others.
 - 2. Solid surface tops to be 1/2" thick, solid surfacing material with front edge built up 1 1/2" with same material.
 - 3. Provide front and end overhang of 1" over base cabinets.
 - 4. Provide 4" high backsplashes and end splashes, 1/2" thick, slightly eased, where shown and at all ends abutting walls and adjacent cabinets.
 - 5. Front Edges of countertops to have full 1 1/2", 180° bullnose.
 - 6. Exposed ends of countertops to have 2" radius bullnose corners.

2.07 SOLID SURFACE WINDOW STOOLS:

- A. Solid surface material: Homogeneous solid sheets of filled plastic resin complying with ISSFA-2. Product by Dupont Corian, color group "A" or "B" matte finish, only light color selections will be accepted.
- 1. Solid surface stools to be 1/2" thick, solid surfacing material with front edge built up 1" with same material.
 - 2. Provide front and end overhang of 1" overhang with notched ends.
 - 3. Front Edges of sills to have full 1", 180° bullnose.

Commented [PB6]: I created a new section to specifically call out the window sills

4. Exposed ends of stools to have radius bullnose corners.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.
- B. Anchor securely in place; coordinate with countertop installation. Provide solid wood blocking at all base and wall cabinet fastenings.
- C. Adjust hinges and drawer fronts for uniformed gaps.
- D. Restore damaged finishes and test for proper operation. Clean and protect work from damage.

END OF SECTION

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SECTION 21 13 00 – FIRE SUPPRESSION SPRINKLER SYSTEM

PART 1 - GENERAL

1.01 SUMMARY

- A. Automatic Fire Suppression System for entire building area including all attic spaces and attic extensions, dormers, canopy, and other concealed spaces.
- B. Controls, Pipes, Fitting, Hangers, Valves, Controllers, Signals and Sensors, and Miscellaneous equipment and components for a complete fire suppression system.

1.02 SUBMITTALS

- A. Prepare a complete set of fire protection documents, signed and stamped by a Certified Fire Protection Engineer and Sprinkler Designer, licensed to practice in the State of Texas. Such drawings shall include all design criterion, hydraulic calculations, sprinkler equipment specifications, and a key plan showing sprinkler system layout in all areas of the Building.
- B. Submit documents to all authorities having jurisdiction of the sprinkler system design. Also submit to Architect-of-Record two (2) copies of complete automatic sprinkler system, prepared by a Certified Fire Protection Engineer and Sprinkler Designer licensed to practice in Texas and stamped with his professional seal and signature.
- C. Submit a copy of all test results, after installation, to Franchisee, and authorities having jurisdiction.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Arrangement and details of automatic sprinkler systems are not indicated on these Drawings. Drawings, certification, and filing with authorities having jurisdiction shall be the responsibility of a Certified Fire Protection Engineer and Sprinkler Designer.
- C. Provide and install complete sprinkler coverage per NFPA 13, and requirements of state and local fire officials.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Provide and install complete sprinkler coverage per NFPA 13, and requirements of state and local fire officials.
- B. Pipe and fittings: Schedule 40 steel with threaded ends meeting NFPA requirements, or acceptable materials complying with local, state, and national standards, and NFPA 13.

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SECTION 21 13 00 – FIRE SUPPRESSION SPRINKLER SYSTEM

- C. Valves: Bronze construction; 2" and smaller with bronze bodies and bonnets with screwed ends; 2-1/2" and larger flanged. Fire valves by Grinnell, Nibco or approved equal.
- D. Sprinkler heads: Style as approved by Grinnell, Star, Firematic or approved equal. Sprinkler heads in the multi-purpose rooms or gyms must be protected with covers or be recessed.
- E. Fire department connection: Free-standing polished brass by Viking, Grinnell or approved equal. Provide threads which comply with local fire department regulations.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install all systems for proper operation in accordance with NFPA 13, 14, 20 and 24. Clean and protect work from damage.
- B. Instruct Goddard School personnel in proper operation, maintenance, and reporting requirements of fire detection and protection systems.

3.02 TESTING

- A. Testing described below is a prerequisite to project completion and issuance of Certificate of Occupancy.
- B. Provide testing, certification, and written results of fire extinguishing systems per NFPA 13, current edition. Provide a copy of all testing and certification documents to the Franchisee. Subsequent annual sprinkler system testing and filing of results to be by Franchisee after initial Occupancy.

END OF SECTION

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FIRE SUPPRESSION SPRINKLER
SYSTEM

SECTION 22 00 00 – PLUMBING

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide plumbing systems including supply, waste and vent systems for:
 - 1. Toilets
 - 2. Kitchen Sinks, Lavatories, and Handwash Sinks.
 - 3. Water heaters.
 - 4. Condensate drains for HVAC equipment.
 - 5. Hot water recirculation
 - 6. Temperature limiting controls
 - 7. Floor drains.
 - 8. Service sinks.
 - 9. Floor clean outs.
 - 10. Access panels.
 - 11. Grease Separator
 - 12. Hose bibs
 - 13. Miscellaneous plumbing components, accessories, equipment

- B. Coordinate location of plumbing systems to avoid interference with location of structure and other building systems. Notify Architect prior to construction of conflicts which cannot be resolved.

- C. Coordinate with the electrical contractor, the wiring, power, control, protection, and circuiting of all mechanical equipment, including but not limited to pumps, valves, motors, sensors, temperature controllers, furnaces, air handlers, air conditioning condensers, exhaust fans, resistance heating equipment, outside air dampers, signaling and control equipment, and other mechanical equipment, whether low-voltage or high-voltage for a complete HVAC and plumbing system, shown anywhere in these Drawings or described anywhere in these Specifications. Size wiring and circuits in accordance with codes.

1.02 SUBMITTALS

- A. Submit for approval shop drawings, product data, fixture cuts, schematics and flow diagrams, record documents.

1.03 QUALITY ASSURANCE

- A. Comply with International Fuel Gas Code, International Plumbing Code and the local utility rules and regulations, and other codes and regulations of local jurisdictions and public utilities.

- B. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

SECTION 22 00 00 – PLUMBING

- C. Arrangement of systems indicated on the drawings is diagrammatic and indicates the minimum requirements for plumbing work. Site conditions shall determine the actual arrangement of runs, bends, offsets, and similar items. Take field measurements before fabrication. Be responsible for accuracy of dimensions and layout. Overhead piping shall be laid out to obtain maximum headroom. No mechanical joints shall be in a concealed area.

PART 2 - PRODUCTS

2.01 NATIONAL ACCOUNT VENDOR

- A. Plumbing components and fixtures described in these Specifications shall be obtained from Goddard System Inc. National Account Program with:
1. Ferguson Enterprises
Division of Wolseley Company
12500 Jefferson Avenue
Newport News, Virginia 23602
Contact: National Accounts Sales & Service Team
Phone: 844-868-8060
Email: NA.Projects@ferguson.com
Website: www.ferguson.com

2.02 MATERIALS

- A. Provide plumbing systems components and all required accessories including shut-offs and clean-outs. Provide components which prevent back-siphonage or cross-connections.
- B. Sanitary, waste and vent piping, including furnace and water heater venting systems: Schedule 40, PVC.
- C. Hot and cold water piping: Copper only. Type K annealed for underslab use, and Type L seamless hard drawn for above slab use. Use brazed joints only for underslab fittings. Use ASTM B32, Grade 95TA joints, for fittings. Slope all piping to drain toward drainoff cocks. All dissimilar metal fittings to be isolated with approved dielectric fittings. All joint solder and brazing material shall be 100% lead free.
- D. Hangers: For cast iron, provide heavy wrought iron pipe hangers, brackets or clamps at 5' intervals. Fasten with lag screw or with expansion shields as applicable. For copper water piping, provide adjustable wrought iron copper plated hangers at 6' intervals maximum. Provide hangers to allow for full thickness of insulation. Do not use dissimilar metal hangers.
- E. Sleeves and escutcheons: Galvanized wrought iron. Where uncovered pipes pass through finished areas, provide heavy chromed escutcheons.
- F. Covering and insulation (no hot water recirculation system): For all hot and cold water piping provide minimum 1/2" flexible foamed tubing by Owens Corning or Armstrong

SECTION 22 00 00 – PLUMBING

1/2" Armaflex or approved equal. Seal joints vapor tight. Insulate valves and fittings including water service piping with equal thickness of pipe insulation. Provide 18 gauge protection saddles between insulation and pipe hangers. Comply with fire regulations.

- G. Covering and insulation (hot water recirculation system): For all hot, recirculating and cold water piping provide minimum 1" flexible foamed tubing by Owens Corning or Armstrong 1" Armaflex or approved equal. Seal joints vapor tight. Insulate valves and fittings including water service piping with equal thickness of pipe insulation. Provide 18 gauge protection saddles between insulation and pipe hangers. Comply with fire regulations.
- H. Drain, Trap, and Water Line Protective Insulation: For all lavatories with drains, traps, and water lines exposed to contact, provide approved molded vinyl, antimicrobial, impact resistant, hard-shell insulation covering entire drain, including trap and tailpiece, water supply lines, stops, and connectors. Proflo PF200 Series trap and supply covers.
- I. Valves and shut-offs: Full size bronze ball valves for hot and cold water branches. Provide drainage valves. Provide units by FNW, Hammond, Jenkins, Nibco or approved equal.
- J. **HB-1** - Frost-proof Hose Bibb: installed where indicated on the plans. Anti-siphon non-freeze recessed wall hydrant, removable key handle, cast polished brass face, with vacuum breaker. Manufactured by Woodford Model No. B67 commercial wall hydrant. Mount hose bibs 18 inches from spout to finished grade.
- K. **FD-1** - Floor Drain: Cast iron floor drain with polished nickel-bronze top, adjustable strainer with flashing clamp device by Zurn, Model ZN-415-5B. Verify need for trap primers with local requirements.
- FS-1** - Floor Sink: Cast iron floor sink with acid-resistant porcelain finish, no hub connection, aluminum dome strainer and half-grate top, by Proflo, Model PF906M. Verify need for trap primers with local requirements.
- WB-1** – Washer/Dryer Wall Box: Metal washing machine outlet box with recessed hot and cold water supply valves and waste drain - ¼ turn brass hammer ball valves, copper sweat, 2" rubber tailpiece. Oatey, Model 38995.
- L. FCO or **WCO** - Cleanout: (Interior) Cast-iron floor or wall cleanout, with clean-out plug and adjustable round top. Units by Zurn No. Z-1400.
- M. **SA** - Shock absorbers: Installed at each cold water supply line at each water closet and additionally as otherwise required by International Plumbing Code, or local jurisdiction; Shock absorber to consist of pre-fabricated units by FNW, SC Series 500 through 2000.
- MV** – Lead-free domestic water mixing valve self-contained thermostatic type including hot water temperature limit, integral check valves, strainer screen by Zurn

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Wilkins Model No. ZW3870XLT. Mixing valve shall be approved by or acceptable to the State Health Department. Provide mixing valve on L-1 and L-2 faucets.

1. Mixing valve total flow rate: 3.10 gpm @ 45 psi
2. Minimum flow rate: 0.5 gpm
3. Minimum Inlet: 3/8" ø
4. Minimum Outlet: 3/8" ø

- O. **GWH-1** – Gas Water Heating System: Commercial-Grade, 100 gallon, gas-fired, 3-year tank warranty, solid state temperature and ignition control with LED fault display and settings display. AO Smith Commercial Gas water heater, Model No. ABTH 15000N Cyclone Xi or equal. Provide approved Schedule 40 PVC ventilation piping not less than 3 inches in diameter, and terminating through the roof with a concentric PVC flue vent & intake assembly.
1. Input: 150,000 btu/hr
 2. Thermal Efficiency: 95%
 3. Recovery: 173 gph @ 100 degree F rise
 4. Temperature: 140°F maximum setpoint
 5. Pressure: 160 psi maximum hydrostatic working pressure
 5. Water heaters shall be equipped with pressure and temperature relief protection. The drain line from the temperature and pressure relief valve shall be galvanized pipe or hard drawn copper. This line will drain into an approved receptor in a manner constituting an indirect waste. Dielectric unions will be used throughout to connect copper water lines to the water heater. No valve or other device which may interfere with flow, shall be installed between any relief valve and the tank (or heater) which the relief valve serves.
 6. Circulation pump, fittings, valves, check valves, flow valves, expansion tanks, sensors, temperature controls, and any and all components necessary to provide a complete hot water recirculation system providing instant hot water at temperatures noted in local Day Care Regulations at all hot water outlets throughout the building, except as noted below.
 7. Provide to janitor's mop sink, kitchen sinks, kitchen handwash sink, and kitchenette sink. Provide temperature at non-tempered faucets to be 120 degrees F maximum temperature. Confirm with local health department for requirements.
 8. Water heater equipment, materials, design and installation shall meet the requirements of the National Standard Plumbing Code (NSPC 2000); and ASHRAE Standard 90.1b-1992,
 9. Water heater shall be design certified by the CSA for the following criteria:
 - a. Operation at 160°
 - b. Safety and construction requirements of ANSI Z21.10.3.
 - c. Automatic storage or instantaneous water heater.
 - d. Automatic circulating tank water heater.
 - e. For operation on combustible floors and in alcove installations.
 - f. Certified for 150 PSI maximum working pressure
- P. Access panels: Metal units with locks by Karp, Milcor, Nystrom or approved equal. Configuration and trim as required by finish wall surface.

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- Q. Gas Piping: Black steel piping or other approved piping system. System components, piping, and installation shall comply with International Fuel Gas Code, International Plumbing Code and local utility

2.02 FIXTURE SCHEDULE

- A. Water closets and accessories: White, floor-mounted, vitreous china water closet, by ProFlo. Water closet flushometers by Sloan or approved equal. White open-front toilet seats with encased stainless steel hinges by Proflo. Orient flush valve handles to open side of stalls per ADA.

1. **WC-1** - Juvenile Water Closet – ProFlo Model PF1700BBHEWH round front, 10" bowl height, 12" height to top of seat, 10" rough-in. 18" finish offset from closest wall to centerline. Proflo # PFTSBB1000 seat; Sloan Regal Model 111XL (1.6 gpf) flushometer. Provide 1.28 gpf model where required by authority having jurisdiction.
2. **WC-2** - Adult Water Closet – ProFlo Model PF1721WH Elongated front bowl, 14-1/8" bowl height, 15" height to top of seat, 10" rough-in. 18" finish offset from closest wall to centerline. Proflo PFTSCOF2000 open front seat with self-sustaining check hinge; Sloan Regal Model 111XL (1.6 gpf) flushometer. Provide 1.28 gpf model where required by authority having jurisdiction.
3. **WC-3** – Handicapped Water Closet – ProFlo Model PF1723WH Elongated front bowl, 16-1/8" bowl height, 17-18" height to top of seat, 10" rough-in. 18" finish offset from closest wall to centerline. Proflo PFTSCOF2000WH open front seat with self-sustaining check hinge; Sloan Regal Model 111XL (1.6 gpf) flushometer. Provide 1.28 gpf model where required by authority having jurisdiction.

- B. Lavatories and accessories: White vitreous china lavatories with 4" faucet centers by ProFlo. Proflo gooseneck spout faucet with wrist blade control handles, grid strainer, tail piece and accessories. Provide sink trap and hot water line insulation per ADA requirements.

1. **L-1** – Wall-hung Lavatory – ProFlo Model No. PF5514WH 20" x 18" nominal sink dimensions; mount with wall hanger. Sink trap insulation per ADA. Provide Proflo Model No. PFWSC1390CP chrome faucet with blade handles.
2. **L-2** – Countertop with Integral sink – see millwork. PFWSC1390CP chrome faucet with blade handles.

NOTE: Provide PFWSC19905CP when .5GPM is required

- C. Stainless steel sinks and Countertops: Self-rimming, stainless steel sinks with 4" faucet centers, 3-1/2" drain openings, and all stainless-steel rotary lever operated drain fittings with grid strainer by Elkay. Proflo gooseneck faucet with lever control handles, removable strainer/stopper, and accessories. All components in these sinks, including strainer, tailpiece, drains, etc. shall be Type 302 stainless steel.

1. **SS-1** - Single-basin SS sink – Elkay Model No. DLR2222103 Lustertone 18 gauge, Type 302, 3-hole, self-rimming, 22"x22"x 10" depth nominal sink dimensions, with regular basket strainers. Provide Proflo Model No. PFXC6880LSCP chrome faucet with chrome lever handles.
2. **SS-2** - Double-basin SS sink – Elkay Model No. ELR-33223 Lustertone 18 gauge, Type 302, 4-hole, self-rimming, 33" x 22" x 8" depth nominal sink

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- dimensions, with regular basket strainers. Provide Proflo Model No. PFXC6880LSCP chrome faucet with chrome lever handles.
3. **SS-3** - Triple-basin SS sink – Elkay Model No. LTR-46226 Lustertone 18 gauge, Type 302, two (2) 3-hole sets, self-rimming, 46" x 22" x 7-1/2" depth nominal sink dimensions, with regular basket strainers Provide two (2) sets of Proflo Model No. PFXC6880LSCP chrome faucet with chrome lever handles.
 4. **SS-3a** – Free Standing Triple-basin SS sink – Size per state or local health department requirements. Include Elkay Model No. ELK24RT rotary lever operation drain outlet fittings. Provide Elkay Model No. LK943C wall mount faucet, flex hose w/ spray head (Chicago Model No. 510GXXCAB as alternate)
- D. **MS** - Floor-mounted Mop Sink - 36 inches by 24 inches by 10 inches deep, rectangular molded high-density composite mop basin with integral molded self-draining mop shelf; stainless steel dome strainer and lint basket. ProFlo Model PFMB3625S. Provide service sink faucet by Proflo Model No. PF1119 polished chrome with vacuum breaker
1. Mount faucet at 36 inches above floor, centered above mop sink long dimension. Provide solid blocking for faucet and diagonal brace mounting.
 2. Mount vacuum breaker at 90 inches above floor.
 3. Coordinate location of mop holder rack, Proflo # PF245 to permit mops to hang above self-draining mop shelf.
 4. Set mop sink in full adhesive slurry bedding and provide continuous edge sealing flange on 3 sides.
- E. **EWC-1** - Main Corridor Bilevel Electric Water Cooler with Sensor Operated Bottle Filler: wall-mounted, hi-low style, ANSI/NSF 61 compliant, barrier-free 8 g.p.h. electric water coolers, each with front and side push bars. Model LZSTL8WSLP by Elkay Manufacturing. Mounting height to spouts as shown on drawings. Provide with gray water cooler accessory apron by Elkay Model No. ELKAPREZL.
- EWC-2** - Gym / Multi-Purpose Room Single Electric Water Cooler with Sensor Operated Bottle Filler: Wall-Mounted, single fountain style, ANSI/NSF 61 compliant, barrier-free 8 g.p.h. electric water cooler, with front and side push bars. MODEL LZS8WSLP by Elkay Manufacturing. Mounting height to spouts as shown on drawings. Provide with gray water cooler accessory apron by Elkay Model No. ELKAPREZL.
- F. **WB** -.Outdoor Freeze-Resistant Water Bubbler: barrier-free outdoor unit for direct connection to cold water line. Model EEDFP-214-FPK by Elkay Manufacturing. Mount with spout at 31 inches above finished sidewalk elevation or as otherwise shown on the Drawings. Provide water supply line with shut-off valve to each bubbler inside building, above ceiling. Provide freeze proof trap by running trap drain inside foundation wall below floor slab, locating trap in heated side of exterior wall, or providing for code-approved trap drain-out. Use bubbler mounting plate by Elkay, Model EMP86.
- G. **GS** –Grease Separator: Mifab Series Lil-20 HDPE injection molded hydromechanical grease interceptor, 16 gallon liquid holding capacity, intermittent flow rate of 20 gpm, and a greasy sludge capacity of 73 lbs. and a grease capacity of 40 lbs. for 100% capacity of SS-3 fixture.

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1. Interceptor may be installed on the ground, semi recessed or flush with the floor. Separator shall intercept waste line by means of an approved indirect drain on 3-basin stainless steel sink (SS-3). Install recessed in floor and with an approved built-in flow control, cover flush with finished floor and in the location shown on Drawings.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials in proper relation with adjacent construction and with uniform appearance for exposed work. Coordinate with work of other sections. Comply with applicable regulations and building code requirements.
- B. Support piping properly. Pitch to drain points. Install with pipe expansion loops, mechanical expansion joints, and anchors.
- C. Install shutoff valves on each piece of equipment on both hot and cold water supply. Provide shutoffs in ceiling for outdoor water bubblers, 12-24 inches from exterior wall pipe drops.
- D. Insulate all above-slab water piping. Provide pipe sleeves for through-slab penetrations of all piping.
- E. Clearly label all valves and components.
- F. Trenches:
 1. Plumbing trenches under slabs shall be backfilled and compacted with granular material.
 2. Building Drain underslab plumbing trenches shall avoid stressed subgrade areas from interior concrete footings. If such conflict occurs, building drain shall be thoroughly isolated from poured concrete by being cushioned in sand of clean granular backfill to the satisfaction of the architect.
 3. Provide blockouts as needed in concrete foundations, piers, and footings to permit installation of downspout leaders. Hold all downspouts and leaders directly in contact with the face of the building.
- G. Sanitary System:
 1. Laying Pipe: Establish all flow conditions prior to commencing work in order to avoid conflicts. Verify overall system flow from fixtures to mains to eliminate unnecessary piping, and within Code limitations. Contractor will be allowed reasonable variations from the established grades and elevations of those shown on the plans in order to meet the final and exact field conditions. Place underslab building drain with a slope of 1/4" per foot.
 2. Layout of Piping: The Drawings indicate a diagrammatic layout of plumbing, including drain connections to main building drain. The flow direction, and invert elevations at building cleanouts are determined by the final site drainage and grading plans in the civil engineering drawings. The Contractor shall confirm overall site flow conditions prior to commencing work.

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3. Cleanouts: Install cleanouts as shown. Locate building end cleanouts with lowest invert closest to sanitary sewer main. Install upstream cleanout at opposite building end or as otherwise shown. Set inverts to permit a slope of not more than 1/4" per foot. Exterior cleanouts shall be located within concrete walk. See detail on Drawings.
 4. Vents: Fixtures will be vented as indicated on the drawings or as otherwise required by Codes. Vents and soil stacks will be extended through the roof at not less than 3 inches in diameter, and are to be terminated 10" above the roof and flashed with an approved flashing assembly.
 5. Grease Separator: Install a grease separator an automatic grease recovery system where shown on drawings, or as otherwise instructed by the local authority having jurisdiction. Separator shall receive indirect waste lines from the following fixtures, before joining the building drain:
 - a. SS-3 3-basin stainless steel sink, 2 faucets
 - b. Additional Fixtures as required by local health department requirements.
- H. Flush Valve Installation:
1. Install flush valves at a height or separation that does not interfere with full use of grab bars.
 2. Orient all flush valve operator handles to be located on the side opposite the grab bars (i.e. open side of stall) in accordance with ADA. When toilets have no grab bars, valve handle may be located on either side.
- I. Water System:
1. Shut Offs: An easily accessible drainable, full-flow ball valve will be provided in the water service line. A full-flow ball valve will be installed on the cold water inlet side of the hot water heater in the immediate vicinity of the heater. A full-flow ball valve will be installed above ceiling on the cold water lines supplying outside water bubblers (WB). The main water service will have a full-flow ball valve installed. Water supply lines to all fixtures (i.e. water closets, lavatories, kitchen sinks, etc.), will have stops installed immediately below the fixture.
 2. Piping: Water service pipes or any underground water pipes will not be run or laid in the same trench with building sewer or drainage piping.
 3. Water lines passing through concrete slabs are to be separated from the slab with approved sleeve insulation. This material shall also be used to separate water lines from hangers or supports where different materials or dissimilar metals are used, or to prevent vibration damage and sound deadening.
 4. Provide hot water recirculation to all sinks and lavatories shown on the recirculation loop. Hot water loop shall be equipped with a temperature limiting device setting for water temperature at any point of use to be not less than 100 degrees F and not more than 105 degrees F.
 5. Provide direct hot water to 2 and 3 basin kitchen sinks, kitchenette sink and janitor's mop sink. Do not recirculate hot water or run through temperature limiting device. Set hot water use temperature for these fixtures to not less than 120 degrees F.
 6. Sterilize water distribution system. Flush and test all systems for proper operation. Purge all domestic water piping of deleterious matter and disinfect in accordance with International Plumbing Code and local requirements.
 7. Insulate all water lines above slab inside building.

SECTION 22 00 00 – PLUMBING

8. Adjust, improve, support, or otherwise modify system as required to prevent water hammer, pipe vibration, or other plumbing-borne noise or vibration.
 9. Locate shock absorbers in water piping system at each water closet; and additional areas in accordance with International Plumbing Code and local requirements
- J. HVAC Condensate Drain System:
1. Each attic air handler shall be provided with a separate condensate drain with a direct connection to a P-trap. Condensate drains shall not be combined into a single condensate drain without resizing the drain, and providing a dedicated and properly sized P-trap drain in a concealed location. Drawings show each condensate draining into a fixture P-trap. Any changes in this design must be submitted by a licensed mechanical engineer, retained by the Contractor, and subject to approval by the Architect.
 2. Provide freeze protection on all condensate lines, pans, traps, etc. in attics
 3. Contractor shall provide and install a separate galvanized steel safe pan beneath each air handler. Plastic safe pans are not permitted in Goddard Schools..
- K. Hangers or Supports: Conform to requirements of local plumbing code.
- L. Escutcheons: Chrome plated required where pipes pass through wall or floor. Chrome plated ring for water closet and lavatories.
- M. Exposed Fixture Piping and Fittings: Exposed piping and fittings for all lavatories, water closets, and handicapped kitchen sinks, are to be chrome or satin finish. The stops, supplies and P-traps on outdoor water fountains will be not less than 17 gauge and are to be equipped with a clean out on the bottom of the trap
- N. Provide approved hard-shell insulation on all plumbing drains and traps, all hot and cold water lines, stops and all exposed plumbing items beneath wall mounted lavatories. Install insulation in a neatly with tight seams, and fully supported to prevent sagging, dislodging, or tampering. Submit for review, catalog cuts or samples of drain insulation products.
- O. Gas Piping: All gas piping materials, methods, and installations shall comply with the International Fuel Gas Code and the local utility regulations
1. Installation, inspections, and purging of gas piping installations shall comply with the International Fuel Gas Code and the local utility regulations
- P. Tests: Contractor is to provide testing in accordance with the International Fuel Gas Code and the local utility regulations.
- Q. Restore damaged finishes. Clean and protect work from damage.
- R. Instruct Owner's personnel in proper operation of systems.

END OF SECTION

SECTION 23 00 00 - HEATING, VENTILATION & AIR CONDITIONING

PART 1 - GENERAL

1.01 DESCRIPTION OF THE WORK:

- A. Heating, Ventilating, and Air Conditioning work includes, but is not limited to the following areas:
1. heating equipment
 2. ductwork and insulation
 3. diffuser
 4. air conditioning equipment
 5. exhaust fans
 6. dampers, flues, vents
 7. thermostats
 8. testing and balancing
 9. filters
- B. Coordinate with the Electrical Contractor, (EC) the wiring, power, control, protection, and circuiting of all mechanical equipment , including but not limited to pumps, valves, motors, sensors, temperature controllers, furnaces, air handlers, air conditioning condensers, exhaust fans, resistance heating equipment, outside air dampers, signaling and control equipment, and other mechanical equipment, whether low-voltage or high-voltage for a complete HVAC and plumbing system, shown anywhere in these Drawings or described anywhere in these Specifications. Size wiring and circuits in accordance with codes.

1.02 QUALITY ASSURANCE:

- A. Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified.
1. Codes and Standards: Comply with adopted editions of the International Mechanical Code (IMC), International Energy Conservation Code (IECC), NFPA #90A and #90B, International Fuel Gas Code (IFGC), and the rules and regulations of the applicable Utility Companies.
- B. Coordinate location of ductwork to avoid interference with location of designated lighting fixture locations. Notify Architect prior to construction of conflicts which cannot be resolved.

1.03 STANDARDS AND COMPLIANCE:

- A. Thermal performance of interior building envelope shall meet the guidelines established by ASHRAE.
- B. Clearances around mechanical equipment shall be in accordance with International Mechanical Code (IMC) current edition and local Amendments to IMC.
- C. Refrigerant piping shall conform to International Mechanical Code (IMC) current edition and local Amendments to IMC.

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- D. Refrigerant gases shall conform to International Mechanical Code (IMC) current edition and local Amendments to IMC.
- E. Refrigerant design, installation and testing shall conform to International Mechanical Code (IMC) current edition and local Amendments to IMC.
- F. Refrigerant standards shall conform to International Mechanical Code (IMC) current edition and local Amendments to IMC.
- G. Combustion air supply, methods and control shall comply with International Mechanical Code (IMC) current edition and local Amendments to IMC.
- H. Installation, design, clearances and protection of all furnace and water heater flue vents shall comply with the International Mechanical Code (IMC) current edition and local Amendments to IMC and all Manufacturer's Recommendations
- I. Outdoor air quantity, control and clearances from surrounding vents and stacks shall comply with International Mechanical Code (IMC) current edition and local Amendments to IMC. Ventilation air shall be balanced in accordance with these Specifications
- J. Ventilation air shall be balanced in accordance with these specifications
- K. Toilet exhaust quantities shall meet or exceed 70 cfm per water closet or as required by local Amendments to IMC.
- L. All duct construction shall conform to the requirements of the International Mechanical Code and local Amendments to IMC.
- M. All duct insulation shall conform to the requirements of International Mechanical Code (IMC) current edition and local Amendments to IMC for flame spread, smoke development, and thermal resistance values.

1.04 COORDINATION WITH DRAWINGS:

- A. Drawings represent a schematic layout of ducts and diffusers to achieve an approximation of the performance intended for the geographic area. Some adjustment in duct distribution, diffuser location, plenum size changes and other modifications are acceptable when supported with submittals showing design data, cfm ratings, and other information supporting the design intents..

1.05 SUBMITTALS:

- A. Submit for approval shop drawings, product data, fixture and equipment catalog cuts.

1.06 ENERGY CONSERVATION REQUIREMENTS:

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- A. General: All equipment shall conform to the requirements of the International Mechanical Code (IMC) and International Energy Conservation Code (IECC), adopted editions.
- B. Controls: Each thermostat shall be capable of being set as follows:
 - 1 Each thermostat shall be capable of being set from 55 degrees F to 85 degrees F and shall be capable of operating the system heating and cooling in sequence. It shall be adjustable to provide a minimum temperature range of 10 degrees F between full heating and full cooling.
 - 2 Each thermostat shall be capable of being programmed on a 7-day cycle with a separate week-end setting, and temperature hold settings.
 - 3 Each thermostat should have the ability to be locked using a code.

1.07 STATEMENT OF PERFORMANCE INTENT:

- A. Heating: It is the intent of the HVAC drawings and these HVAC specifications to provide a heating system which is safe, quiet, and economical in operation and one that is complete and in compliance with all Codes in all respects and which will provide a uniform temperature of 72 degrees F at all locations 2-feet from the floor, in all habitable spaces, when the outside temperature is at the outside design temperature of Two (2) degrees F and 5,000 heating degree days Provide combustion air to fuel-burning equipment and outside air mix to all habitable spaces. Design equipment and size for outside air introduction at a rate as required by adopted code and adjusted per local regulations. All materials and equipment necessary to accomplish this intent, shall be furnished and installed by the Contractor.
 - 1. The heating system shall meet the performance requirements of International Mechanical Code (IMC) current edition
 - 2. The system shall be engineered to maintain a draft-free temperature of between 65 degrees F and 75 degrees F throughout winter months or heating season, measured at a point 36 inches above the floor.
- B. Air Conditioning: It is the intent of the HVAC drawings and HVAC specifications to provide for a cooling system which is safe, quiet and economical in operation and complete in all respects and which will provide a uniform temperature of 74 degrees F and 50% relative humidity at a dry bulb temperature of 91 degrees F and a wet bulb temperature of 78 degrees F. and 1,200 cooling degree days Design equipment and size for outside air introduction at a rate as required by adopted code and adjusted per local regulations. Accomplishment of these intents shall be furnished and installed by the Contractor.
 - 1. The cooling system shall meet the performance requirements of International Mechanical Code (IMC) current edition
 - 2. The system shall be engineered to maintain a temperature of between 68 degrees F and 82 degrees F throughout summer months or cooling season, measured at a point 36 inches above the floor.
- C. Arrangement of systems and components indicated on the drawings is diagrammatic, and indicates the minimum requirements for mechanical work. Actual field conditions may require variations in the location, volume, and balance of equipment. Prior to installation and fabrication, the Contractor shall take field measurements including heat gain and heat loss analysis to confirm

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regional conditions and heating and cooling loads. If conflicts, obstructions, or other hindrances are encountered that would interfere with the accomplishment of these Performances, the Architect shall be advised prior to commencement of any work.

1.08 ACCESSIBILITY:

- A. All individual items of equipment and components thereof shall be completely accessible for repair, removal or replacement without functional impairment or dismantling of any adjoining surfaces or assemblies, and in accordance with Manufacturer's specifications.

PART - 2 PRODUCTS

2.01 GAS HEATING AND ELECTRIC AIR CONDITIONING EQUIPMENT

- A. Contractor shall provide and install the equipment described below with quantities and locations as shown on the Drawings.

2.02 EQUIPMENT –80% & IEER 20 EFFICIENT UNITS:

- A. Gas Heating & Electric Cooling: 80% efficient gas-fired, electronic ignition, forced air, packed DX, air conditioning, rooftop unit (RTU). Fan/blower, 230 volt/three-phase, air cooled condensing unit, minimum IEER Rating 20, with dry bulb economizer. System to be designed and sized for the code-required outside air.
- B. Manufacturer: Trane (see plans for schedules, quantities and locations)

2.04 DUCT WORK, FLUES, DAMPERS, DIFFUSERS VENTS & THERMOSTATS:

- A. All duct work above Slab: 26 gauge galvanized steel for round and enclosed rectangular ducts shall comply with SMACNA Duct Manual and Sheet Metal Construction for Ventilating and Air Conditioning Systems.
- B. Ducts installed in unheated spaces shall be insulated with a 1-1/2" ductwrap insulation, conforming to Type 1, Class 6 designation B-1, B-2, or B-3, which shall be covered with a vapor barrier, maximum permeance of 0.05 perms and all joints shall be sealed against vapor penetration. Insulation, including covering and coating, shall have a flame spread classification not to exceed 25 and a smoke development rating not to exceed 50 when tested in accordance with ASTM E-84, and shall carry a label indicating the fire hazard classification.
- C. Diffusers, Grilles: All diffusers, and grilles, shall be units with approved face and frame design, gaskets, and white baked enamel finish by Titus or approved equal.
 - 1. Supply air grilles shall be Titus TMSA or equal with integral volume damper
 - 2. Return air grilles shall be Titus 50F or equal,

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3. Linear Diffuser shall be Titus or equal with drywall flanges for flush mounting in drywall bulkhead
- D. Flexible Connections: Flexible connections shall be installed at all locations where duct work connect to air handling units. Connections shall be manufactured products designed for this application, and shall be at least 3 inches in length, and fire resistant, with UL testing label.
- E. Filters: Spun fiberglass non-permanent type and size required by furnace manufacturer. A new filter shall be installed in all units at the time of Occupancy.
- F. Thermostats: 7-day programmable thermostats with week-end settings, and temperature-hold settings. Manufactured by Honeywell, Johnson Controls, or equal. See Sequence of Operations on Drawings for thermostat function, heating and cooling modes, outside air modes, and other operations.
 1. Each thermostat should have the ability to be locked using a code.
- G. Volume Damper: provide balancing damper at each supply and return branch where shown on drawings.
- H. Outside Air: provide outside air to all habitable areas of building as required by the adopted version of the International Mechanical Code (IMC) and local Amendments to IMC current edition and related codes, rules, and regulations for commercial buildings, and as specifically required for Day Nurseries.
 1. Outside air damper Sequence of Operations are indicated on the Drawings
 2. Provide a time switch (time clock) for control of each outside air damper
 3. See drawings for sequence of operation and mechanical time switch specifications.
- I. Exhaust Fans: power ventilator consisting of centrifugal ceiling type exhaust in toilet rooms, kitchens, above diaper changing areas, and in other areas requiring ventilation. Provide ductwork directly to the outside with either wall or roof cap. Provide independent volume damper in a location where two (2) or more system merge together before discharging through roof. Design air changes to meet the mechanical code and other codes, standards, and rules. Balance system for equal exhaust ventilation. See plans for schedules, quantities and locations.

PART 3 - EXECUTION

3.01 GENERAL

- A. Coolant: System shall be charged with approved HCFC refrigerant to a pressure recommended by equipment manufacturer and to meet performance requirements of this Section. Coolant lines shall be of coolant type copper and of size required by equipment manufacturer and insulated with Armaflex or equal with a wall thickness of not less than 1/2", or as otherwise recommended by manufacturer. Repair any tears, gaps, or missing sections of refrigerant pipe insulation on all exposed lines. Protect exterior exposed coolant lines.

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- B. Cutting and Notching: All cutting, notching, and drilling shall be done within the limits set forth in Section 01045, Section 06100, or as otherwise described in this Section.
- C. Tests: Each system shall be tested to insure that the INTENT stated above has been realized. Bonnet temperature and equipment noise level shall be checked to insure proper equipment operation. Air flow at each diffuser shall be checked to insure proper and unrestricted flow of air through the duct system.
- D. Install flexible connectors between all plenum ductwork and air handlers to prevent structural-borne and duct-borne vibration and noise.
- E. Provide approved mounting frame to eliminate structural-borne and duct-borne vibration and noise. Do not mount equipment on mezzanine floor without proper vibration controlling mounting system. Mount rooftop equipment on approved mounting pads and with reinforced roof membrane pads acceptable to roofing manufacturer.
- F. Coordinate location of all thru-roof vents, stacks and other penetrations not less than ten (10) feet away from the outside air intake vents (OAL) shown on Drawings.

3.02 ROOF MOUNTED AIR CONDITIONING EQUIPMENT

- A. Locate RTUs where shown on the Drawings. Maintain spacing between separate units and between building elements to meet manufacturer's recommendations for free air clearances. Mechanical contractor shall provide an equipment layout plan as a prerequisite for installation and as part of submittals showing RTU layout, spacing, and location of electrical disconnecting switches. Approval of mechanical equipment layout is a prerequisite to commencing of such work.
 - 1. Locate electrical disconnects for each condensing unit in accordance with NEC and local regulations.
 - 2. Use approved vibration absorbing mounting pads to prevent structural-borne vibration, placed on RTU curb, mounted on treated 4" x 4" wood rails. Coordinate location of equipment with roofing subcontractor and arrange for approved roof membrane pads at appropriate locations.
 - 3. Coordinate location of pitch pockets and other roof penetrations for electrical conduit and refrigerant lines, with roofing subcontractor.
 - 4. Locate equipment at rear section of roof wherever possible to reduce visibility from ground. See Roof Plan on Drawings for layout.

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SECTION 23 00 00 - HEATING, VENTILATION & AIR CONDITIONING

3.03 AIR SYSTEM BALANCE & CERTIFICATION

- A. Perform air balance and certification of all heating, cooling, and ventilating systems with a testing laboratory certified by one of the following agencies:
 1. AABC Certified Independent Testing and Balancing Agency
 2. National Environmental Balancing Bureau Certified Independent Agency (NEBB)
- B. Adjust air handling systems to provide required or design supply, return, and exhaust air quantities. Perform this work with cooling system energized where applicable to obtain the extra resistance of wet coils.
- C. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.
- C. Measure air quantities at air inlets and outlets.
- E. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.
- F. Use volume control devices to regulate air quantities only to the extent that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices.
- G. Vary total system air quantities by adjustment of fan speeds. Provide drive changes required. Vary branch air quantities by damper regulation.
- H. Provide system schematic with required and actual air quantities recorded at each outlet or inlet.
- I. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across the fan. Make allowances for 50 percent loading of filters.
- J. Adjust outside air dampers, outside air quantities, return air, and exhaust dampers for design conditions.
- K. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.
- L. Measure building static pressure and adjust supply, return, and exhaust air systems to provide required relationship between each to maintain approximately 0.05 inches (12.5 Pa) positive static pressure near the building entries.
- M. Test Reports: Submit the following reports to Architect from Testing Laboratory, with copy to the Owner. Prepare reports to include the following minimum information:
 1. Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.

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2. Submit copies of report for review prior to final acceptance of building. Provide final copies for inclusion in Operating and Maintenance manuals.
3. Provide reports in binder manuals, complete with index page and indexing tabs, with cover identification at front and side. Include set of reduced drawings with air outlets and equipment identified to correspond with data sheets, and indicating thermostat locations.
4. Indicate data on AABC National Standards for Total System Balance forms.
 - a. Certificates: Manufacture's certificate that products meet or exceed specified requirements.
 - b. Qualification Documentation: Submit documentation of experience indicating compliance with specified qualification requirements.

3.04 CLEANING

- A. Clean duct system and force air at high velocity through duct to remove accumulated dust. To obtain sufficient air, clean half the system at a time. Protect equipment which may be harmed by excessive dirt with temporary filters, or bypass during cleaning.
- B. Install new, clean, and final air filters in all air handlers after completion of all construction and duct cleaning described above. Remove and dispose of all temporary air filters.

3.05 TRAINING

- A. The Mechanical Contractor and General Contractor shall train the Franchisee in the proper and correct operation of all HVAC equipment, including filter locations, filter types, and filter changing methods, thermostat locations, programming, and zone control, outside air damper location, theory, and operation, location of all HVAC equipment, controls, sensors and signals, and protection circuits, and recommended maintenance procedures. In addition to on-site training session, provide all instructional material in the Operations and Maintenance Manual.

END OF SECTION

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SECTION 26 00 00 - ELECTRICAL

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide electrical systems including:
 - 1. Power.
 - 2. Switches
 - 3. Receptacles.
 - 5. Low voltage wiring and equipment
 - 6. Miscellaneous equipment, wiring, accessories, and components
- B. Include primary service, transformers, distribution center, grounding, power and lighting panels, wiring, outlet boxes, receptacles, lighting fixtures, switches, conduits, and raceways, and all labor and materials necessary to provide and install a complete electrical system for all fixtures, devices, equipment, and components shown in these Drawings and described in these Specifications.
- C. Coordinate location of electrical outlets and other fixtures with Goddard Systems, to avoid interference with furniture, cabinets, and other movable or semi-permanent components.
- D. Coordinate with the mechanical contractor, the wiring, power, control, protection, and circuiting of all mechanical equipment, including but not limited to pumps, valves, motors, sensors, temperature controllers, furnaces, air handlers, air conditioning condensers, exhaust fans, resistance heating equipment, outside air dampers, signaling and control equipment, and other mechanical equipment, whether low-voltage or high-voltage for a complete HVAC and plumbing system, shown anywhere in these Drawings or described anywhere in these Specifications. Size wiring and circuits in accordance with codes.

1.02 REFERENCES

- A. National Electrical Contractors Association (NECA):
 - 1. NECA SI - Standard of Installation.
- B. National Electrical Manufacturers Association (NEMA):
 - 1. KS 1 - Enclosed Switches.
 - 2. NEMA WD 1 - General Requirements for Wiring Devices.
 - 3. NEMA WD 6 - Wiring Device -- Dimensional Requirements.
- C. National Electrical Testing Association (NETA):
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- D. National Fire Protection Association (NFPA):
 - 1. NFPA 70 - National Electrical Code.

1.03 SUBMITTALS

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- A. Submit for approval shop drawings, product data, fixture and equipment catalog cuts.

1.04 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Arrangement of systems indicated on the drawings is diagrammatic, and indicates the minimum requirements for electrical work. Site conditions shall determine the actual arrangement of conduits, boxes, disconnects, and similar items. Take field measurements before fabrication and coordinate with other trades. Be responsible for accuracy of dimensions and layout, and compliance with all applicable codes and regulations.
- C. The installation shall comply with all laws of local regulating authorities, the regulations of the current edition of the National Electric Code, and with the rules of the local electrical utility company.
- D. Installer Qualifications: Company specializing in performing Work of this Section with minimum 5 years documented experience.
- E. Regulatory Requirements:
 - 1. Conform to requirements of NFPA 70.
 - 2. Products: Listed and classified by Underwriters Laboratories, Incorporated as suitable for the purpose specified and indicated.

1.05 BASIC ELECTRICAL METHODS

- A. Drawings are schematic and diagrammatic. Use judgment and care to install electrical Work to function properly and fit within building construction and finishes. Electrical conductors, components, not shown or specified, which are required for any device or system to produce a complete and operative system are required to be furnished and installed.
- B. Exact location of outlets are determined from dimension on Drawings, manufacturer's shop drawings, or as may be determined at Project Site. Do not scale Drawings for exact location of any item. Verify item mounting heights as required by project conditions prior to rough-in.
- C. Route wiring associated with new equipment and systems above ceilings, in chases, and concealed within building structure.
- D. Surface mounted raceways or conduit permitted only at locations specifically indicated on Drawings.
- E. Provide proper number of conductors or cables to provide operative system as indicated on Contract Documents. Do not regroup any feeder circuits, branch circuits, home runs, and alarms at any point, from that shown on Contract Documents.

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- F. Branch and home run circuits are indicated as 2, 3, or 4 wire circuits unless otherwise noted. Do not connect two ungrounded conductors to same circuit breaker/fused switch in any panel. Circuit runs consist of a maximum of five conductors; 3 phase conductors, 1 neutral conductor, and 1 equipment ground conductor, unless otherwise noted. Do not splice branch circuit conductors in any panels, safety switches, or non-automatic circuit breakers in separate enclosures.
- G. Equipment, switches, devices, shown mounted on and/or adjacent to equipment, which if installed, would impair proper operation of any equipment, shall be removed and relocated by Contractor as required so equipment will function properly. Notify Architect immediately if any such condition exists.
- H. Seal and make permanently watertight penetrations by electrical raceways or equipment through ceilings, walls or floors.
 - 1. Seal penetrations in fire rated walls and ceiling and non-fire rated ceilings, walls.
- I. Tighten electrical connectors and terminals, including screws and bolts, in accordance with equipment manufacturer's published torque tightening values for equipment connectors. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL 486A, and NFPA 70.
- J. Install equipment and materials to provide required maintenance and code working clearance for servicing and maintenance. Coordinate final location of concealed equipment and devices requiring access with final location of required access panels and doors. Allow required space for removal of parts that require replacement or servicing.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Conduit: Rigid galvanized metal conduit, intermediate metallic conduit, electrical metallic tubing for concealed interior raceways, flexible metal conduit (Greenfield), and rigid nonmetallic conduit as required.
 - 1. Rigid conduit shall be General Electric or Republic. Thin wall (EMT) shall be General Electric or Republic.
 - 2. Non-metallic conduit shall be Parnite, Phelps-Dodge, Anaconda or Circle.
 - 3. Conduit fittings shall be Thomas Betts, Appleton, Steel City, or Cedney.
 - 4. Connectors shall be Thomas Betts, Appleton, Steel City, or Cedney.
 - 5. Flexible metal conduit (Greenfield) to be not more than 6-feet long.
- B. Boxes: Provide galvanized steel outlet, junction and pull boxes sized to meet requirements of National Electrical Code, or non-metallic (FS W-J-805).
- C. Exterior Boxes: NEMA FB 1, Type FD, cast aluminum. Provide gasketed cover by box manufacturer. Provide threaded hubs.

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- D. Conductors and wiring: 600 volt insulation type THWN or THHN copper wiring for branch circuits. Conductors AWG No. 12 shall be solid. Conductors AWG No. 10 and larger stranded. Minimum conductor size AWG No. 12. Green ground conductor in all raceways. Other sizes as required by service intended.
1. Conductors shall be Phelps-Dodge, Columbia, Hatfield, Parnite, or Circle.
 2. MC cable with Underwriter's approval
- E. Wiring devices: Receptacles, lighting switches, ground fault receptacles, dimmers, data ports, telephone ports, and coverplates as required.
1. Switch boxes shall be of standard type galvanized or non-metallic (FSW-J-805) with covers as required. Use single, double or other multiple box sizes or combinations as needed.
 2. Switches – Commercial Specification Grade, color White
 - a. Single Pole Switch: Leviton Cat. No.1221-2
 - b. Double Pole Switch: Leviton Cat. No. 1222-2
 - c. Three-way Switch:. Leviton, Cat. No. 1223-2
 - d. wall switch occupancy Leviton Cat No. OSS10
 3. Duplex Receptacles Commercial Specification Grade, Color White w/ White Cover Plates
 - a. Standard Tamper Receptacles meeting UL 498; NEMA 5-20R
 - (1) 20A 125V: Leviton Catalog No. TBR20W Commercial Grade.
 - b. GFICTamper Receptacles meeting ANSI C73, UL 943 Class A, NEMA 5-20R
 - (1) 20A 1215V: Leviton Catalog No. T6899W Commercial Grade; Decora Style
 - c. Child-Proof Tamper Receptacles meeting NEC 517-18(c) and NEMA 5-20R
 - (1) 20A 125V: Leviton Catalog No. T8300 SGW Hospital Grade; Tamper Resistant; Decora Style
 4. Cover Plates - Color White. All receptacles, switches, dimmers, data ports and telephone ports to be provided with UL approved cover plates. Use studed cover plates for wall mounted telephones in Classrooms. Where two or more switches, outlets, or data ports are in the same location, or such combinations of switches, outlets, or data ports are in same locations, they shall be ganged and covered by a single plate of the proper gang, mix, and type.
- F. Provide electrical panelboards sized in accordance with National Electrical Code. Use only panelboards with copper bus bars.
- G. Transformers: dry type if required for interior.
- H. Mechanical Equipment: provide wiring, connections, components, devices, and accessories for complete connections to all mechanical equipment including but not limited to pumps, valves, motors, sensors, temperature controllers, furnaces, air handlers, air conditioning condensers, exhaust fans, resistance heating equipment, outside air dampers, signaling and control equipment and other mechanical equipment, whether low-voltage or high-voltage for a complete HVAC and plumbing system, shown

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anywhere in these Drawings or described anywhere in these Specifications. Size wiring and circuits in accordance with codes.

PART 3 - EXECUTION

3.01 GENERAL

- A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials in proper relation with adjacent construction and with uniform appearance for exposed work. Coordinate with work of other sections. Comply with applicable regulations and building code requirements.
- B. Accessibility: All individual items of equipment and components shall be 100% accessible for repair, removal or replacement without functional impairment or dismantling of any adjoining major surfaces or assemblies. Each circuit protecting device shall be clearly marked and readily accessible.
- C. Markers: Each meter and its associated switch shall have a marker identifying the distribution panel it serves. The meter and the switch shall each have a panel.
- D. Sleeves: Passage of conductors through any masonry wall or concrete floors shall be provided with conduit and steel pipe sleeves. Sleeves shall extend 1/2" above the floor. Seal space between sleeve and conduit with oakum and waterproof mastic. All conduit 1-1/4" and larger, shall be sleeved. Any exposed conduit 3" or smaller passing through floors, ceilings, walls, casework surfaces, etc., in finished area, shall be fitted with nickelplated escutcheons of sufficient outside diameter to amply cover the sleeved opening and an inside diameter to closely fit the conduit around which it is installed.
- E. Circuitry: Circuit numbers as shown on the drawings refer to the breaker numbers in the panel. Identification of the individual circuits shall be placed on the panel identification cards as shown on the drawings. The routing of circuits shall be within the scope of good engineering practice and all outlets and fixtures shall be on the same circuit number as shown on the drawings. Organize circuits by Rooms wherever possible. Clearly label circuit by Room Numbers and function.
- F. Concealment of Wiring and Equipment: All wiring shall be run in concealed spaces. The wiring shall be installed in strict compliance with applicable articles of the National Electric Code, and the rules of the local utility. All device boxes shall be installed recessed in walls and ceilings such that when the device plate or fixture is installed, there is no gap between it and the wall or ceiling surface.
- G. Cutting and Notching: All cutting, notching, and drilling shall be done within the limits set forth by metal framing manufacturer. Any member which has been cut or notched in excess of these limits, shall be repaired or replaced as directed by the Architect, at the Contractor's expense.
- H. Test all systems for proper operation. Restore damaged finishes. Clean and protect work from damage.

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- J. Entrance service grounding shall be in accordance with NEC 250.50, NEC 250.52 (A) (1), and NEC Table 250.66.
- K. Raceways passing from the interior to the exterior of the building shall be filled with an approved sealant or filler material to block and seal air passage and prevent condensation in raceways. Work shall comply with NEC 300.7 (A).

3.02 INSTALLATION OF OUTLETS AND SWITCHES

- A. Install Child-tamper Proof receptacles in all areas accessible to and usable by children, including but not limited to classroom, corridors, entry vestibule, isolation areas, foyer area and exterior building walls exposed to playground areas. On exterior childproof receptacles, protect these using remote GFIC circuit protection with GFIC circuit breakers in the panelboard.
- B. Use integral GFIC tamper receptacles at all wet areas, adjacent to plumbing fixtures, on all kitchen and kitchenette back walls, in adult toilet rooms, on all other exterior locations not accessible to children, and as otherwise required by building codes and NEC.
- D. Install wall switches and wall occupancy sensors 48" above finished floor. Locate switches within rooms at strike side of door. Install receptacles, data, and telephone ports not less than 15" above finished floor, measured to bottom of cover plate, unless noted otherwise (UNO).
- E. Install one (1) fourplex wall receptacle at 60" above finished floor in each Classroom, centered above cubbie groups. Final location of this receptacle to be coordinated with actual location of cubbie groups and the Project Manager from Goddard Systems, Inc.
- F. Install one (1) fourplex wall receptacle at 72" above finished floor in Infant Classroom, centered above the infant cubbie group. Final location of this receptacle to be coordinated with actual location of cubbie groups and the Project Manager from Goddard Systems, Inc.
- G. Install one (1) recessed duplex wall receptacle at 60" behind each microwave shelf in kitchens, kitchenettes, or as otherwise shown on Drawings.
- H. Install one (1) duplex wall receptacle at 60" above finished floor in each Classroom. adjacent to telephone receptacle box at typical locations shown on Drawings.
- I. Install convenience ground fault (GFIC) duplex wall receptacles at 44" above countertop backsplashes in kitchens, kitchenettes and at other locations shown on the Drawings or required by the National Electric Code and other codes having jurisdiction. Coordinate mounting of receptacles to avoid interference of cover plates with other equipment, countertop, and backsplashes.
- J. All exterior weather-proof receptacles shall have integral ground fault (GFIC) protection for areas not accessible to children, and shall have remote ground fault (GFIC) protection for areas accessible to children, in addition to being child-proof receptacles as described above. Such receptacle shall be installed in approved weather-proof enclosures. Install exterior receptacles not less than 18" above grade.

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- K. Use cast outlet box with weatherproof cover in exterior locations exposed to the weather.
- K. Gang-mount multiple switching locations. Mount multiple types of controls as close together as possible and in-line with each other at a height of 48" above finished floor together on wall in gang-type boxes. If gang box grouping is not possible, place individual boxes not more than 6" apart. Avoid back-to-back box locations.

3.03 WIRING OF MECHANICAL EQUIPMENT

- A. Install equipment supplied by mechanical contractor including, but not limited to, time clocks, transformers, relays, outside air dampers, and other equipment..
- B. Provide wiring to all electrical equipment and make connections to such equipment including, but not limited to:
 - 1. Time clocks
 - 2. Duct dampers and smoke dampers
 - 3. Outside air dampers
 - 4. Electrically actuated door hardware
 - 5. Hot water recirculation pumps
 - 6. Unit heaters
 - 7. Ceiling fans and exhaust fans
 - 8. Kitchen equipment
 - 9. Emergency alarm equipment
 - 10. Sensors and signaling devices
 - 11. Building mounted sign lights
 - 12. All other equipment requiring electrical connection

END OF SECTION

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SECTION 26 50 00 - LIGHTING

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide lighting systems including:
 - 1. Interior luminaires and accessories.
 - 2. Exterior luminaires and accessories
 - 3. Emergency lighting units
 - 4. Exit Signs.
 - 5. Photocells
 - 8. Time clocks

1.02 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Location of lighting indicated on the drawings is diagrammatic and indicates a minimum requirement. Site conditions may dictate minor differences in final location or arrangement of components.
- C. The installation shall comply with all laws of local regulating authorities, the regulations of the current edition of the National Electric Code, the [insert local or state building codes], and with the rules of the local electrical utility company.

1.03 SUBMITTALS

- A. Submit for approval shop drawings, product data, fixture and equipment catalog cuts.
- B. Submit for approval a complete site photometric analysis of proposed lighting fixtures including wallpacks, pole-mounted luminaires, soffit can lights, and other lighting. Do not include in Photometric Studies any emergence egress fixture activated by emergency egress systems such as Light Fixture EV-1.

1.04 EXTERIOR SITE LIGHTING INTENT

- A. Exterior site lighting for parking area shall be either provided by means of area lighting, wall-pack lighting, or existing ambient lighting to provide an average lighting over the parking lot of 1.5 footcandles. If ambient lighting levels create wide ranges in lighting levels and high contrasts in the parking area, additional lighting shall be provided to balance the ambient levels across the entire parking area for uniform illumination levels but shall not exceed 2.0 footcandles in any 100 square foot area.
- B. Coordinate with lighting supplier to provide a photometric study of lighting levels around the building and across the parking lot to assure a uniform level of lighting is provided. Submit with lighting submittals.

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SECTION 26 50 00 - LIGHTING

PART 2 - PRODUCTS

2.01 NATIONAL ACCOUNT VENDOR

- A. Lighting fixtures and equipment described in this Specification Section shall be obtained from Goddard System Inc. National Account Program with:

1. Suburban Wholesale Lighting, Inc., Inc.
30 Industrial Blvd
Paoli, PA 19301
Contact: Ron Delinski rdelinski@suburbanwholesale.com
Alternate: Adam Hepp ahepp@suburbanwholesale.com
Phone: 610.993.0470
Toll free: 800.432.2805
Fax: 610.993.0473

2.02 MATERIALS

- A. Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
1. Eaton/Cooper Cleveland OH 1-800-386-1911 www.cooperindustries.com
 2. Cree Lighting 4600 Silicon Drive Durham , NC 1-800-533-2583
 3. Hi-Lite Mfg. Chino California 1-800-465-0211
 4. Phillips/Emco San Marcos, TX (800) 227-0758 www.gardco.com
 5. Villa Lighting Supply St. Louis, MO (800) 325-0963 www.villialighting.com

2.03 INTERIOR LUMINAIRES AND ACCESSORIES

- A. **Type A1** Cooper / METALUX 2x4 Recessed LED Model 24GR-LD5-56-A-UNV-L840-CD-1
1. Description: Recessed, 2 feet wide by 4 feet long LED grid troffer.
 2. Lens: Prismatic acrylic, A-12 pattern, 0.095 inches thick
 3. Housing: Cold rolled steel body, door is steel with hemmed corners. Frame and housing finished with baked white enamel
 4. Voltage: 120/277
 5. Lamps: LED
- B. **Type A1-Gym** Cooper / METALUX 2x4 Recessed LED Model 24GR-LD5-56-A19/156-UNV-L840-CD-1
1. Description: Recessed, 2 feet wide by 4 feet long LED grid troffer.
 2. Lens: Prismatic acrylic, A19/156 #19 pattern acrylic, 0.156 inches thick
 3. Housing: Cold rolled steel body, door is steel with hemmed corners. Frame and housing finished with baked white enamel
 4. Voltage: 120/277
 5. Lamps: LED

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- C. **Type A2** Cooper / METALUX 2x4 Recessed LED Model 24GR-LD5-34-A-UNV-L840-CD-1
1. Description: Recessed, 2 feet wide by 4 feet long LED grid troffer
 2. Lens: Prismatic acrylic, A-12 pattern, 0.095 inches thick
 3. Housing: Cold rolled steel body, door is steel with hemmed corners. Frame and housing finished with baked white enamel
 4. Voltage: 120/277
 - . Lamps: LED
- E. **Type B1** Cooper / METALUX Industrial Fluorescent Model 14GR-LD5-32-A-UNV L840-CD-1
1. Description: General industrial LED fixture, 10-1/2 inches wide, 4 feet long
 2. Lens: None
 3. Housing: Steel housing, solid top reflector; white
 4. Mounting: Surface or suspended.
 5. Voltage: 120/277
 6. Lamps: LED
- F. **Type EM1** Cooper / METALUX Thermoplastic Model AP2SQLED
1. Description: 90-minute emergency light, lead-calcium battery, vandal-resistant. 5 year service life
 2. Housing: High-impact white thermoplastic housing; self contained
 3. Mounting: Wall mounted.
 4. Voltage: 120 volt
 5. Lamps: LED
 6. Warranty: Electronics: 3 years; Battery: 1 year full, 4 years pro rata
- G. **Type X1** Cooper / METALUX LED Exit Sign Model APH70RWHDSQ
1. Description: 90-minute emergency light, lead-calcium battery, vandal-resistant. 5 year service life. Exit illumination by LEDs with a life expectancy of 25 years
 2. Features: Red Letters, White Stencil, White Injection molded housing
 3. Mounting: Ceiling or end-mount, damp location meeting UL 924
 4. Voltage: 120
 5. Emergency Lamps: Two (2) 6 volt, 5.4 watt T5 tungsten lamps
 6. Emergency Lamp Heads: Two
 7. Warranty: Electronics: 3 years; Battery: 1 year full, 4 years pro rata
- H. **Type X2** Cooper / METALUX LED Exit Sign Model APX7R
1. Description: LED illuminated exit light, nickel cadmium battery, vandal-resistant. 10 year service life
 2. Features: Red Letters, White Stencil, White Injection molded housing
 3. Mounting: Ceiling, End or Top-mount, damp Location
 4. Voltage: 120
 5. Exit Lamps: LED lamp module
 6. Warranty: Electronics: 3 years; Battery: 5 years full, 5 years pro rata

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- J. **Type P2** Generic
1. Description: Keyless porcelain incandescent fixture.
 2. Mounting: Direct to framing in attic or sidewall in Janitor Closet
 3. Voltage: 120
 3. Maximum Voltage/Wattage: 250 volt/ 660W
- K. **Type W1** HE Williams 6DR-TL-L30-8-35-DIM-UNV / A-WW-OF-WH-I-F1
1. Description: 6-3/4" horizontal single wall washer
 2. Baffle: specular clear
 3. Ballast: 120v-277v UL Listed Electronic Ballast.
 4. Mounting Frame: Die Cast Alum. Housing IC Rated
 5. Junction Box: Outboard mounted junction box to be code approved for through wiring. Junction box to be pre-wired and accessible through the ceiling trim opening.
 6. Voltage: UNV
 7. Lamp(s): Integral LED
 8. Finish: White

2.04 EXTERIOR LUMINAIRES AND ACCESSORIES

- A. **Type AL-1** Eaton / McGraw Model GLEON-AF-03-LED-E1-XXX-BZ
1. Description: Pole-Mounted Area Lighting: Provide pole mounted lighting where shown on the site plans. Mount lamp post on minimum 16"Ø concrete pier. See site engineering drawings for foundation lamp pole foundation design
 2. Lamp Head: Series Galleon LED; 15.5" wide x 21 3/4" deep x 4" height; rain-tight, die cast aluminum housing; IP66 Rated
 3. Lamp Optics: Select distribution pattern
 4. Lamps: LED Diodes 4000K
 5. Finish: polyester power coating; dark bronze color
 6. Mounting: Standard arm mount to square pole; Mounting [one (1) head per pole @ 90°] [two (2) heads per pole @ 90°] [two (2) heads per pole @ 180°] [three (3) heads per pole @ 90°] [four (4) heads per pole @ 90°] [two (2) heads per pole @ 120°] [three (3) heads per pole @ 120°] [other configuration]
 7. Pole: 5 inch x 5 inch square steel tube; 11 gauge, bronze painted poles; 25 feet high; powder coated dark bronze. Supply all accessories, anchors, base plates, wiring covers, etc. Manufactured by Lyte Poles, Inc. Eastpointe, MI
 8. Height: 20 feet mounting height
 9. Controls: photocell and timeclock
 10. Glare Shields: Factory or field installed House Side shield
- B. **Type EV-1** COOPER Model AEL2-31-SD
1. Description: ER Series Emergency Lighting Pack

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2. Housing: High-impact aluminum housing powder coat finish UV Stable Poly Carb light diffuser. 7" long x 10 7/8 wide x 3 7/8 deep; Meeting UL94 V-0, 5VA white
 3. Lamp Mounting: Where shown on drawings
 4. Lamp(s): LED
 6. Battery : Integral Sealed nickel cadmium
 7. Battery Housing Mounting: Integral to fixture
 8. Activation: Connect for activation by any emergency system, alarm, sprinkler, fire, and smoke
- D. **Type WP1** MCGRAW-EDISON Model ISC-350/450-LED-E1-XX-BZ
1. Description: Wall mounted LED; 18" wide x 7" high x 9" deep; IP66 for wet locations
 2. Mounting: Wall
 3. Voltage: 120/277
 4. Lamp: LED Diodes Integral Light Squares
 5. Controls: Circuit controlled by photocell and time clock

2.07 ACCESSORIES

- A. Time Switches (Time Clocks):
1. 24 hour mechanical time switch, Model T101 by Intermatic Inc. Spring Grove, IL 60081
- B. Photocells:
1. Photo controller relay unit, Model K1121 by Intermatic Inc. Spring Grove, IL 60081. Use not more than one (1) photocell unit per 1800 ballast wattage.

PART 3 - EXECUTION

3.01 GENERAL

- A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials in proper relation with adjacent construction and with uniform appearance for exposed work. Coordinate with work of other sections. Comply with applicable regulations and building code requirements.
- B. Install suspended luminaires and exit luminaire signs using pendants supported from swivel hangers or in accordance with details shown on drawings. Provide pendant length required to suspend luminaire at indicated height
- C. Support recessed fluorescent fixtures 2 foot x 2 foot and larger using a minimum of four wire hangers of same gauge as ceiling suspension system supported from building structure independent of ceiling framing.

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SECTION 26 50 00 - LIGHTING

- D. Locate recessed ceiling luminaires as indicated on reflected ceiling plan.
- E. Install surface mounted luminaires and exit luminaire signs plumb and adjust to align with building lines and with each other. Secure to prevent movement. Mount exit signs to outlet box mounted flush in wall or ceilings. Outlet box for ceiling mounted exit signs: Connect to rigid conduit system.
- F. Install recessed luminaires to permit removal from below.
- G. Install accessories furnished with each luminaire.
- H. Connect luminaires, emergency lighting units and exit luminaire signs to the unswitched leg of the local lighting branch circuits using minimum 1/2 inch (12 mm) flexible metal conduit whips maximum 5 feet in length.
- I. Bond products and metal accessories to branch circuit equipment grounding conductor.
- J. Install specified lamps in each emergency lighting unit, exit luminaire sign, and luminaire.

3.02 EXTERIOR LIGHT FIXTURES

- A. All exterior wall pack lighting, soffit can lights, and pole-mounted area lights shall be controlled by photocell and time-clock. Drawings indicate Circuits for power source only and should not be interpreted as indicating any form of switching or controls.
- B. Mount wall pack (WP-1) light fixtures at a height 9'-4" to the top of the fixture above finished floor elevation. Coordinate final location with location of downspouts and other wall-mounted components.
- C. Provide appropriate glare shields on wall-packs and pole-mounted area light fixtures as required by local jurisdiction and zoning rules.

3.03 FIELD QUALITY CONTROL

- A. Operate each luminaire after installation and connection. Inspect for improper connections and operation.
- B. Measure illumination levels to verify conformance with layout and performance requirements.
- C. Take measurements during night sky, without moon or with heavy overcast clouds effectively obscuring moon.

END OF SECTION

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LIGHTING

SECTION 26 50 00 - LIGHTING



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LIGHTING

**SECTION 27 15 00
COMMUNICATION WIRING SPECIFICATION**

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Voice and Data Cabling
2. Patch Panel Terminations
3. Wall plates and wall outlet assemblies.
4. Plenum Wiring required
5. Labeling
6. Testing

1.2 COMMUNICATIONS CABLING DESCRIPTION

A. General Intent:

1. Install voice and data cabling, consisting of multiple port wall receptacles for data and telephone use, where shown on Drawings and connected with Plenum rated Category 6 wiring from the patch panels in the IT room.
2. All Cabling will be installed in the ceiling supported on field choice hangers (j-hooks, etc.). The cables will be bundled and supported above the lay-in ceiling. To avoid electrical interference and in conformance with standard practice for routing network wiring, the cabling shall be at least 1 foot from fluorescent lights and 3 feet from transformers.
3. Extend cabling to IT room and terminate at the communications demarcation board with adequate surplus length to complete punch down connections to provided patch panels.
4. Label both ends of the cables with the corresponding patch panel port numbers.

1.3 PERFORMANCE REQUIREMENTS

A. General Performance:

1. Communication cabling system shall comply with transmission standards in TIA/EIA-568-B.1, when tested according to test procedures of this standard.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings, including the following:

1. Jack ID's
2. Cable pathways

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**SECTION 27 15 00
COMMUNICATION WIRING SPECIFICATION**

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Cabling Installer must have personnel certified by BICSI (RCDD) on staff.
- B. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: 25 or less.
 - 2. Smoke-Developed Index: 450 or less.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- D. Telecommunications Pathways and Spaces: Comply with TIA/EIA-569-B.
- E. Grounding: Comply with ANSI-J-STD-607-A.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Test cabling to Category Cat-6 industry standards for all cabling installed.

PART 2 - PRODUCTS

2.1 NATIONAL ACCOUNT VENDOR

- A. Communications cabling and installation described in these Specifications shall be obtained from Goddard System Inc. National Account Program with:

Rittenhouse Communications
Contact: Sean Edwards
Phone: 215-600-1846
Fax: 215-754-5933
Email: sean.edwards@rcgtelecom.com
Website: www.rcgtelecom.com

2.2 BACKBOARDS

- A. Backboards: A-B Plywood, fire-retardant treated, UL approved coatings from Contego International (800.434.6444). Comply with requirements in Division 06 Section "Rough Carpentry" for plywood backing panels.

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CABLING

**SECTION 27 15 00
COMMUNICATION WIRING SPECIFICATION**

2.3 UTP CABLE

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
1. Voice - LanMark 6, Category 6 Plenum Cable, White (Berk-Tek part #10136230)
 2. Data - LanMark 6, Category 6 Plenum Cable, Blue (Berk-Tek part #10136226)
- B. Description: 100-ohm, 4-pair UTP, covered with a thermoplastic jacket.
1. Comply with ICEA S-90-661 for mechanical properties.
 2. Comply with TIA/EIA-568-B.1 for performance specifications.
 3. Comply with TIA/EIA-568-B.2, Category 6
 4. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444 and NFPA 70 for the following types:
 - a. Communications, Plenum Rated: Type CMP, complying with NFPA 262.

2.4 UTP CABLE HARDWARE

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Leviton
- B. General Requirements for Cable Connecting Hardware: Comply with TIA/EIA-568-B.2, IDC type, with modules designed for punch-down caps or tools. Cables shall be terminated with Category 6 connecting hardware.
- C. Patch Panels: 110-style, Category 6, 24-port (Leviton part # 69586-U24) or 48-port, (Leviton part # 69586-U48) patch panels. Provide panels for the number of cables installed plus 10% future growth capacity. Voice and data cables to terminate on separate patch panels.
- D. Wall Mount Rack: Great Lakes part #GL24SR (2'H x 18" D)
- E. Jacks and Jack Assemblies:
1. Voice - Cat 6 eXtreme QuickPort Jacks, White (Leviton part # 61110-RW6)
 2. Data - Cat 6 eXtreme QuickPort Jacks, Blue (Leviton part # 61110-RL6).
- F. Patch Cords: Provided by others.
- G. Wire Management: 1U Horizontal Wire Manager (Leviton #49253-LPM). Install (1) wire manager per patch panel.

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CABLING

**SECTION 27 15 00
COMMUNICATION WIRING SPECIFICATION**

2.5 TELECOMMUNICATIONS OUTLET/CONNECTORS

- A. Jacks: 100-ohm, balanced, twisted-pair connector; four-pair, eight-position modular. Comply with TIA/EIA-568-B.1.
- B. Outlets: Single gang faceplates with label fields to mount keystone jacks. The faceplates should contain the appropriate number of ports that correspond to the number of outlets. Confirm faceplate colors in the field to match electric receptacle type/color (i.e. plastic or stainless steel).
 - 1. Plastic Faceplate: High-impact plastic. Coordinate color with Division 26 Section "Wiring Devices."
 - a. 1-port Faceplate, White (Leviton part #42080-1WS)
 - b. 2-port Faceplate, White (Leviton part #42080-2WS)
 - c. 3-port Faceplate, White (Leviton part #42080-3WS)
 - d. 4-port Faceplate, White (Leviton part #42080-4WS)
 - 2. Metal Faceplate: Stainless steel complying with requirements in Division 26 Section "Wiring Devices."
 - a. 1-port Faceplate, Stainless Steel (Leviton part #43080-1L1)
 - b. 2-port Faceplate, Stainless Steel (Leviton part #43080-1L2)
 - c. 3-port Faceplate, Stainless Steel (Leviton part #43080-1L3)
 - d. 4-port Faceplate, Stainless Steel (Leviton part #43080-1L4)
 - 3. Metal Faceplate with integral phone-support studs: Stainless steel complying with requirements in Division 26 Section "Wiring Devices."
 - a. Recessed Wall Phone Plate, Stainless Steel (Leviton part #4108W-1SP)
 - 4. For use with snap-in keystone style jacks accommodating any combination of UTP work area cords.
 - 5. Labels: Machine printed specifying Voice or Data and the corresponding patch panel port.

2.6 GROUNDING

- A. Comply with requirements in Division 26 Section "Grounding and Bonding for Electrical Systems" for grounding conductors and connectors.
- B. Comply with ANSI-J-STD-607-A.
- C. Rack/ Cabinet will be grounding to meet the standards required.

2.7 IDENTIFICATION PRODUCTS

- A. Comply with TIA/EIA-606-A and UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

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SECTION 27 15 00
COMMUNICATION WIRING SPECIFICATION

PART 3 - EXECUTION

3.1 WIRING METHODS

- A. Wiring Method: Install cables in wall drop conduits except in accessible ceiling spaces, in attics, in plenums, and in gypsum board partitions where unenclosed wiring method may be used.
 - 1. Install plenum cable in environmental air spaces, including plenum ceilings.
- B. Wiring within Enclosures: Bundle, lace, and train cables to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools.

3.2 INSTALLATION OF CABLES

- A. Comply with NECA 1.
- B. General Requirements for Cabling:
 - 1. Comply with TIA/EIA-568-B.1.
 - 2. Comply with BICSI ITSIM, Ch. 6, "Cable Termination Practices."
 - 3. Install 110-style IDC termination hardware unless otherwise indicated.
 - 4. Terminate conductors; no cable shall contain unterminated elements. Make terminations only at indicated outlets, terminals, cross-connects, and patch panels.
 - 5. Cables may not be spliced. Secure and support cables at intervals not exceeding 30 inches and not more than 6 inches from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
 - 6. Install lacing bars to restrain cables, to prevent straining connections, and to prevent bending cables to smaller radii than minimums recommended by manufacturer.
 - 7. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI ITSIM, "Cabling Termination Practices" Chapter. Install lacing bars and distribution spools.
 - 8. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.
 - 9. Cold-Weather Installation: Bring cable to room temperature before dereeling. Heat lamps shall not be used for heating.
 - 10. In the communications equipment room, install a 10-foot- long service loop on each end of cable.
 - 11. Pulling Cable: Comply with BICSI ITSIM, Ch. 4, "Pulling Cable." Monitor cable pull tensions.
 - 12. Install UTP cabling conduit in outlets shown on Drawings, terminating each wall drop above ceiling into a sweep or bend. Home run wiring from all outlets through wall conduit, to a height above the lay-in ceiling in an organized bundle and collected in a cable tray. Run tray(s) above lay-in ceiling. Extend tray and wiring to mechanical room and terminate at the telephone demarcation board with adequate surplus length to complete punch down connections to panel.

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**SECTION 27 15 00
COMMUNICATION WIRING SPECIFICATION**

13. Do not untwist UTP cables more than 1/2 inch from the point of termination to maintain cable geometry.

C. Separation from EMI Sources:

1. Comply with BICSI TDMM and TIA/EIA-569-A for separating unshielded copper voice and data communication cable from potential EMI sources, including electrical power lines and equipment.

3.3 SCHEDULE OF OUTLETS & EQUIPMENT

A. Data Wiring Schedule: Run UTP cabling to each of the locations noted below:

1. Locations 6 in each office as shown on the drawings. 4 in the staff room as shown on the drawings. 2 in each preschool room as shown on the drawings. 2 in in the conference room as shown on the drawings.
2. Wiring – Cat 6. color White or Blue (Voice & Data should match in color)
3. Jacks – all jacks to be RJ 45. Labeled
4. Cover plates – not stud mounted
5. Data Closet termination – punch down to 24 and/or 48-port patch panels .Label. Tested and certified.

B. Telephone Wiring Schedule: Run UTP cabling to each location noted below:

1. Locations – 1 in each classroom mounted at 60" AFF as shown on the drawings. 3 in each office at 18" AFF as shown on the drawings. 1 in the conference room at 44" AFF as shown on the drawings.
2. Wiring – Cat-6. White or Blue (Voice & Data should match in color)
3. Jacks – all jacks to be RJ 45. Punched down pattern 568-B Labeled
4. Cover plates – stud mounted in classrooms. Not stud – mounted in offices and conference room
5. Data Closet termination – punched down to a 24 or 48-port, Category 6 patch panel. Labeled. Tested and certified.

C. OPEN PATH

1. Location – on the owner's office wall between the vision panel and interior vestibule wall at 44" AFF to center of single gang box - as shown on the drawings.
2. Wiring –
 - a. Cat 6 White or Blue (Should match voice/data cable color) – refer to drawings
3. Jack– male RJ 45 at scanner location
4. Cover plates – none
5. Data Closet termination – punch down to 24 port punch down panel. Label. Tested and certified.

D. Flat Screen Monitor:

1. Location – On the foyer wall centered at 60" AFF as shown on the drawings.
2. Wiring – Cat 6. White or Blue-(Should match voice/data/hand key cable color)

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COMMUNICATION WIRING SPECIFICATION

3. Jack– female RJ 45
4. Cover plates – not stud mounted
5. Data Closet termination – punch down to 24 and/or 48-port, Category 6 patch panel. Label. Tested and certified.

E. Miscellaneous:

1. All terminations in the Data Closet shall be to rack mounted, Category 6 patch panels.
2. Provide one (2) quadplex outlet mounted on phone board as shown on the plans
3. Provide (1) rack mount shelf and install to wall mount rack.
4. Provide one (1) 2' H x 18" D" Wall mount rack for telephone router, patch panel, and network switch
5. Provide one (1) RJ45 data jack and (1) RJ45 phone jack on the Data Closet plywood

3.4 IDENTIFICATION

A. Identify system components, wiring, and cabling complying with TIA/EIA-606-A. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

B. Cable and Wire Identification:

1. Label each cable within 4 inches of each termination and tap, where it is accessible in a cabinet or junction or outlet box, and elsewhere as indicated.
2. Each wire connected to building-mounted devices is not required to be numbered at device if color of wire is consistent with associated wire connected and numbered within panel or cabinet.
3. Label each terminal strip and screw terminal in each cabinet, rack, or panel.

C. Labels shall be preprinted or computer-printed type with printing area and font color that contrasts with cable jacket color but still complies with requirements in TIA/EIA-606-A.

3.5 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Visually inspect UTP cable jacket materials for NRTL certification markings. Inspect cabling terminations in communications equipment rooms for compliance with color-coding for pin assignments, and inspect cabling connections for compliance with TIA/EIA-568-B.1.
2. Visually confirm Category 6 marking of outlets, cover plates, outlet/connectors, and patch panels.
3. Visually inspect cable placement, cable termination, grounding and bonding, equipment and patch cords, and labeling of all components.
4. UTP Performance Tests: Test for each outlet. Perform the following tests according to TIA/EIA-568-B.1 and TIA/EIA-568-B.2:

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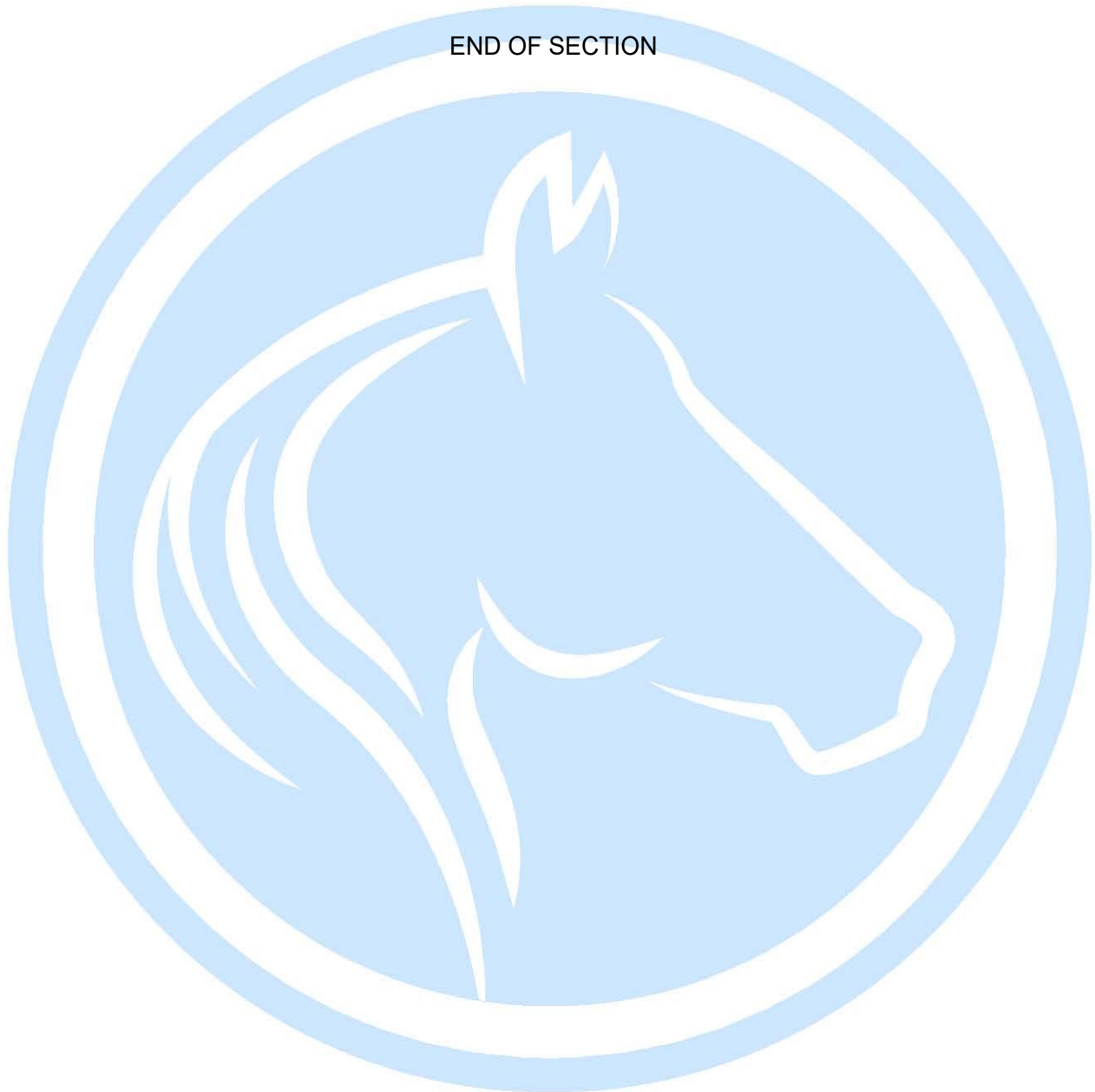
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**SECTION 27 15 00
COMMUNICATION WIRING SPECIFICATION**

- B. All testing shall be completed and written inspection reports and testing reports issued prior to obtaining a Certificate of Occupancy.

END OF SECTION



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CABLING

SECTION 28 13 00 – ACCESS CONTROL

PART 1 - GENERAL

1.01 SUMMARY

- A. Scope of Work: Materials required under this Section are supplied by the door and hardware supplier. The Scope of Work for this Section is limited only to the installation, testing, and closeout of this system
- B. Contractor shall install electric strike, power supply, push buttons, transmitter and receiver, wiring, conduit, and other components for the access security system.
 - 1. Wiring diagrams are shown on the Drawings
 - 2. Access control system must be wired so that door opens when alarm is activated
- C. Related Work: See Section 08 70 00 Hardware and Section 28 31 00 Fire Detection and Alarm
- D. See APPENDIX for Responsibility Chart

1.02 SUBMITTALS

- A. Submit for review samples, shop drawings, product data, warranty, maintenance data.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. General Description: Remotely operated electric door strike consisting of a door strike, strike-release push buttons, power supply, wiring, conduit, receiver and hand-held remote transmitters. Products are specified in Section 08 70 00.
- B. Coordinate sequence of operation with Goddard Systems, Inc. and as shown on the Drawings
- C. Installation to conform to NFPA 70 and regulations of local and state codes.

PART 3 - EXECUTION

3.01 INSTALLATION

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ACCESS CONTROL

SECTION 28 13 00 – ACCESS CONTROL

- A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.
- B. Contractor shall provide complete system installation and testing. Contractor is responsible for wiring, testing, and operation of the electric strike, entrance push buttons, power supply, interface to alarm and sprinkler system, and overall system operation in accordance with these Specifications, NFPA 70, and related rules and regulations.
- C. Label all communication wiring as outlined in Section 27 15 00.
- D. It is recommended that Access Control System to be installed by same contractor installing fire alarm system.

END OF SECTION

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ACCESS CONTROL

**SECTION 28 23 00 – VIDEO SURVEILLANCE
(WIRING ROUGH-IN ONLY)**

PART 1 - GENERAL

1.01 SUMMARY

- A. The General Contractor shall provide a complete wiring system for the Closed-Circuit Television (CCTV) System described herein and shown on the Drawings per responsibility chart. Wiring system shall accommodate the CCTV system operation described herein.
- B. CCTV Installation Company shall provide all equipment, labor, accessories, and supplies to complete the installation of the CCTV System including:
 - 1. Eight or more Exterior CCTV Cameras
 - 2. One (1) Interior CCTV Camera in Foyer
 - 3. One (1) Flat-Screen LCD Monitor in Owner's Office
 - 4. One (1) Flat-Screen LCD Monitor in Director's Office
 - 5. One (1) Network Video Recorder (NVR) in Owner's Closet
 - 6. One (1) Flat-Screen LCD Monitor at the NVR
 - 7. All mounts, housings, and miscellaneous accessories

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. The Contractor shall provide only the wiring and related conduits, receptacles, and wiring labor for the CCTV system as shown on the Drawings and described herein.

PART 2 - PRODUCTS

- A. **CABLING. MISCELLANEOUS**
 - 1. Provide and install all cabling required by the CCTV system shown on the Drawings.
 - 2. For the camera cabling, Cat5E (Ethernet/Data) cable or equivalent is required.
 - 3. Provide Cat5E cables from the NVR to the office flat screen monitors.
 - 4. Make all necessary electrical connections.
- B. **EXTERIOR CAMERA INSTALLATION**
 - 1. See Note 3.02 E in the equipment rough-in spec below.

PART 3 - EXECUTION

3.01 INSTALLATION

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VIDEO SURVEILLANCE

**SECTION 28 23 00 – VIDEO SURVEILLANCE
(WIRING ROUGH-IN ONLY)**

- A. Provide and install all power outlets, conduit, interconnecting cables as required for a complete and operable system.

3.02 EQUIPMENT ROUGH-IN

- A. Cat5E cable pulls from the NVR location to each of the camera locations.
- B. Cat5E cable pulls from the NVR to each of the wall-mounted flat screen monitors in the offices.
- C. Provide a single Cat5E cable pull from the NVR directly to the Internet Service Provider (ISP) Equipment location leaving appropriate cable coils, and ensuring the cable is tagged at both ends.
- D. At the Owner's Closet (prototype location of the NVR, or actual NVR location if otherwise) a 15' coil for each CCTV cable is to be left and tagged for the CCTV installing company.
- E. For each exterior camera the cable installer shall provide a wall penetration. Camera wiring should be penetrated through the wall at the desired camera location with at least an 8' coil of cable left for final connection to the camera. No rough-in box is required at the camera end. CCTV installer to supply conduit base for all exterior cameras
- F. Install solid 2" x 10" wood blocking for flat-screen monitor brackets. Mount brackets are installed at 76" off finished floor to center. Coordinate exact location with GSI Project Manager
- G. Provide one (1) 120 VAC duplex outlet and one (1) port data at each monitor location above monitor bracket blocking. Coordinate exact location with GSI Project Manager
- H. Provide one (1) 120 VAC quad outlet in Owners Closet for NVR use.

For any questions pertaining to the camera system installation and/or design contact either of the two individuals listed below:

Roy A. Reese (roreese@guardianprotection.com)
Guardian Protection National Accounts Sr. Project Manager
O:800-224-2044 ext. 11114
C: 724-963-4624

Paul R. Huffman (phuffman@guardianprotection.com)
Guardian Protection National Accounts Manager
O: 1-302-736-5056
C: 302-222-2199

END OF SECTION

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VIDEO SURVEILLANCE

SECTION 28 31 00 - FIRE DETECTION AND ALARM

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide complete automatic fire alarm system including:
1. Initiating devices.
 2. Notification appliances and devices.
 3. Control panel.
 4. Remote station signal transmitter.
 5. Inspection, Testing and Certification
 6. Installer to provide one year of monitoring service including land "copper" or cellular monitoring line.

1.02 SUBMITTALS

- A. Submit for review samples, shop drawings, product data, warranty, maintenance data.
- B. Submit written testing certification reports as described herein.

1.03 REFERENCES

- A. American National Standards Institute (ANSI):
1. ANSI S341, [\[current issue\]](#) - Audible Emergency Evacuation Signals.
- B. National Fire Protection Association (NFPA):
1. NFPA 13, [\[current\]](#) -Edition - Installation of Sprinkler Systems.
 3. NFPA 70, [\[current\]](#) Edition - National Electrical Code.
 4. NFPA 72, [\[current\]](#) Edition - National Fire Alarm Code.
 5. NFPA 101, [\[current\]](#) Edition - Life Safety Code.
- C. Underwriters Laboratories, Inc.(UL):
1. UL Fire Protection Directory, [\[current\]](#) Edition.

1.04 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Provide and install complete fire alarm system and detection system per NFPA 72, , and requirements of state and local fire officials. Provide smoke/carbon monoxide detection devices at locations to comply with NFPA 72, and not to exceed 30 feet on center or as otherwise required by NFPA 72 and local rules and regulations.
- C. Coordinate alarm wiring with automatic sprinkler system per NFPA 13, the Building Code and requirements of state and local fire officials.

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FIRE DETECTION AND ALARM

SECTION 28 31 00 - FIRE DETECTION AND ALARM

- D. Provide and install all detection systems per NFPA 70, NFPA 13, the Building Code and requirements of state and local fire officials.

1.05 SYSTEM DESCRIPTION

- A. Protected Premises Fire Alarm System: NFPA 72, manual and automatic local fire alarm system with dial-out connections to third party remote monitoring stations of the Owner's choice.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
 1. Honeywell
 2. Silent Knight
 3. Bosch
 4. Firelite

2.02 PROTECTED PREMISES FIRE ALARM CONTROL PANEL

- A. Control Panel: Modular construction with flush wall-mounted enclosure.
- B. Power supply: Adequate to serve control panel modules, remote detectors door holders, smoke dampers, relays, and alarm signaling devices. Include battery-operated emergency power supply with capacity for operating system in standby mode for 24 hours followed by alarm mode for 10 minutes.
- C. System Supervision: Component or power supply failure places system in trouble mode.
- D. Initiating Device Circuits: Supervised zone with alarm and trouble indication; occurrence of single ground or open condition places circuit in trouble mode but does not disable that circuit from initiating an alarm.
- E. Indicating Appliance Circuits: Supervised ANSI S3.41 signal module, sufficient for signal devices connected to system; occurrence of single ground or open condition places circuit in trouble mode but does not disable that circuit from signaling an alarm. Visual appliance circuits shall provide for synchronization of flashing.
- F. Remote Station Signal Transmitter: Electrically supervised digital alarm communicator transmitter capable of transmitting alarm and trouble signals over telephone lines to central station receiver.
- G. Auxiliary Relays: Provide sufficient SPDT auxiliary relay contacts for each detection zone to provide accessory functions specified.
- H. Provide TROUBLE ACKNOWLEDGE, DRILL, and ALARM SILENCE switch.

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- I. Trouble Sequence of Operation: System or circuit trouble places system in trouble mode, which causes the following system operations:
 - 1. Visual and audible trouble alarm indicated at fire alarm control panel.
 - 2. Visual and audible trouble alarm indicated at remote annunciator panel.
 - 3. Trouble signal transmitted to remote station.
 - 4. Manual acknowledge function at fire alarm control panel silences audible trouble alarm; visual alarm is displayed until initiating failure or circuit trouble is cleared.
 - J. Alarm Sequence of Operation: Actuation of initiating device places circuit in alarm mode, which causes the following system operations:
 - 1. Sound and display local fire alarm signaling devices with ANSI S3.41 signal.
 - 2. Transmit non-coded signal to remote station equipment
 - 3. Indicate location of alarm zone on fire alarm control panel and on remote annunciator panel.
 - 4. Transmit signal to building mechanical systems to initiate shutdown of fans and damper operation.
 - 5. Transmit signal to release door hold-open devices.
 - K. Alarm Reset: System remains in alarm mode until manually reset with key-accessible reset function; system resets only if initiating circuits are out of alarm mode.
 - L. Lamp Test: Manual lamp test function causes alarm indication at each zone at fire alarm control panel.
 - M. Drill Sequence of Operation: Manual drill function causes alarm mode operation as described above.
 - N. Zoning: As indicated on drawings
- 2.03 INITIATING DEVICES
- A. Manual Pull Station: Semi-recessed mounted, non-coded type, single action manual station. Provide manufacturer's standard backbox.
 - B. Spot Heat Detector: Combination rate-of-rise and fixed temperature, rated 135 degrees F (57 degrees C) and temperature rate of rise of 15 degrees F (8.3 degrees C)
 - C. Ceiling Mounted Smoke and Carbon Monoxide Detector: NFPA 72, ionization type with adjustable sensitivity, plug-in base, integral thermal element rated 135 degrees F (57 degrees C), and visual indication of detector actuation, integral test button, suitable for mounting on 4 inch outlet box. Provide two-wire detector with common power supply and signal circuits.
 - D. Duct Mounted Smoke Detector: NFPA 72, photoelectric type with auxiliary SPDT relay contact for addressable remote relay control key-operated NORMAL-RESET-TEST switch, duct sampling tubes extending width of duct, and visual indication of detector actuation, in duct-mounted housing. Provide two-wire detector with common power supply and signal circuits.
 - E. Flame Detector: NFPA 72, ultraviolet or infrared radiation type.

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- F. Suppression System flow activation and tamper switches.

2.04 SIGNALING APPLIANCES

- A. Alarm Bells: NFPA 72, electric vibrating, 10 inch bell with operating mechanism behind dome. Sound Rating: minimum 81 dB at 10 feet for exterior installation.
- B. Alarm Lights: NFPA 72, strobe lamp fully synchronized with red lettered "FIRE" on white lens.
- C. Alarm Horn: NFPA 72, surface type fire alarm horn. Sound Rating: 87 dB at 10 feet. Provide integral strobe lamp fully synchronized with red lettered "FIRE" on white lens.

2.05 MISCELLANEOUS

- A. System shall be provided with a remote monitoring capabilities by a third party monitoring agency of the owner's choice.
- B. Key box (Knox Box): Install only if required by local fire department. Install a key box emergency access system at location determined by Fire Department.
- C. Attic Detectors: Provide photoelectric-type detectors for attic areas of a design and construction suitable for such environments and meeting the requirements of NFPA 72. Adjust detectors for maximum ambient attic temperature without false signaling. Provide detectors suitable for 900 square feet sensitivity, or supply alternative spacing with engineering support documentation.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials in proper relation with adjacent construction and with uniform appearance for exposed work. Coordinate with work of other sections. Comply with applicable regulations and building code requirements.
- B. Install manual station with operating handle 48 inches aff. Install audible and visual signal devise not less than 80 inches aff, and not more than 96 inches aff to bottom of lens at locations shown on Drawings.
- C. Use 16 AWG minimum size conductors for fire alarm initiating and signal circuit conductors. Use 14 AWG minimum size conductors for indicating appliances. Install wiring in [conduit.] [cable.]
- D. Mount end-of-line device in control panel for Class "A" supervision box with last device or separate box adjacent to last device in circuit for Class "B" supervision.

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- E. Make conduit and wiring connections to door release devices, sprinkler flow switches, sprinkler valve tamper switches, fire suppression system control panels, and duct smoke detectors
 - F. Automatic Detector Installation: Conform to NFPA 72.
 - G. Provide and install fire strobes and strobe-alarms in each habitable room, toilet rooms, kitchen, staff lounge and other areas where shown on Drawings.
 - H. Restore damaged finishes.
 - I. Instruct Goddard School personnel in proper operation, maintenance, and reporting requirements of fire detection and protection systems.
 - J. Install detectors in all areas of attic in accordance with NFPA 72
- 3.02 INITIAL TESTING AFTER INSTALLATION
- A. Test in accordance with NFPA 72 and local fire department requirements. Use "Certificate of Completion" Figure 1-7.2.1 (NFPA 72).
 - B. Inspection:
 - 1. Inspect equipment installation, interconnection with system devices, mounting locations, and mounting methods.
 - 2. Verify that units and controls are properly installed, connected, and labeled and that interconnecting wires and terminals are identified.
 - C. Pretesting: Align and adjust system and perform pretesting of components, wiring, and functions to verify conformance with specified requirements. Correct deficiencies by replacing malfunctioning or damaged items with new items. Retest until satisfactory performance and conditions are achieved.
 - D. Acceptance Operational Tests:
 - 1. Perform operational system tests to verify conformance with specifications:
 - a. Each alarm initiating device installed shall be operationally tested. Each device shall be tested for alarm and trouble conditions. Contractor shall submit a written certification that the Fire Alarm System installation is complete including all punch-list items. Test battery operated emergency power supply. Test emergency power supply to minimum durations specified. Test Remote Station Signal Transmitter. Coordinate testing with Remote Station monitoring firm. Submit written documentation from Remote Station monitoring firm that Fire Alarm Signal Transmitter is operating properly.
 - b. Test each Signal Appliance installed for proper operation. Submit written report indicating sound levels at specified distances.
 - c. Test Fire Alarm Control Panel and Remote Annunciator.
 - 2. Provide minimum 10 days notice of acceptance test performance schedule to Building Owner, Remote Station monitoring firm, and local fire authorities having jurisdiction.

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- E. Retesting: Correct deficiencies and retest until total system meets the requirements of Specifications and complies with applicable standards.

3.03 TESTING

- A. Testing described below is a prerequisite to project completion and issuance of Certificate of Occupancy..
- B. Provide a copy of all testing and certification documents to the Franchisee. Subsequent annual fire alarm system testing and filing of results to be by Franchisee after initial Occupancy.
- C. Provide a copy of all testing and certification documents to the Franchisee. Subsequent biennial smoke alarm sensitivity testing and filing of results to be by Franchisee after initial Occupancy.

3.04 FIRE ALARM WIRE AND CABLE COLOR CODE

- A. Where conduit is used, provide fire alarm circuit conductors with insulation color coded as follows, or using colored tape at each conductor termination and in each junction box. Where cable is used, identify conductors at each junction box with tags.
 1. Power Branch Circuit Conductors: Black, red, white.
 2. Initiating Device Circuit: Black, red.
 3. Detector Power Supply: Violet, brown.
 4. Signal Device Circuit: Blue (positive), white (negative)
 5. Door Release: Gray, gray.

END OF SECTION

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FIRE DETECTION AND ALARM

SECTION 32 31 00 – FENCE AND GATES

PART 1 - GENERAL

1.01 WORK INCLUDED

1.02 RELATED WORK

Section 8700 Hardware

1.03 SYSTEM DESCRIPTION

The manufacturer shall supply a total fence system of (specify Montage® standard picket space or Montage Pool, Pet & Play® 3" air space) **Welded and Rackable** (ATF – All Terrain Flexibility) Ornamental Steel, (for standard picket space, specify Classic™, Majestic™, Genesis™, Warrior™, Crescent™; for 3" air-space specify Classic™, Majestic™, Genesis™, or Gemini™) design. The system shall include all components (i.e., panels, posts, gates and hardware) required.

1.04 QUALITY ASSURANCE

1.05 REFERENCES

- ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
- ASTM B117 - Practice for Operating Salt-Spray (Fog) Apparatus.
- ASTM D523 - Test Method for Specular Gloss.
- ASTM D714 - Test Method for Evaluating Degree of Blistering in Paint.
- ASTM D822 - Practice for Conducting Tests on Paint and Related Coatings and Materials using Filtered Open-Flame Carbon-Arc Light and Water Exposure Apparatus.
- ASTM D1654 - Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.
- ASTM D2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
- ASTM D2794 - Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
- ASTM D3359 - Test Method for Measuring Adhesion by Tape Test.
- ASTM F2408 – Ornamental Fences Employing Galvanized Steel Tubular Pickets.

1.06 SUBMITTAL

1.07 PRODUCT HANDLING AND STORAGE

1.08 PRODUCT WARRANTY

A. All structural fence components (i.e. rails, pickets, and posts) shall be warranted within specified limitations, by the manufacturer as stated in the Montage product warranty. Warranty shall cover any defects in material finish, including cracking, peeling, chipping, blistering or corroding.

B. Reimbursement for labor necessary to restore or replace components that have been found to be defective under the terms of manufactures warranty shall be guaranteed for five (5) years from date of original purchase.

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SECTION 32 31 00 – FENCE AND GATES

PART 2 - MATERIALS

2.01 MANUFACTURER

- A. Fencing and other components described in these Specifications shall be obtained from Goddard System Inc. National Account Program with:
 - 1. Ameristar
 - Contact: John Medica
 - Email: john.medica@assaabloy.com
 - Phone: (888) 333-3422

2.02 MATERIAL

- A. Steel material for fence panels and posts shall conform to the requirements of ASTM A653/A653M, with a minimum yield strength of 45,000 psi (310 MPa) and a minimum zinc (hot-dip galvanized) coating weight of 0.60 oz/ft² (184 g/m²), Coating Designation G-60.
- B. Material for pickets shall be 5/8" square x 18 Ga. tubing. The rails shall be steel channel, 1.25" x 0.92" x 14 Ga. Picket holes in the rail shall be spaced 3.500" o.c. for 3" air space. Fence posts shall be a minimum of 2" square x 16 Ga. Gate posts shall meet the minimum requirements of Table 1.
- C. Perimeter fencing shall be 72" in height. Interior fences shall be 48" in height.
- D. Panic devices, mounting plates, and exit alarms for man gates provided by door and hardware supplier.

2.03 FABRICATION

- A. Pickets, rails and posts shall be pre-cut to specified lengths. Rails shall be pre-punched to accept pickets.
- B. Pickets shall be inserted into the pre-punched holes in the rails and shall be aligned to standard spacing using a specially calibrated alignment fixture. The aligned pickets and rails shall be joined at each picket-to-rail intersection by Ameristar's proprietary fusion welding process, thus completing the rigid panel assembly (Note: The process produces a virtually seamless, spatter-free good-neighbor appearance, equally attractive from either side of the panel).
- C. The manufactured panels and posts shall be subjected to an inline electrode position coating (E-Coat) process consisting of a multi-stage pretreatment/wash, followed by a duplex application of an epoxy primer and an acrylic topcoat. The minimum cumulative coating thickness of epoxy and acrylic shall be 2 mils (0.058 mm). The color shall be Black. The coated panels and posts shall be capable of meeting the performance requirements for each quality characteristic shown in Table 2 (Note: The requirements in Table 2 meet or exceed the coating performance criteria of ASTM F2408).
- D. The manufactured fence system shall be capable of meeting the vertical load, horizontal load, and infill performance requirements for Residential weight fences under ASTM F2408.
- E. Gates shall be fabricated using welded ornamental panel material and gate ends having a 1-1/4" square cross-sectional size. All rail and upright intersections shall be joined by welding. All picket and rail intersections shall also be joined by welding.

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PART 3 - EXECUTION

3.01 PREPARATION

All new installation shall be laid out by the contractor in accordance with the construction plans.

3.02 FENCE INSTALLATION

Fence panels have a 8' nominal (94") rail span. Fence posts shall be spaced 96"3/4", plus or minus 1/2". For installations that must be raked to follow sloping grades, the post spacing dimension must be measured along the grade. Fence panels shall be attached to posts with flat mount brackets, part number BB105SP with black 1/4" x 1-1/2" stainless steel carriage bolt, part number HB511 and a 1/4" stainless steel black security nut, part number HB911. The carriage bolt must be installed on one extreme side or the other of the slot in the bracket (not in the middle) to ensure three sides of the bolt are in contact with the bracket and that the bolt is securely fastened with the security nut. Brackets and hardware are to be supplied by Ameristar. The "Earthwork" and "Concrete" sections of this specification shall govern material requirements for the concrete footer.

3.03 FENCE INSTALLATION MAINTENANCE

When cutting/drilling rails or posts adhere to the following steps to seal the exposed steel surfaces; 1) Remove all metal shavings from cut area. 2) Apply zinc-rich primer to thoroughly cover cut edge and/or drilled hole; let dry. 3) Apply 2 coats of custom finish paint matching fence color. Failure to seal exposed surfaces per steps 1-3 above will negate warranty. Ameristar spray cans or paint pens shall be used to prime and finish exposed surfaces; it is recommended that paint pens be used to prevent overspray. Contractor is to provide zinc-rich primer and custom finish paint to the franchise owner at the completion of the installation for use in fence maintenance. Use of non-Ameristar parts or components will negate the manufactures' warranty.

3.04 GATE INSTALLATION

Gate posts shall be spaced according to the manufacturers' gate drawings, dependent on standard out-to-out gate leaf dimensions and gate hardware selected. Type and quantity of gate hinges shall be based on the application; weight, height, and number of gate cycles. The manufacturers' gate drawings shall identify the necessary gate hardware required for the application. Gate hardware shall be provided by the manufacturer of the gate and shall be installed per manufacturer's recommendations. Gates on interior yard fencing shall include a Pool, Pet & Play adjustable safety latch provided by Ameristar. Bolt on gate hinges should be installed with the threaded ends facing toward the outside of the gate to avoid exposure to children. Samson Adjustable Gate Closer by Locinox is to be installed on all gates.

3.05 CLEANING

The contractor shall clean the jobsite of excess materials; post-hole excavations shall be scattered uniformly away from posts.

NOTE TO GENERAL CONTRACTOR AND FENCING CONTRACTOR: PLEASE REFER TO GSI SPECIFICATIONS 08 17 13 DOOR HARDWARE GROUPS FROM NATIONAL ACCOUNT MPM INDUSTRIES FOR THE SINGLE GATES AT THE BUILDING. TWO FRONT GATES FACING PARKING LOT AND TWO REAR BUILDING GATES.

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SECTION 32 31 00 – FENCE AND GATES

Table 1 – Minimum Sizes for Montage Gate Post

Gate Leaf	Gate Height	
	Up To & Including 4'	Over 4', Up To & Including 6'
Up To & Including 4'	2" x 16 Ga.	2" x 16 Ga.
Over 4'1", Up To & Including 6'	2" x 16 Ga.	2-1/2" x 16 Ga.
Over 6'1", Up To & Including 8'	2-1/2" x 16 Ga.	2-1/2" x 16 Ga.

Table 2 – Coating Performance Requirements

Quality Characteristics	ASTM Test Method	Performance Requirements
Adhesion	D3359 – Method B	Adhesion (Retention of Coating) over 90% of test area (Tape and knife test).
Corrosion Resistance	B117, D714 & D1654	Corrosion Resistance over 1,000 hours (Scribed per D1654; failure mode is accumulation of 1/8" coating loss from scribe or medium #8 blisters).
Impact Resistance	D2794	Impact Resistance over 60 inch lb. (Forward impact using 0.625" ball).
Weathering Resistance	D822, D2244, D523 (60° Method)	Weathering Resistance over 1,000 hours (Failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units).

END OF SECTION

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FENCE AND GATES

[SECTION 01 78 39 - PROJECT RECORD DOCUMENTS]

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
- B. See Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
- C. See Divisions 02 through 49 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.2 SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit **[one]** <Insert number> set(s) of marked-up Record Prints.
 - 2. Number of Copies: Submit copies of Record Drawings as follows:
 - a. Initial Submittal: Submit **[one]** <Insert number> set(s) of **[corrected Record Transparencies]** **[plots from corrected Record CAD Drawings]** and **[one]** <Insert number> set(s) of marked-up Record Prints. Architect will initial and date each **[transparency]** **[plot]** and mark whether general scope of changes, additional information recorded, and quality of drafting are acceptable. Architect will return **[transparencies]** **[plots]** and prints for organizing into sets, printing, binding, and final submittal.
 - b. Final Submittal: Submit **[one]** <Insert number> set(s) of marked-up Record Prints, and the following:
 - 1) Record Transparencies: **[One]** <Insert number> set(s).
 - 2) Record CAD Drawing Files and Plots: **[One]** <Insert number> set(s).
 - 3) Copies printed from Record **[Transparencies]** **[CAD Drawing Plots]**: **[Three]** <Insert number>. **[Print]** **[Plot and print]** each Drawing, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit **[one copy]** [**<Insert number> copies**] of Project's Specifications, including addenda and contract modifications.

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- C. Record Product Data: Submit [**one copy**] [**<Insert number> copies**] of each Product Data submittal.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.
1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 2. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
 3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Transparencies: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Architect. When authorized, prepare a full set of corrected transparencies of the Contract Drawings and Shop Drawings.
1. Incorporate changes and additional information previously marked on Record Prints. Erase, redraw, and add details and notations where applicable.
 2. Refer instances of uncertainty to Architect for resolution.
 3. Owner will furnish Contractor one set of transparencies of the Contract Drawings for use in recording information.
 4. Print the Contract Drawings and Shop Drawings for use as Record Transparencies. Architect will make the Contract Drawings available to Contractor's print shop.
- C. Record CAD Drawings: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Architect. When authorized, prepare a full set of corrected CAD Drawings of the Contract Drawings, as follows:
1. Format: [**Same CAD program, version, and operating system as the original Contract Drawings**] **<Insert program, version, and operating system>**.
 2. Incorporate changes and additional information previously marked on Record Prints. Delete, redraw, and add details and notations where applicable.

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3. Refer instances of uncertainty to Architect for resolution.
 4. Architect will furnish Contractor one set of CAD Drawings of the Contract Drawings for use in recording information.
 - a. Architect makes no representations as to the accuracy or completeness of CAD Drawings as they relate to the Contract Drawings.
 - b. CAD Software Program: The Contract Drawings are available in **<Insert name and version of CAD program and operating system>**.
- D. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Record Transparencies: Organize into unbound sets matching Record Prints. Place transparencies in durable tube-type drawing containers with end caps. Mark end cap of each container with identification. If container does not include a complete set, identify Drawings included.
 3. Record CAD Drawings: Organize CAD information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each CAD file.
 4. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect.
 - e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. Note related Change Orders[, **Record Product Data,**] and Record Drawings where applicable.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

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1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders[, **Record Specifications,**] and Record Drawings where applicable.

2.4 RECORD AREA CALCULATIONS

- A. Preparation: Note on the Drawings' *Square Foot Analysis Plan* the actual field-measured square footages of each Classroom using the following criteria to determine individual Net Classroom Areas
1. All measurements shall be to face of finished ~~dry~~wall.
 2. Exclude the floor area below lavatories, diaper changing sinks, hand-wash sinks, and other permanently mounted wall accessories.
 3. Exclude the floor area below all cubbies.
 4. Exclude the floor area occupied by the Corridor-Classroom door swing.

2.5 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

END OF SECTION

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APPENDIX 'C' – HARMFUL PLANT LIST

Harmful Plant List From The Children's Hospital Of Pittsburg.

Plants in this list shall not be used anywhere on this project, either inside the play area fencing, outside the fencing, or anywhere within the site boundaries. If such plant species are existing on site prior to construction, all such material shall be removed.

Scientific Name

Common Name

Malus sylvestris

Anemone
 Angle Trumpet Tree
 Apple
 Arrowhead
 Avocado Leaves
 Betel Nut Palm
 Bird-of-Paradise Shrub
 Black Locust, White Locust
 Buckeye
 Buttercups
 Castor Oil Plant, Castor Bean
 Choke Cherry
 Common Privet, etc...
 Crocus - Autumn
 Daffodil, Jonquil
 Daphne
 Deadly nightshade
 Devil's Ivy
 Dumb cane, Elephant ear
 Elderberry
 Elephant Ear
 Elephant Ear
 English Ivy
 European Bittersweet,
 Deadly Nightshade
 Fancy-leaf Caladium
 Four O'Clock
 Foxglove
 Holly, etc...
 Horsetail Reed
 Hyacinth
 Hydrangea
 Iris
 Ivy...Boston, English, etc...
 Jack-in-the-Pulpit
 Jasmine, Jessamine
 Jequirity Bean
 Jerusalem Cherry
 Jimsonweed, Thorn Apple,
 Angel's Trumpet

Caesalpinia gilliesii
Robinia psuedocacia

Prunus virginiana
Lingstrum species

Narcissus
Daphne mesereum
Alroba belladonna

Dieffenbachia

Colacasia
Philodendron
Hedera Helix
Solanum dulcamara

Caladium

Digitalis
Ilex species

Hyacinthus orientalis
Hydrangea macrophylla
Iris

Arisaema tryphyllum

Solanum pseudocapsicum
Datura stramonium

APPENDIX C-1

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HARMFUL PLANT LIST FORM

Lantana
Delphinium

Lantana, Bunchberry, Red Sage
Larkspur, Crowfoot
Laurels

Convallaria majalis

Lily of the Valley
Lobelia

Podophyllum peltatum

Marijuana
Mayapple, Mandrake,
Ground Lemon

Datura meteloides

Mistletoe
Monkshood
Moonflower, Angel's Trumpet,
Locoweed

Ipomoea violacea
Nerum oleander
Prunus species

Moonseed
Morning Glory
Oleander
Peach, Plum, Cherry, Apricot

Conium maculatum

Periwinkle
Peyote (mescal)
Philodendron
Poison Hemlock, False Parsley

Phytolacca americana

Poison Ivy
Poison Oak
Pokeweed, Inkberry
Poppy (California Poppy exempted)

Rhododendron
Rheum rhabarbarum

Potato Sprouts
Primrose
Ranunculus
Rhododendron, Azalea

Lathyrus odoratus
Monstera

Rhubarb
Star of Bethlehem
Sweet Pea
Swiss Cheese Plant, Ceriman

Parthenocissus quinquefolia
Cicuta maculata

Tobacco
Tomato Vines
Tulip
Virginia Creeper, American Ivy

Wisteria species
Gelsemium sempervirens

Water Hemlock,
Spotted Cowbane
Wisteria
Yellow Jessamine,

Taxus

Carolina Jessamine
Yew (Japanese)

END OF APPENDIX

APPENDIX C-2

Goddard KYLE, TX

Issue Date *TBD*
Version *7.0*

HARMFUL PLANT LIST FORM

APPENDIX 'D' – TEMPORARY SITE SIGNAGE

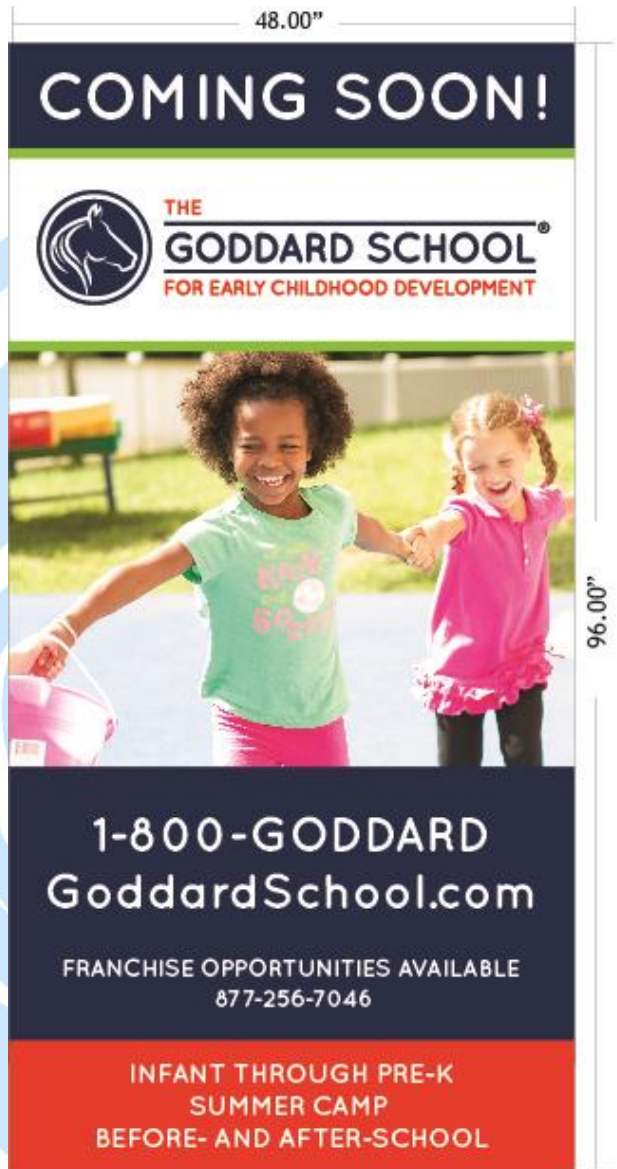


APPENDIX C-1

Goddard KYLE, TX

Issue Date *TBD*
Version *7.0*

TEMPORARY SITE SIGNAGE



Site Sign B

END OF APPENDIX

APPENDIX C-2

Goddard KYLE, TX

Issue Date *TBD*
Version *7.0*

TEMPORARY SITE SIGNAGE