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PROJECT MANUAL

JACKSON COUNTY

JACKSON COUNTY SHERIFF'S OFFICE
NEW FACILITY

MARIANNA, FLORIDA

CRA PROJECT NUMBER: 24020

September 25, 2025

(100% CONSTRUCTION DOCUMENTS)

VOLUME I

1 OF 2

SET NUMBER:

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NEW FACILITY

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Mechanical, Electrical and Plumbing Firm	H2Engineering, Inc. 114 East 5th Avenue Tallahassee, Florida 32303 Certificate of Authorization #2485
Mechanical Engineer	Jeffrey L. Tyler, PE Divisions 21, 22, 23, Florida #57093
Electrical Engineer	Matthew T. Scaringe, PE Divisions 26, 27, 28, 29 Florida #54639

Applicable Codes Listed In: 210100, 220100, 230100, 260100, 270100, 280100, 290100

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SECTION 011000 - SUMMARY OF WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS: Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.02 PROJECT DESCRIPTION

A. The Project shall consist of new construction as indicated on drawings for the Lafayette County Emergency Operations Center.

1. Project Location: Marianna, Florida
2. Owner: Jackson County

B. Contract Documents, dated September 25, 2025, (100% Construction Documents) were prepared for the Project by Clemons Rutherford and Associates, 2027 Thomasville Road, Tallahassee, Florida.

C. The work consists of:

1. New site work.
2. New Emergency Operations Center
3. New standing seam metal roof.
4. Insulated concrete form exterior wall system (ICF).
5. New mechanical, electrical, plumbing, and communication/cabling systems.
6. New interior partitions, millwork, and finishes.
7. New doors and hardware.
8. Coordination of Owner furnished equipment.
9. Coordination of FF & E with Owner and Architect.
10. Assistance with sales tax savings.

D. Work Sequence: The work will be conducted in such a sequence to minimize interference to Owner's normal activities on site and adjacent sites.

E. Applicable Codes: All work shall be completed in accordance with the following codes where applicable:

1.	Florida Building Code, Building (FBC-B)	Seventh (2020) Edition.
2.	Florida Building Code, Mechanical (FBC-M)	Seventh (2020) Edition.
3.	Florida Building Code, Fuel Gas (FBC-FG)	Seventh (2020) Edition.
4.	Florida Building Code, Plumbing (FBC-P)	Seventh (2020) Edition.
5.	Florida Building Code, Accessibility (FBC-A)	Seventh (2020) Edition.
6.	Florida Fire Prevention Code (FFPC)	Seventh (2020) Edition.
7.	Florida Building Code, Test Protocols for HVHZ	Seventh (2020) Edition.
8.	ICC/NSSA Standard For The Design and Construction Of Storm Shelters (ICC 500)	2020 Edition.
9.	NFPA 70, National Electric Code (NEC)	2017 Edition.
10.	NFPA 72, National Fire Alarm and Signaling Code	2016 Edition.
11.	NFPA 101 Life Safety Code	2018 Edition.
12.	NFPA 110, Standard for Emergency and Standby Power Systems	2016 Edition.
13.	ASCE 7	2022 Edition.
14.	Reference Manual To Mitigate Potential Terrorist Attacks against Buildings (FEMA 426)	

F. Product Approval Contractor shall be responsible for providing Florida Product Approval Numbers OR certify that products installed conform to the Florida Building Code 2010 Edition, for each product installed in the building envelope.

G. Construction Manager: Construction Manager has been engaged for this project to serve as Contractor who in turn Subcontracts all or portions of the work. In Divisions 1 through 16, the terms "Construction Manager" and "Contractor" are synonymous.

H. All external envelope enclosure products and assemblies shall meet the large missile impact criteria.

1.03 CONTRACTOR USE OF PREMISES

A. General: During the construction period, the contractor shall have limited use of the premises for construction activities in areas indicated or agreed upon by the Owner. Surrounding existing buildings shall remain operational, accessible, and be occupied throughout the duration of construction.

1. Confine operations to areas within Contract limits indicated. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.
2. Keep surrounding driveways, sidewalks, and entrances serving the premises clear and available to the Owner and Visitors at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.
3. Designated wetland areas/easements shall remain undisturbed.
4. Do not access adjacent jail site without prior approval.

B. Construction Safeguards: The contractor shall construct safeguards to protect personnel and visitors from the construction areas and areas where materials are stored. Limits of the construction safeguards shall be determined by the Owner.

Note: Construction area, including building and buildings being renovated, shall remain accessible to handicap during entire construction process. Contractor is responsible for providing temporary access to building where needed. This includes temporary ramps, walkways, handrails and all other necessary items required. Contractor shall be responsible for inspecting construction site to determine the extent of temporary access needed. (These items are not necessarily shown on drawings). Contractor shall comply with all ADA requirements.

1.04 DRESS CODE AND CONDUCT: All workmen on the construction site shall wear a shirt at all times. No workmen shall engage in any verbal expressions or physical gestures directed towards all visitors, employees of Owner, or any other person at this construction site which may be considered sexual harassment. Any person found engaging in any offensive conduct will be banned from this construction site.

PART 2 - PRODUCTS (Not applicable).

PART 3 - EXECUTION

3.01 LAYOUT OF THE WORK: Dimensions and elevations indicated on the drawings shall be verified by the Contractor prior to commencement of work. Discrepancies between drawings, specifications, and existing conditions shall be referred to the Architect for adjustment before affected work is performed. Failure to make such notification shall place responsibility upon the Contractor to carry out the work in a satisfactory and workmanlike manner at no additional cost to the Owner.

3.02 RESTORATION

A. Remove, cut, alter, replace, patch and repair existing work as necessary to install new work.

B. Existing work (site utilities, electrical work, lawns, paving, roads, walks, etc.) disturbed or removed as a result of performing required new work, shall be patched, repaired, reinstalled, or

replaced with new work, and refinished and left in as good condition as existed before

commencing work. Existing work to be altered or extended and that is found to be defective in any way, shall be reported to Architect before it is disturbed. Materials and workmanship used in restoring work, shall conform in type and quality to that of original existing construction, except as otherwise shown or specified.

C. Upon completion of contract, deliver work complete and undamaged. Damage that may be caused by Contractor or his workmen to existing structures, grounds, and utilities or work done by others shall be repaired by him at no additional cost to the Owner and left in as good condition as existed prior to damaging.

D. At his own expense, Contractor shall immediately restore to service and repair any damage he may cause to existing piping and conduits, wires, cables, etc., of utility services or of fire protection systems and communications systems which are not scheduled for discontinuance or abandonment. Contractor shall employ appropriate parties for repair work.

3.03 CLEANING UP

A. At completion of the work, the Contractor shall remove from the building and site all tools, appliances, surplus materials, debris, temporary structures and facilities, scaffolding, and equipment; sweep clean the building thoroughly and remove all marks, stains, fingerprints, dust, dirt, paint drippings, and the like from all surfaces; clean tile work, windows, plumbing, and other fixtures and surfaces.

B. All hardware and other unpainted metals shall be cleaned and polished, and all equipment and paint or decorated work shall be cleaned and touched up, if necessary. Surfaces that are waxed shall be polished. Remove all temporary labels, tags, and paper covering throughout the building.

C. The exterior of the buildings, the grounds, approaches, equipment, pavement, sidewalks, etc., shall be cleaned similar to interior of buildings and left in good order at the time of final acceptance, with paint surfaces clean and unbroken, hardware clean and polished, all repair work accomplished and dirt areas scraped and cleared of weed growth.

D. Cleaning, polishing, sealing, waxing, and all other finish operations indicated on the drawings, or required in the specifications, shall mean that this is the required condition at the time of acceptance of all work under the contract.

END OF SECTION 011000

SECTION 012150 - THRESHOLD INSPECTION PLAN

PART 1 - GENERAL

1.01 GENERAL

Florida Statute 553.79 requires that Threshold Buildings have Structural Inspection Plan submitted to the local enforcing agency. As the Engineer of Record, I have prepared the following plan for the Jackson County Sheriff Office. The Sheriff's Office building has been designed in accordance with the 2023 Florida Building Code and ICC-500-2020 as a hurricane shelter.

1.02 BUILDINGS DESIGNATED AS ATHRESHOLD BUILDINGS

Sheriff's Office Building is designated as a Threshold Buildings.

1.03 SPECIAL INSPECTOR QUALIFICATIONS

The special Inspector shall be a person, not a firm or company, nor two or more persons taken collectively, certified by either the Board of Architecture or the Board of Professional Engineers. The name of the special inspector must be submitted to, and approved by, the Building Official prior to commencement of inspection services.

The special inspector may employ duly authorized technical representatives in the field. However, such representatives must have the following minimum qualifications:

A. Be a licensed architect or professional engineer, or

B. Graduate from an engineering education program in civil or structural engineering, or

C. Graduate from an architectural education program, or

D. Successfully complete an NCEES examination, or

E. Be registered as either a building inspector or a general contractor.

PART 2 - STRUCTURAL INSPECTION PLAN

2.01 SPECIAL INSPECTOR'S RESPONSIBILITY:

The Special Inspector is responsible to the Enforcement Agency having jurisdiction for this Project. The Special Inspector shall not assume the duties of the Enforcement Agency, the Contractor, the Architect, nor the Structural Engineer. The Special Inspector shall make inspections of the construction only to verify that construction is accomplished according to the requirements indicated on the plans and approved specifications. However, the Special Inspector shall not make design decisions, interpretations of the Contract Documents, direct Contractor's work, nor be responsible for construction means and methods. The Special Inspector shall not have the authority to order any changes in the work nor any additional testing, as only the Architect/Engineers of record have such authority. The Special Inspector shall make inspections of all construction indicated on the Structural Drawings and shall immediately report observed construction variations to the Contractor and the Structural Engineer. The Special Inspector, or his duly authorized representatives, shall perform inspections according to the special inspection plan approved by the Building Official. The Special Inspector shall prepare written Inspection Reports recording work progress, working conditions, inspection observations, testing, variations of construction from the drawings, requirements pertaining to variations, and corrective actions taken by the Contractor. Since the Special Inspector does not certify that the official Contract Documents are in compliance with the Building Code, all inspections and reports will refer to completed work being in accordance with the Contract Documents rather than the applicable codes. A written inspection report shall be prepared for every inspection performed by the Special Inspector, or his authorized representatives, and all inspection reports shall be signed, dated and bear the impressed seal of the Special Inspector. An updated file summary, and

the written reports for all inspections performed during the period shall be submitted to the Enforcement Agency, the Contractor, the Architect, and the Structural Engineer on a weekly basis no more than 3 days after the end of a given weekly period. All inspection reports shall be sequentially numbered and shall indicate:

1. Sequential report number.

2. The date and time of inspection.

3. Identification of the project, the project location, the Contractor and the Owner.

4. Work conditions including weather conditions observed at the time of inspection.

5. The names and affiliation of people pertinent to the project, on the project site at the time of the inspection. Include the name of the person making the inspection, names of representatives of the contractor and other pertinent personnel.

6. A summary of the inspection report.

7. Individual inspection observations indicated on a numbered item basis, including, if pertinent, references to previous inspection observations noting previous inspection report numbers and observation item numbers.

Prior to commencement of the inspection services described herein, the special inspector shall issue to the owner a letter stating that he or she has read the special inspection plan and intends to comply with and enforce it. This letter shall bear the special inspectors seal and signature.

2.02 INSPECTION OBSERVATIONS SHALL INCLUDE:

1. Summary of work progress.

2. Testing, including description and locations of testing, test results and requirements pertaining to testing.

3. The construction item or method inspected as indicated on the plans and herein.

4. An indication that the construction item or method observed conforms with or varies from the requirements indicated on the plans.

5. Requirements pertaining to variations including a record of communications between the field inspector and the Structural Engineer.

6. Corrective actions taken by the Contractor including references to the construction item number and the inspection report number where the variation was noted.

2.03 THE SPECIAL INSPECTOR SHALL MAINTAIN AN EXCEPTION FILE RECORDING:

1. Observed variations of construction from the requirements indicated on the drawings including the Inspection report number and construction observation item number recording the observed variation.

2. Requirements indicated either on the drawings or by the Structural Engineer pertaining to variations including the inspection report number and construction observation item number recording these requirements and communication with the Structural Engineer.

3. Corrective actions taken including the inspection report number and construction observation item number recording the corrective action.

2.04 OBSERVED CONSTRUCTION VARIATIONS THAT SHALL BE REPORTED TO THE CONTRACTOR, THE ENFORCEMENT AGENCY, THE ARCHITECT AND THE STRUCTURAL ENGINEER INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

1. The use of materials, tests, equipment or workmanship not conforming to the drawings.

2. Construction not in substantial conformance with the drawings.

3. Construction without inspection where inspection is prevented due to concealment or other reasons.

2.05 OTHER REQUIREMENTS

The Special Inspector shall insure that all shoring plans are filed with the District Office prior to commencement of all such activities.

2.06 SPECIAL INSPECTOR'S RESPONSIBILITY TO THE OWNER

The Special Inspector works for and reports directly to the Enforcement Agency but is paid by the owner.

PART 3 - STRUCTURAL INSPECTION STAGES

3.01 SOIL PREPARATIONS

The Special Inspector shall be furnished with inspection reports, test reports and a summary report from the geotechnical inspector indicating that all subsurface soils preparation was performed in accordance with the Contract Documents. The summary report shall be signed, dated and bear the embossed seal of an Engineer registered in the State of Florida.

3.02 FOUNDATIONS

The Special Inspector shall observe and inspect foundations for conformance with the Contract Documents as follows:

1. Review test reports from concrete testing to verify concrete strength.

2. Check dimensions of foundations including width, length and depth.

3. Verify reinforcing steel grade, size, number of bars, placement, clearance, dowels and splices.

4. Review concrete forming and operations as indicated for concrete inspection herein.

3.03 MASONRY WALLS

The Special Inspector shall observe grouting operations, including grouting filled cells and bond beams, and construction of masonry walls for conformance with the Contract Documents as follows:

1. Masonry units; mortar materials and preparation; joint reinforcing materials, laps and use of preformed corner and tees; dovetail slots; materials and construction.

2. All masonry cells and bond beams to be grouted including cell sizes; clean-out sizes and locations; debris and mortar fin removal; and height of grouting operation.

3. Filled cell, pier and bond beam reinforcing steel, bar conditions, placement, locations, supports and cover, bar sizes, bends and grades; corner bars; and lap splices.

4. Filled cell and bond beam grouting. For masonry grout used to fill cells and bond beams, verify the grout materials and mix. Record all testing. Observe methods used to transport, handle, place, vibrate and consolidate the grout.

5. Tie Beam size and reinforcing.

3.04 CAST-IN-PLACE CONCRETE

The Special Inspector shall inspect the cast-in-place stairs, columns, walls, slabs, and other cast-in-place concrete work for conformance with the Contract Documents as follows:

1. Observe formwork including bulkheads and construction joints and keyways.

2. Inspect reinforcing steel bar conditions, placements, locations, supports and covers; bar sizes, bends and grades; and lap splices.

3. Inspect embedded items including weld plates, anchor bolts, inserts and sleeves for proper embedment, location and position.

4. Observe and record openings not shown in the drawings and verify added reinforcing or other requirements.

5. Observe and record concrete placement; verify the concrete mix; batching, travel and arrival time and the addition of water to concrete from the batch plant ticket for every batch of concrete. Record all concrete testing including slump tests and test cylinder preparation. Observe methods used to transport, handle, place vibrate, and consolidate the concrete. Observe curing of concrete. Verify testing required by the Contract Documents is performed.

6. Generally inspect anchors for proper number, sizes, location and tightening.

7. Verify size of all cast-in place concrete elements, including beams, columns, slabs, walls, footings, etc.

8. Receive and review lab reports for strength of concrete.

3.05 OBSERVE SHORING AND RESHORING PROCEDURES

1. Forms for reinforced concrete pilasters, columns, walls and sides of beams shall remain in place a minimum of 24 hours after casting.

2. Forms for beam soffits shall remain in place for a minimum of 4 days.

3. Beams shall be reshored immediately following removal of soffit forms.

4. For beams supporting masonry, shores or reshores shall remain in place until the supported masonry work has been completed but not less than 14 days.

5. Forms, shores and reshores shall be designed to support applied loads in accordance with ACI 347. The contractor is responsible for the design, construction, erection and removal of all formwork and shoring.

3.06 STRUCTURAL STEEL

1. Inspect materials for proper size, condition, finish, grade and fabrication including cutting, notching, camber and holes.

2. Inspect erection for location, level, plumb, straightness, finish and fit.

3. Generally inspect bolted connections for proper number, types, sizes and tightening of bolts.

4. Make a visual inspection of all welds for type, length, size and quality of weld. Verify welders on site making field welds have current certificates.

5. Inspect headed stud anchors for size, length, spacing and welding.

6. Inspect steel decks for type, gage, size, condition, welding, side lap connections, laps, connection to supporting structure and weld repair for conformance with Contract Documents. Where steel deck is connected to light gage steel trusses or framing, inspect the screw size and pattern for conformance with Contract Documents.

7. Verify testing and secondary inspections required by the Contract Documents are performed.

8. Inspect steel beams to verify that all required bridging and bracing at steel beams, trusses, joists and other elements is in place.

9. Inspect steel bearing on masonry to ensure connection is solid and smooth.

3.07 OPEN WEB STEEL JOISTS

1. Inspect materials for mark numbers and confirm actual layout is in accordance with layout plan and mark number locations indicated on vendor drawings.

2. Inspect erection for location, plumb and fit.

3. Inspect embed plates or other supporting structure to insure proper alignment. Joist bearing on embed plate shall be solid and smooth.

4. Inspect bridging to insure the correct amount, type and size bridging is installed. Also inspect bridging attachment to supporting structure to insure conformance with vendor drawings.

5. Inspect and verify joist size (depth and chord bar size) conforms to sizes shown on approved documents.

3.08 METAL ROOF DECK

1. Inspect materials for proper size, thickness and grade.

2. Inspect joints and attachments to insure correct size, type and spacing and overall conformance with vendor drawings and details and construction drawings.

PART 4 - FINAL REPORT

The Special Inspector shall, upon completion of the building and prior to the Issuance of a Certificate of Occupancy, file a signed and sealed statement with the Enforcement Agency, in substantially the following form “To the best of my knowledge and belief, the construction of all structural load-bearing components described in the special inspection plan complies with the approved documents, and the specialty shoring design professional engineer has ascertained that the shoring and reshoring conforms with the shoring and reshoring plans submitted to the district office”.

JOHNSON & ASSOCIATES ENGINEERING

Bradley B. Johnson, P.E.
Florida Registration No. 52284

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.01 SUBSTITUTIONS: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for "substitutions." The following **are not** considered substitutions:

A. Substitutions requested during the bidding period, and accepted prior to award of Contract.

B. Revisions to Contract Documents requested by the Owner or Architect.

C. Specified options of products and construction methods included in Contract Documents.

D. Compliance with governing regulations and orders issued by governing authorities.

1.02 SUBMITTAL: Requests for substitution will be considered if received within 30 days after commencement of the Work. Requests received may be considered or rejected at the discretion of the Architect after review. See mechanical and electrical "General Provisions" section for special substitution requirements.

A. Submit 3 copies of each request for substitution in the form and in accordance with procedures for Change Order proposals.

B. Identify the product, or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Document compliance with requirements for substitutions, and the following information, as appropriate:

1. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.
2. Samples, where applicable or requested.
3. A comparison of significant qualities of the proposed substitution with those specified.
4. A list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors, that will be necessary to accommodate the proposed substitution.
5. A statement indicating the substitution's effect on the Construction Schedule compared to the Schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
6. Cost information, including a proposal of the net change, if any in the Contract Sum.
7. Certification that the substitution is equal-to or better in every respect to that required by Contract Documents, and that it will perform adequately in application indicated. Include Contractor's waiver of rights to additional payment or time, that may be necessary because of the substitution's failure to perform adequately.

C. Architect's Action: Within one week of receipt of the request for substitution, the Architect will request additional information necessary for evaluation. Within 2 weeks of receipt of the request, or one week of receipt of additional information, whichever is later, the Architect will notify the Contractor of acceptance or rejection. If a decision on use of a substitute cannot be made within the time allocated, use the product specified. Acceptance will be in the form of a Change Order.

1.03 SUBSTITUTIONS: The Contractor's substitution request will be received and considered by the Architect when one or more of the following conditions are satisfied, as determined by the Architect; otherwise requests will be returned without action except to record noncompliance with these requirements.

A. The request is directly related to an "or approved equal" clause or similar language in the Contract Documents.

B. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.

C. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.

D. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or separate contractors, and similar considerations.

E. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.

F. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.

G. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provide the required warranty.

1.04 The Contractor's submittal and Architect's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

END OF SECTION 012500

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SCHEDULE OF VALUES: Coordinate preparation of the Schedule of Values with the Contractor's Construction Schedule. Correlate line items in the Schedule of Values for each phase with other schedules and forms, including:

Contractor's Construction Schedule.
Application for Payment form.
List of subcontractors.
List of products.
Schedule of submittals.

Submit the Schedule of Values to the Architect at the earliest date, but no later than 7 days before the date scheduled for submittal of the initial Application for Payment.

Format and Content: Use the Project Manual Table of Contents as a guide to establish the format.

Identification: Include the following identification:

Project name and location.
Name of the Architect.
Project number.
Contractor's name and address.
Date of submittal.

Format: Use AIA Document G703 Continuation Sheet.

Break down each Division that is listed in enough detail to facilitate evaluation of Application for Payments. Round amounts off to the nearest dollar; the total shall equal the Contract Sum.

Each item in the Applications for Payment and Continuation Sheet shall be complete including total cost and share of overhead and profit. Temporary facilities and items that are not direct cost of Work-in-place may be shown as separate line items or distributed as general overhead expense.

Update and resubmit the schedule when Change Orders change the Contract Sum.

1.02 APPLICATIONS FOR PAYMENT: Applications for Payment shall be submitted by the 25th of the month and will be paid by the 10th of the following month. Applications for Payment not received by the 25th of the month will be paid not later than 15 days after the date received. The period covered by each Application for Payment is one month. A retainage of 10% of the amount earned and stored will be withheld from each payment.

A. Payment Application Times: Payment dates are indicated in the Agreement. The period covered by each application is the period indicated.

B. Payment Application Forms: Use AIA Document G 702 and Continuation Sheets G 703, 1992 edition, as the form for the application.

C. Application Preparation: Complete every entry, including notarization and execution by person authorized to sign on behalf of the Contractor. Incomplete applications will be returned without action. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made. Include amounts of Change Orders issued prior to the last day of the period covered by the application.

D. Transmittal: Submit 4 executed copies of each application to the Architect within 24 hours; two copies shall be complete, including waivers of lien where required and similar attachments. Transmit each copy with a transmittal listing attachments, and recording information related to the application.

E. Waivers of Lien: With final application, submit waivers of lien from every entity who has performed work, provided labor or supplied materials, constituting 2% or more of the overall contract amount. Waivers of Lien are to be provided by, but not limited to the following material suppliers and subcontractors. This list is for illustration only, not necessarily complete.

Concrete	Masonry	Paving
Steel	Site Work	Landscaping
Finish Carpentry	Roofing	Doors
Windows	Finish Hardware	Gypsum Wallboard
Flooring	Painting	Ceilings
Signage	Toilet & Bath Accessories	Elevators
Mechanical	Plumbing	Electrical

F. Waiver Forms: Submit waivers of lien on AIA Document G706A, "Contractor's Affidavit Of Release Of Liens".

1.03 INITIAL APPLICATION FOR PAYMENT: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include:

Fully executed Contract.
List of subcontractors.
List of suppliers and fabricators.
Schedule of Values.
Contractor's Construction Schedule (preliminary if not final).
Submittal Schedule (preliminary if not final).
List of Contractor's staff assignments.
Copies of building permits (if required).
Copies of licenses from governing authorities.
Certificates of insurance and insurance policies.
Performance and payment bonds.

1.04 PARTIAL RETAINAGE RELEASE FORMS: Use AIA Document G707A, "Consent of Surety to Reduction in Or Partial Release of Retainage".

1.05 APPLICATION FOR PAYMENT AT SUBSTANTIAL COMPLETION: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions. Administrative actions and submittals that precede or coincide with this application include:

Occupancy permits.
Test/adjust/balance records (preliminary).
Operation and Maintenance instructions.
Meter readings.
Change-over information related to Owner's occupancy.

1.06 FINAL PAYMENT APPLICATION: Administrative actions and submittals which must precede or coincide with submittal of the final payment application include:

Completion of Project closeout requirements. Refer to Section 017700 - Project Closeout.
Warranties and maintenance agreements.
Completion of all items specified for completion after Substantial Completion.
Transmittal of required Project construction records to Architect.
Final cleaning.
AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims".
Change of door locks to Owner's access.
AIA Document G707, " Consent of Surety to Final Payment".

END OF SECTION 012900

SECTION 013100 - PROJECT COORDINATION

PART 1 - GENERAL

1.01 THIS SECTION specifies requirements for project coordination including:

Coordination with other Contractors.
Administrative and supervisory personnel.
General installation provisions.
Cleaning and protection.

1.02 COORDINATION: Coordinate activities included in various Sections to assure efficient and orderly installation of each component. Coordinate operations included under different Sections that are dependent on each other for proper installation and operation.

Where installation of one component depends on installation of other components before or after its own installation, schedule activities in the sequence required to obtain the best results.

Where space is limited, coordinate installation of different components to assure maximum accessibility for maintenance, service and repair.

Make provisions to accommodate items scheduled for later installation.

Prepare memoranda for distribution to each party involved outlining required coordination procedures. Include required notices, reports, and attendance at meetings.

Prepare similar memoranda for the Owner and separate Contractors where coordination of their Work is required.

1.03 ADMINISTRATIVE PROCEDURES: Coordinate scheduling and timing of administrative procedures with other activities to avoid conflicts and ensure orderly progress. Such activities include:

Preparation of schedules.
Power and utility shutdowns.
Installation and removal of temporary facilities.
Delivery and processing of submittals.
Progress meetings.
Project closeout activities.

1.04 COORDINATION DRAWINGS: Prepare Coordination Drawings where close coordination is required for installation of products and materials fabricated off-site by separate entities, and where limited space necessitates maximum utilization of space for efficient installation of different components.

Show relationship of components shown on separate Shop Drawings.
Indicate required installation sequences.

1.05 STAFF NAMES: Within 15 days of Notice to Proceed, submit a list of Contractor's staff assignments, including Superintendent and personnel at the site; identify individuals, their duties and responsibilities, addresses and telephone numbers.

Post copies in the Project meeting room, the field office, and at each temporary telephone.

1.06 INSPECTION OF CONDITIONS: The Installer of each component shall inspect the substrate and all other conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected.

1.07 MANUFACTURER'S INSTRUCTIONS: Comply with manufacturer's installation instructions and recommendations, to the extent that they are more stringent than requirements in Contract Documents.

1.08 INSPECT material immediately upon delivery and again prior to installation. Reject damaged and defective items.

1.09 PROVIDE ATTACHMENT and connection devices and methods necessary for securing each construction element. Secure each construction element true to line and level. Allow for expansion and building movement.

1.10 VISUAL EFFECTS: Provide uniform joint widths in exposed Work. Arrange joints to obtain the best effect. Refer questionable choices to the Architect for decision.

1.11 RECHECK MEASUREMENTS and dimensions, including elevations, before starting installation.

1.12 INSTALL EACH COMPONENT during weather conditions and project status that will ensure the best results. Isolate each part from incompatible material as necessary to prevent deterioration.

1.13 COORDINATE TEMPORARY ENCLOSURES with inspections and tests, to minimize uncovering completed construction for that purpose.

1.14 MOUNTING HEIGHTS: Where mounting heights are not indicated, install components at standard heights for the application indicated or refer to the Architect.

1.15 CLEANING AND PROTECTION: During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

Clean and maintain completed construction as often as necessary through the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

Limiting Exposures: Supervise operations to ensure that no part of construction, completed or in progress, is subject to harmful or deleterious exposure. Such exposures include, but are not limited to the following:

Excessive static or dynamic loading.
Excessive internal or external pressures.
Excessive weathering.
Excessively high or low temperatures or humidity.
Air contamination or pollution.
Water or ice.
Chemicals or solvents.
Heavy traffic, soiling, staining and corrosion.
Rodent and insect infestation.
Unusual wear or other misuse.
Contact between incompatible materials.
Theft or vandalism.

END OF SECTION 013100

SECTION 013150 - CUTTING AND PATCHING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS: Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.02 SUMMARY: This Section specifies administrative and procedural requirements for cutting and patching.

Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the work.

Refer to Division-15 and Division-16 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.03 SUBMITTALS

A. Cutting and Patching Proposal: Where approval of procedures for cutting and patching is required before proceeding, submit a proposal describing procedures well in advance of the time cutting and patching will be performed and request approval to proceed. Include the following information, as applicable, in the proposal:

Describe the extent of cutting and patching required and how it is to be performed; indicate why it cannot be avoided.

Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.

List products to be used and firms or entities that will perform Work.

Indicate dates when cutting and patching is to be performed.

List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.

1.04 QUALITY ASSURANCE

A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.

B. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.

1.05 VISUAL REQUIREMENTS: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS

2.01 MATERIALS: Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.01 INSPECTION: Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting, and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.

3.02 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas. Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

3.03 PERFORMANCE

A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

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

B. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.

In general, where cutting is required, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces. Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill.

Comply with requirements of applicable Sections of Division-2 where cutting and patching requires excavating and backfilling. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated or abandoned. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

3.04 PATCHING: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

Where feasible, inspect and test patched areas to demonstrate integrity of the installation.

Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken area containing the patch, after the patched area has received primer and second coat.

3.05 CLEANING: Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely from non-intended locations any paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION 013150

SECTION 013200 - PROJECT MEETINGS

PART 1 - GENERAL

1.01 SUMMARY: This Section specifies requirements for Project meetings including:

Pre-Construction Conference.
Progress Meetings.

1.02 PRE-CONSTRUCTION CONFERENCE: Architect shall conduct a pre-construction conference after execution of the Agreement and prior to commencement of construction activities. Review responsibilities and personnel assignments.

Attendees: The Owner, Architect and their consultants, the Contractor and its superintendent, subcontractors, suppliers, manufacturers, and other concerned parties shall be represented by persons authorized to conclude matters relating to the Work.

Agenda: Discuss significant items that could affect progress, including the tentative construction schedule, critical sequencing, use of the premises, procedures for processing Change Orders and equipment deliveries.

Review progress of other activities and preparations for the activity under consideration at each conference, including time schedules, manufacturer's recommendations, weather limitations, substrate acceptability, compatibility problems and inspection and testing requirements.

Record significant discussions, agreements and disagreements of each conference, along with the approved schedule. Distribute the meeting record to everyone concerned, promptly, including the Owner and Architect.

Do not proceed if the conference cannot be successfully concluded. Initiate necessary actions to resolve impediments and reconvene the conference at the earliest feasible date.

1.03 PROGRESS MEETINGS: Conduct progress meetings at regular monthly intervals. Notify the Owner and Architect of scheduled dates. Coordinate meeting dates with preparation of the payment request.

Attendees: The Owner and Architect, each subcontractor, supplier or other entity concerned with progress or involved in planning, coordination or performance of future activities shall be represented by persons familiar with the Project and authorized to conclude matters relating to progress.

Agenda: Review minutes of the previous progress meeting. review significant items that could affect progress. Include topics appropriate to the current status of the Project including:

RFIs	Change Orders
Scheduling	Submittals

Reporting: Distribute copies of the minutes of the meeting to each party present and to parties who should have been present.

1.04 CONTRACTOR'S CONSTRUCTION SCHEDULE: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

Review the present and future needs of each entity present, including such items as:
Time.
Sequences.
Deliveries.

Off-site fabrication problems.
Site utilization.
Temporary facilities and services.
Hazards and risks.
Quality and Work standards.
Change Orders.
Documentation of information for payment requests.

END OF SECTION 013200

SECTION 013300 - SUBMITTALS

PART 1 - GENERAL

1.01 GENERAL PROCEDURES

A. Coordinate submittal preparation with performance of construction activities, and with purchasing or fabrication, delivery, other submittals and related activities. Transmit in advance of performance of related activities to avoid delay.

B. Coordinate transmittal of different submittals for related elements so processing will not be delayed by the need to review concurrently for coordination. The Architect reserves the right to withhold action on a submittal requiring coordination until related submittals are received.

1.02 PROCESSING: Allow two weeks for initial review. Allow more time if processing must be delayed for coordination with other submittals. The Architect will notify the Contractor when a submittal must be delayed for coordination. Allow two weeks for reprocessing each submittal.

No extension of time will be authorized because of failure to transmit submittals sufficiently in advance of the Work to permit processing.

1.03 SUBMITTAL PREPARATION: Place a label or title block on each submittal for identification. Provide two 4" x 5" spaces on the label or beside the title block on Shop Drawings to record Contractor's review and approval markings and action taken. Include the following information on the label for processing and recording action taken. Submittals received without a signed Contractor's Approval Stamp will be returned for resubmittal with no action taken.

Project name.
Date.
Name and address of Contractor.
Name and address of supplier.
Name of manufacturer.
Number and title of appropriate Specification Section.
Drawing sheet number and detail references, as required.

1.04 SUBMITTAL TRANSMITTAL: Package submittals appropriately for transmittal and handling. Transmit with a transmittal form. Submittals received from other than the Contractor will be returned without action.

Transmittal Form: Use AIA Document G 810 or other form acceptable to Architect. On the form record requests for data, and deviations from Contract Documents. Include Contractor's certification that information complies with Contract Documents.

1.05 CONTRACTOR'S CONSTRUCTION SCHEDULE: Submit a fully developed, CPM type construction schedule, within 30 days after the date of the Owner's issuance of a Notice to Proceed. Use the categories of work in the schedule to establish the categories in the "Schedule of Values".

As work progresses, mark the schedule to indicate Actual Completion.

Provide notations on the Schedule depicting the consequences on the Work from construction phasing.

Prepare the schedule on sheets of sufficient width to show data for the entire construction period.

Secure commitments for performing critical construction operations from parties involved. Coordinate each activity with other activities and show in proper sequence; include minor elements involved in the construction sequence. Indicate sequences necessary for completion of related portions.

Coordinate the Construction Schedule with the Schedule of Values, list of subcontracts, Submittal Schedule, progress reports, payment requests and other schedules.
Schedule completion in advance of the date established for Substantial Completion. Schedule Substantial Completion to allow time for the Architect's procedures necessary for certification of Substantial Completion.

Print and distribute schedule following initial approval to the Architect, Owner, subcontractors and other parties required to comply with scheduled dates. Redistribute after any approved revisions. Post copies in the temporary field office. Submit update schedule with each Pay Application.

1.06 DAILY CONSTRUCTION REPORTS: Prepare a daily construction report, recording information concerning events at the site. Submit duplicate copies to the Architect at weekly intervals. Include the following information:

List of subcontractors at the site.
Work Activities.
High and low temperatures, general weather conditions.
Accidents, stoppages, delays, shortages, losses.
Emergency procedures.
Change Orders received, implemented.
Partial Completions, occupancies.
Substantial Completions authorized.
Other relevant dates.

1.07 SUBMITTALS: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 1 set electronically to be returned to Contractor. The Architect will retain one copy and return the original marked with the action taken. **(Note: Architect will mark only one (1) set for return to the Contractor with action taken and/or modifications required.)** Maintain Sample sets at the Project site, for quality comparisons throughout construction phase.

Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

1.08 ARCHITECT'S ACTION: Except for submittals for record, information or similar purposes, where action and return is required, the Architect will review each submittal, mark to indicate action taken, and return. Compliance with specified characteristics is the Contractor's responsibility.

Action Stamp: The Architect will stamp each submittal with a self-explanatory action stamp. The stamp will be appropriately marked to indicate action taken.

1.09 DISTRIBUTION: Furnish copies of final submittal to installers, and others required for performance of construction activities. Show distribution on transmittal forms. Do not proceed with installation until an applicable copy of Product Data is in the installer's possession. Do not permit use of unmarked copies of Product Data in connection with construction.

1.10 SHOP DRAWINGS: Submit information, drawn to accurate scale. Submittals shall **indicate deviations from Contract Documents**. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Include the following information:

Project Name.
Location.
Suppliers Name.
Date.
Drawing No.
Specification Section Reference.
Dimensions.
Identification of products and materials included.
Compliance with specific standards.
Notation of coordination requirements.
Notation of dimensions established by field measurement.

Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2" x 11" but no larger than 24" x 36".

Initial Submittal: Submit one complete set for review; the digital markup will be returned.

Final Submittal: Submit one (1) of the original submittal for use by the Architect/Engineer/ Owner and Contractor.

Do not use Shop Drawings without a Architects stamp indicating action taken in connection with construction.

The Contractor shall schedule all shop drawing submittals to allow sufficient time for one initial review and two resubmittal reviews.

1.11 COORDINATION DRAWINGS are a special type of shop drawing depicting relationship and integration of different construction elements requiring coordination during fabrication or installation to fit and function as intended.

Preparation of coordination drawings is described in these Specifications under "Project Coordination" and may include components previously shown on shop drawings or product data.

Submit for integration of different construction elements. Show sequences and relationships of separate components to avoid conflicts in use of space.

1.12 PRODUCT DATA: Collect Product Data into a single submittal for each element or system. Mark each copy to show applicable choices and options. Where Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:

Manufacturer's printed recommendations.
Compliance with recognized trade association standards.
Compliance with recognized testing agency standards.
Application of testing agency labels and seals.
Notation of dimensions verified by field measurement.
Notation of coordination requirements.

A. Submittals: Submit 1 copies. The Architect will retain a copy and will return the original. **Note:** The Architect will mark only one set for return to the Contractor with action taken and/or modifications required. The Contractor will be responsible to see that any notes made by the Architect are made on all copies.

Unless noncompliance with Contract Documents, the submittal may serve as the final submittal.

B. Distribution: Furnish copies of final submittal to installers and others required for performance of construction activities. Show distribution on transmittal forms. Do not proceed with installation until an applicable copy of Product Data is in the installer’s possession.

1.13 SAMPLES: Submit Samples for review of kind, color, pattern, and texture, for a final check of these characteristics, and a comparison of these characteristics between the final submittal and the component as delivered and installed. Where variations are inherent in the product, submit multiple units that show limits of the variations.

Refer to other Sections for Samples that illustrate details of assembly, fabrication techniques, workmanship, connections, operation and similar characteristics.

Refer to other Sections for Samples to be returned for incorporation in the Work. Such Samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of Sample submittals.

Sample sets may be used to obtain final acceptance of the construction associated with each set.

Preliminary submittals: Where Samples are for selection of characteristics from a range of choices, submit a full set of choices for the product. Preliminary submittals will be reviewed and returned indicating selection and other action.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION (Not Applicable).

PART 4 - SCHEDULES

4.01 The following Submittal Schedule is for ***REFERENCE ONLY***. Items listed may or may not be required for this project.

SUBMITTAL SCHEDULE

SECTION	TYPE OF SUBMITTAL	DESCRIPTION
00610 - Performance Bond and Labor and Material Bond	Bonds	Performance Bond, Labor and Material Bond
00840 - List of Subcontractors	List	Subcontractors, Suppliers, Principal Manufactures
01027 - Application for Payment	Schedule of Values Application for Payment	Initial and Subsequent Initial and Subsequent
01040 - Project Coordination	List	Staff Names
01300 - Submittals	Construction Schedule Submittal Schedule Daily Construction Reports	
02070 - Selective Demolition	Schedule	Demolition Schedule
02280 - Termite Control	Warranty	Soil Treatment Solution
02510 - Concrete Paving	Shop Drawings	Walkways/Curb Layout
031119 - Concrete	Shop Drawings	Formwork Reinforce Placement/Schedule
042000 - Unit Masonry	Product Data Field Mock-Up	Grout/Mortar, Joint Reinforcement Masonry Wall
051200 – Structural Steel	Product Data Shop Drawings Certification	Assembly and Installation Instructions Metal Fabrication Metal and Steel Test Results
055000 - Metal Fabrication	Product Data Shop Drawings Certification	Assembly and Installation Instructions Metal Fabrication Metal and Steel Test Results
06192 - Prefabricated Wood Trusses	Shop Drawings	Sizes, Design Information
061000 - Rough Carpentry	Product Data Samples	
064023 - Interior Architectural Woodwork	Shop Drawings Samples	Casework Plastic Laminate, Hardware
071326 - Sheet Membrane Waterproofing	Product Data	Technical Data and Recommendations

SUBMITTAL SCHEDULE		
SECTION	**TYPE OF SUBMITTAL**	**DESCRIPTION**
072116 - Building Insulation	Product Data	Each Type of Insulation Required
076200 - Flashing and Sheet Metal	Product Data Guarantee	Roofing and Flashing Materials Maintenance Guarantee
074113 – Preformed Walls and Roof Panels	Product Data Samples	Manufacturer=s Information
079200 - Joint Sealers	Product Data Samples Certification	Each Type Sealants Product Test Reports
081113 - Steel Door and Frames	Shop Drawings Schedules	Frames
081416 - Flush Wood Doors	Product Data Shop Drawings Schedule	Wood Doors
083323 – Overhead Doors	Product Data	Doors
087100 - Finish Hardware	Schedule Product Hardware	Hardware
088000 - Glass and Glazing	Product Data Samples	Glass/Glazing Materials Glass
088000 - Glass and Glazing	Product Data Samples	Glass/Glazing Materials Glass
093000 - Tile	Product Data Samples	Tile and Grout Tile
095100 - Acoustical Ceilings	Product Data Samples	Panel/Suspension System
095100 - Acoustical Ceilings	Product Data Samples	Panel/Suspension System
096513 - Resilient Flooring	Product Data Sample Maintenance Instructions Replacement Material	Tile and Base
096816 - Carpeting	Product Data Samples Seaming Plan	Each Carpet Type Each Carpet Type All Carpet Spaces
099100 - Painting	Product Data Samples Mock-Up	Paint Paint Field Application
099100 - Painting	Product Data Samples Mock-Up	Paint Paint Field Application
101000 - Markerboards, Chalkboards, Tackboards	Product Data Samples	Each Type of Visual Board Tackboard Fabric
102800 - Toilet Partitions	Product Data Shop Drawings Samples	Toilet Partitions Fabrication of Partitions Color and Solid Plastic Selection
102800 - Toilet Partitions	Product Data Shop Drawings	Toilet Partitions Fabrication of Partitions

SUBMITTAL SCHEDULE		
SECTION	**TYPE OF SUBMITTAL**	**DESCRIPTION**
	Samples	Color and Solid Plastic Selection
101440 - Signage	Product Data Schedule Shop Drawings	Signage Sign Layout
105050 - Metal Lockers	Product Data Shop Drawings Samples	Lockers Layout and Details Color and Finish Selection
102800 - Toilet and Bath Accessories	Product Data	Accessories
109900 - Miscellaneous Specialties	Product Data Shop Drawings	Each Item Installation Instructions Fabrication Details (where required)
111320 - Project Screens and T.V. Mounting Brackets	Product Data Shop Drawings	Screens and Monitor Mounts Installation Details
111320 - Project Screens and T.V. Mounting Brackets	Product Data Shop Drawings	Screens and Monitor Mounts Installation Details
15010 - Mechanical General Provisions		
15400 - Plumbing		
16010 - Electrical General Provisions		

NOTE: Additional Submittals may be requested by the Architect/Engineer.

END OF SECTION 013300

SECTION 014000 - QUALITY CONTROL SERVICES

PART 1 - GENERAL

1.01 GENERAL: This Section specifies requirements for quality control services. Quality control services include inspections and tests performed by independent agencies, governing authorities, as well as the Contractor.

1.02 CONTRACTOR RESPONSIBILITIES: Provide inspections and tests specified or required by governing authorities, except where they are the Owner's responsibility, or are provided by another entity; services include those specified to be performed by an independent agency not by the Contractor. Costs are included in the Contract.

The Contractor shall engage and pay for services of an independent agency, acceptable to the Architect/Engineer to perform inspections and tests specified as Quality Control services.

Retesting: The Contractor is responsible for retesting where results prove unsatisfactory and do not indicate compliance with Contract Documents, regardless of whether the original test was the Contractor's responsibility.

Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.

Associated Services: The Contractor shall cooperate with agencies performing inspections or tests and provide auxiliary services as requested. Notify the agency in advance of operations to permit assignment of personnel. Auxiliary services include but are not limited to:

Provide access to the Work and furnish incidental labor and facilities necessary to facilitate inspections and tests.

Take representative samples of materials that require testing or assist the agency in taking samples.

Provide facilities for storage and curing of samples, and deliver samples to testing laboratories. Provide a preliminary design mix proposed for use for material mixes that require control by the testing agency.

Provide security and protection of samples and test equipment at the Project site.

1.03 DUTIES OF THE TESTING AGENCY: The agency engaged to perform inspections and testing of materials and construction shall cooperate with the Architect and Contractor in performance of its duties, and provide qualified personnel to perform inspections and tests.

The agency shall notify the Architect and Contractor promptly of deficiencies observed during performance of its services.

The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.

1.04 COORDINATION: The Contractor and each agency engaged to perform inspections and tests shall coordinate the sequence of activities to accommodate services with a minimum of delay. The Contractor and each agency shall coordinate activities to avoid removing and replacing construction to accommodate inspections and tests.

The Contractor is responsible for scheduling inspections, tests, taking samples and similar activities.

1.05 SUBMITTALS: The testing agency shall submit a certified written report of each inspection and test to the Architect, in duplicate, unless the Contractor is responsible for the service. If the Contractor is responsible, submit a certified written report of each inspection and test through the Contractor, in triplicate, who shall send two (2) copies to the Architect.

Submit additional copies of each report to the governing authority, when the authority so directs.

Report Data: Written reports of each inspection or test shall include, but not be limited to:

Date of issue.
Project title and number.
Name, address and telephone number of testing agency.
Testing agency qualifications.
Dates and locations of samples and tests or inspections.
Names of individuals making the inspection or test.
Designation of the Work and test method including applicable industry standards and/or codes.
Identification of product and Specification Section.
Complete inspection or test data.
Test results and an interpretations of test results.
Ambient conditions at the time of sample-taking and testing.
Comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements.
Name and signature of laboratory inspector or person reviewing results.
Recommendations on retesting.

1.06 QUALIFICATION FOR SERVICE AGENCIES: Engage inspection and testing agencies which are prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and specialize in the types of inspections and tests to be performed.

Each inspection and testing agency engaged shall be authorized to operate in the State in which the Project is located.

1.07 REPAIR AND PROTECTION: Upon completion of inspection and testing repair damaged construction and restore substrates and finishes to eliminate deficiencies. Comply with requirements for "Cutting and Patching."

Protect construction exposed by or for quality control service activities, and protect repaired construction.

The Contractor is responsible for repair and protection regardless of the assignment of responsibility for inspection and testing.

END OF SECTION 014000

SECTION 014200 - DEFINITIONS AND STANDARDS

PART 1 - GENERAL

1.01 DEFINITIONS: Basic Contract definitions are included in the General Conditions.

A. Indicated refers to graphic representations, notes or schedules on Drawings, or Paragraphs or Schedules in Specifications, and similar requirements in Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used, it is to help locate the reference.

B. Directed: Terms such as "directed", "requested", "authorized", "selected", "approved", "required", and "permitted" mean "directed by the Architect", "requested by the Architect", and similar phrases. No implied meaning shall be interpreted to extend the Architect's responsibility into the Contractor's supervision of construction.

C. Approve, used in conjunction with action on submittals, applications, and requests, is limited to the Architect's duties and responsibilities stated in General and Supplementary Conditions. Approval shall not release the Contractor from responsibility to fulfill Contract requirements.

D. Regulation includes laws, ordinances, statutes and lawful orders issued by authorities having jurisdiction, and rules, conventions and agreements within the construction industry that control performance of the Work, whether lawfully imposed by authorities having jurisdiction or not.

E. Furnish means "supply and deliver, ready for unloading, unpacking, assembly, installation, and similar operations."

F. Install describes operations at the site including "unloading, unpacking, assembly, erection, anchoring, applying, working to dimension, protecting, cleaning and similar operations."

G. Provide means "furnish and install, complete and ready for use."

H. Installer: "Installer" is the Contractor or an entity engaged by the Contractor, as an employee, subcontractor or sub- subcontractor for performance of a particular construction activity, including installation, erection, application and similar operations. Installers are required to be experienced in the operations they are engaged to perform. The term "experienced," when used with "Installer" means having a minimum of 5 previous Projects similar in size to this Project, and familiar with the precautions required, and with requirements of the authority having jurisdiction.

I. Project Site is the space available for construction activities, either exclusively or with others performing other construction on the Project. The extent of the Project Site is shown on the Drawings, and may or may not be identical with the description of the land upon which the Project is to be built.

J. Testing Laboratories: A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, at the Project Site or elsewhere, and to report on, and, if required, to interpret, results of those inspections or tests.

1.02 SPECIFICATION FORMAT: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 16-Division format and MASTERFORMAT numbering system. Language used in the Specifications is the abbreviated type. Implied words and meanings will be appropriately interpreted. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and where the context so indicates.

Imperative language is used generally. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the text subjective language is used to describe responsibilities which must be fulfilled indirectly by the Contractor, or by others when so noted. The words "shall be" shall be included by inference wherever a colon (:) is used within a sentence or phrase.

1.03 ASSIGNMENT OF SPECIALISTS: Certain construction activities shall be performed by specialists,

recognized experts in the operations to be performed. Specialists must be engaged for those activities, and assignments are requirements over which the Contractor has no option. Nevertheless, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.

1.04 DRAWING SYMBOLS: Where not otherwise noted, symbols are defined by "Architectural Graphic Standards", published by John Wiley & Sons, Inc., eighth edition.

1.05 MECHANICAL/ELECTRICAL DRAWINGS: Graphic symbols for mechanical and electrical Drawings are defined in a graphic symbol legend on the Construction Documents and are aligned with symbols recommended by ASHRAE. Where appropriate, they are supplemented by symbols recommended by technical associations. Refer instances of uncertainty to the Architect for clarification before proceeding.

1.06 APPLICABILITY OF STANDARDS: Except where the Contract Documents include more stringent requirements, applicable industry standards have the same force and effect as if bound or copied into Contract Documents. Such standards are part of the Contract Documents by reference. Individual Sections indicate standards the Contractor must keep available at the Project Site.

1.07 PUBLICATION DATES: Where the date of issue of a referenced standard is not specified, comply with the standard in effect as of date of Contract Documents.

Updated Standards: Submit a Change Order proposal where an applicable standard has been revised and reissued after the date of the Contract Documents and before performance of Work. The Architect will decide whether to issue a Change Order to proceed with the updated standard.

1.08 CONFLICTING REQUIREMENTS: Where compliance with two or more standards that establish different or conflicting requirements for minimum quantities or quality levels, the most stringent requirement will be enforced. Refer uncertainties as to which quality level is more stringent to the Architect for a decision before proceeding.

Minimum Quantities or Quality Levels: The quantity or quality shown or specified is the minimum to be provided or performed. Indicated values are minimum or maximum values, as appropriate for the requirements. Refer instances of uncertainty to the Architect for decision before proceeding.

1.09 COPIES OF STANDARDS: Each entity engaged on the Project shall be familiar with standards applicable to that activity. Copies of applicable standards are not bound with the Contract Documents.

Where copies of standards are needed for performance of a required construction activity, the Contractor shall obtain copies directly from the publication source.

Although copies of standards needed for enforcement of requirements may be part of submittals, the Architect reserves the right to require submittal of additional copies for enforcement of requirements.

1.10 ABBREVIATIONS AND NAMES: Where acronyms or abbreviations are used in the Specifications or other Contract Documents they mean the recognized name of the trade association, standards generating organization, authority having jurisdiction or other entity applicable. Refer to the "Encyclopedia of Associations," published by Gale Research Co., available in most libraries.

1.11 PERMITS, LICENSES, AND CERTIFICATES: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS: Drawings and General Provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

1.02 SUMMARY: This Section specifies temporary services and facilities, including utilities, construction and support facilities, security and protection. Provide facilities ready for use. Maintain, expand and modify as needed. Remove when no longer needed, or replaced by permanent facilities.

Temporary facilities required include but are not limited to water service and distribution, temporary electric power and light, storage sheds, sanitary facilities and temporary enclosures, barricades, warning signs, lights and environmental protection.

1.03 USE CHARGES: Cost or use charges for temporary facilities are not chargeable to the Owner or Architect, and will not be accepted as a basis of claims for a Change Order.

1.04 REGULATIONS: Comply with all applicable local, state, and federal laws and regulations.

1.05 STANDARDS: Comply with NFPA Code 241, "Building Construction and Demolition Operations", ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", and NECA Electrical Design Library "Temporary Electrical Facilities@ and OSHA.

A. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared by AGC and ASC.

B. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).

1.06 INSPECTIONS: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.07 CONDITIONS OF USE: Keep facilities clean and neat. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload, or permit facilities to interfere with progress. Do not allow hazardous, dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

1.08 MATERIALS AND EQUIPMENT: Provide new materials and equipment; if acceptable to the Architect, undamaged previously used materials and equipment in serviceable condition may be used. Provide materials and equipment suitable for the use intended.

A. Tarpaulins: Waterproof, fire-resistant, UL labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures provide translucent nylon reinforced laminated polyethylene or polyvinyl chloride fire retardant tarpaulins.

B. Temporary / Construction Fencing: 11-gage, galvanized 2-inch, chain link fabric fencing 6-feet high with galvanized steel pipe posts, 1-1/2" I.D. for line posts and 2-1/2" I.D. for corner posts.

1.09 TEMPORARY UTILITY INSTALLATION: Engage the local utility company to install temporary service or connect to existing service. Arrange for a time when service can be interrupted to make connections. Provide adequate capacity at each stage of construction. Combined use of temporary and existing power and water is anticipated for this project.

A. Water Service: Install water service and distribution piping of sizes and pressures adequate for construction. Sterilize water piping prior to use.

B. Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics. Include meters, transformers,

overload protected disconnects, automatic ground-fault interrupters and main distribution switch gear. Install service underground, if possible.

1. Power Distribution System: Install wiring overhead, and rise vertically where least exposed to damage.
2. Electrical Outlets: Provide properly configured NEMA polarized outlets. Provide outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.
3. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to traffic.

C. Lighting: Provide temporary lighting with local switching to fulfill security requirements and provide illumination for construction operations and traffic conditions.

1. Lamps and Light Fixtures: Provide general service incandescent lamps. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.

D. Telephones: Provide temporary telephone service for personnel engaged in construction. Post a list of important telephone numbers.

E. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent. If sewers are not available or cannot be used, provide drainage ditches, or similar facilities.

Filter out construction debris and other contaminants that might clog sewers or pollute waterways before discharge. Provide earthen embankments and similar barriers in and around excavations and subgrade construction to prevent flooding by runoff of storm water from heavy rains. **Comply with all City and County requirements for storm water runoff.**

1.10 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION: Locate for easy access. Maintain facilities until Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, if acceptable to the Owner.

A. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads where they do not interfere with construction activities.
Dust Control: If, in the opinion of the Owner or Architect it is necessary to control dust during construction period, the Contractor shall furnish and spread water or calcium chloride at points where dust is a nuisance or as directed by the Architect, at no additional cost to the Owner.

B. Field Offices: Provide field offices of size required to accommodate personnel, including telephone and fax line. In addition provide a 3' x 5' desk, table and stool for use by the Architect. Field office is to be provided with air conditioning. Keep clean and orderly for use for small progress meetings.

C. Storage and Fabrication Sheds: Install sheds, equipped to accommodate materials and/or existing equipment involved. Sheds may be open shelters.

D. Sanitary facilities include temporary toilets and drinking water fixtures. Comply with regulations and health codes for the type, number, location, operation and maintenance of fixtures. Install where facilities will best serve the Project. Provide toilet tissue, paper towels, paper cups and similar disposable materials for each facility. Provide covered waste containers for used material.

E. Toilets: Install self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell

or similar nonabsorbent material. Use of pit-type privies will not be permitted. Under no circumstances will construction personnel use existing toilet facilities.

F. Drinking Water Facilities: Provide containerized tap-dispenser type drinking water units.

G. Dewatering Facilities and Drains: For temporary drainage and dewatering operations not associated with construction, comply with requirements of applicable Division-2 Sections. Where feasible, utilize the same facilities. Maintain excavations and construction free of water.

H. Temporary Enclosures: Provide temporary enclosure for protection of construction from exposure, foul weather, other construction operations and similar activities. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions.

Install tarpaulins securely, with incombustible framing. Close openings through floor or roof decks and horizontal surfaces with load-bearing construction.

I. Collection and Disposal of Waste: Collect waste daily. Comply with NFPA 241 for removal of combustible waste. Enforce requirements strictly. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose in a lawful manner.

J. Project Identification and Temporary Signs: Prepare project identification signs on grade B-B High Density Overlay Plywood; install at project ROW. Support on framing of preservative treated wood or steel. Engage an experienced sign vendor to apply graphics. Architect will provide project sign layout upon request of Contractor. Graphics to have, Owner name, Project Name, Sheriff Name, Architect logo and CM logo.

1.11 SECURITY AND PROTECTION FACILITIES INSTALLATION: Except for use of permanent fire protection as soon as available, do not change from use of temporary security and protection facilities to permanent facilities until Substantial Completion.

A. Fire Protection: Until fire protection is supplied by permanent facilities, install and maintain temporary fire protection of types needed to protect against predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations." Consideration should be given to existing fire hydrant locations.

B. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide hand-carried, portable, UL-rated, class "ABC" dry chemical extinguishers. Locate fire extinguishers where effective for the intended purpose.

Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.

Store combustible materials in containers in fire-safe locations.

Provide supervision of welding operations, combustion type temporary heating units, and sources of fire ignition.

C. Barricades, Warning Signs and Lights: Comply with standards and code requirements for erection of barricades. Paint appropriate warning signs to inform personnel and the public of the hazard being protected against. Where needed provide lighting, including flashing lights. Temporary, portable or metal barricades and structures shall be constructed over all open trench areas intersecting student walkways. Walkway structures over trenches shall be of sturdy construction with handrails and be handicap accessible.

D. Security Enclosure and Lockup: Install temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism and theft. Where materials and equipment must be stored, provide a secure lockup.

E. Enclosure Fence: When excavation begins, install an enclosure fence with lockable entrance gates where indicated, or if not indicated, enclose the entire site or the portion sufficient to accommodate operations. Provide open-mesh, chain-link fencing with posts set in a compacted mixture of gravel and earth.

F. Environmental Protection: Operate temporary facilities and conduct construction by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted. Restrict use of noise making tools and equipment to hours that will minimize complaints.

1.12 OPERATION: Enforce strict discipline in use of temporary facilities. Limit availability to intended use to minimize abuse. Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and the elements.

Maintain operation of enclosures, heating, cooling, humidity control, ventilation and similar facilities on a 24-hour day basis to achieve indicated results and to avoid damage.

Prevent piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

1.13 TERMINATION AND REMOVAL: Remove each facility when the need has ended, or replaced by a permanent facility, or no later than Substantial Completion. Complete or restore construction delayed because of interference with the facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.

Temporary facilities are property of the Contractor.

At Substantial Completion, renovate permanent facilities used during the construction period, including but not limited to:

Replace air filters and clean inside of ductwork and housings.
Replace worn parts and parts subject to unusual operating conditions.
Replace burned out lamps.

END OF SECTION 015000

SECTION 015500 - MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 DEFINITIONS

A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.

B. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

C. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature, that is current as of the date of the Contract Documents.

D. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

E. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

1.02 QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.

B. Compatibility of Options: When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products that will be exposed to view in occupied spaces or on the exterior.

D. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.

E. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

Name of product and manufacturer.

Model and serial number.

Capacity.

Speed.

Ratings.

1.03 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products according to the manufacturer's recommendations, using

means and methods that will prevent damage, deterioration, and loss, including theft.

B. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses; and to prevent overcrowding of construction spaces.

C. Deliver products to the site in undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

D. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

E. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.

F. All new installed materials shall be sealed from moisture penetration at the end of each day.

PART 2 - PRODUCTS

2.01 PRODUCT SELECTION

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation. Discontinued items will not be accepted.

1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

B. Product Selection Procedures: The Contract Documents and governing regulations govern product selection. Procedures governing product selection include the following:

1. Semi-proprietary Specification Requirements: Where Specifications name two or more products or manufacturers, provide one of the products indicated.

   Where Specifications specify products or manufacturers by name, accompanied by the term "**or equal**" or "**or approved equal**", comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

2. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.

3. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated.

   Manufacturer's recommendations may be contained in published product literature or by the manufacturer's certification of performance.

4. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with an imposed code, standard, or regulation, select a product that complies with the standards, codes, or regulations specified.

5. Visual Matching: Where Specifications require matching an established Sample (match existing), the Architect's decision will be final on whether a proposed product matches satisfactorily.

   Where no product is available within the specified category, matches satisfactorily and complies with other specified requirements; comply with provisions of the Contract Documents concerning "substitutions" (Section 01631 - Product Substitutions) for selection of a matching product in another product category.

6. Visual Selection: Where specified product requirements include the phrase "... as selected from manufacturer's standard colors, patterns, textures ..." or a similar phrase, select a product and manufacturer that complies with specified requirements. The Architect will select the color, pattern, and texture from the product line selected. Any selections within the product line which are unavailable, no longer make or superseded by another should be so marked.

PART 3 - EXECUTION

3.01 INSTALLATION OF PRODUCTS

A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.

B. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION 015500

SECTION 017700 - PROJECT CLOSEOUT

PART 1 - GENERAL

1.01 SUBSTANTIAL COMPLETION: (See Section 000700 - General Conditions, Section 9.8). Before requesting inspection for certification of Substantial Completion, complete the following:

A. Change-over permanent locks and transmit keys to the Owner.

B. Complete start-up testing of systems, and instruction of the Owner's personnel. Remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.

C. Complete final clean up. Touch-up and repair and restore marred exposed finishes.

1.02 INSPECTION PROCEDURES: When the Contractor considers the work substantially complete, he shall prepare and submit a comprehensive list of items to be completed and/or corrected to the Architect. The Contractor shall proceed to promptly complete and/or correct all items on the list.

A. Upon receipt of Contractor's list, the Architect will make an inspection or inform the Contractor of work to be completed before an inspection will be conducted.

B. When the work is substantially complete, the Architect will prepare the Certificate of Substantial Completion which shall establish the date of Substantial Completion.

C. Results of the completed inspection will form the basis of requirements for final acceptance, **including any items discovered at a later date considered necessary to be completed for final**.

1.03 FINAL ACCEPTANCE: (See General Conditions Section 9.10). Before requesting inspection for certification of final acceptance and final payment, complete the following:

A. Submit a copy of the final inspection list stating that each item has been completed or otherwise resolved for acceptance.

B. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.

C. Submit record drawings, maintenance manuals, damage or settlement survey, and similar record information.

D. Refer to Section 012900 - Application For Payment - Final Payment Application.

E. Provide the Architect with “Final Statement of Compliance”, for the Owner.

1.04 REINSPECTION PROCEDURE (if required): The Architect will re-inspect the Work upon receipt of notice that the Work has been completed, except items whose completion has been delayed because of circumstances acceptable to the Architect.

A. Upon completion of re-inspection, the Architect will then prepare a certificate of final acceptance, or advise the Contractor of work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance. If necessary, re-inspection will be repeated.

1.05 RECORD DRAWINGS: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark-up these drawings to show the actual installation where installation varies from that shown originally. Mark whichever drawing is most capable of showing conditions accurately. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

A. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover.

B. 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 lost. Provide access to Project Record Documents for Architect=s reference during normal working hours.

C. Upon completion of the Work, submit Record Drawings (red-line field as-builts) to the Architect for Owner's records.

1.06 PROJECT RECORD SPECIFICATIONS: Maintain one copy of the Project Manual, including addenda. Mark-up to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot be readily discerned later by direct observation. Note related record drawing information and Product Data.

A. Upon completion of the Work, submit record Drawings and Specifications to the Architect for the Owner's records.

1.07 PROJECT AS-BUILT DRAWINGS: The Contractor shall, at his own expense, hire Architect of Record (CRA) to prepare as-built drawings. The Contractor shall provide to the Architect record drawings and record specifications. The Contractor is solely responsible for the content of the record drawings and the as-built documents. As-built drawings shall comply with the following:

A. Show the actual locations of all components, including depth below grade, along with any changes and/or modifications to the Contract Drawings.

B. All dimensions and elevations, including invert elevations, shall be verified by field measurements.

C. The Contractor is cautioned to make all necessary measurements and elevations during installation to accurately locate all concealed items.

D. As-Built Survey: Contractor shall provide signed and sealed As-Built Survey of existing grades and structures as required by authorities having jurisdictions.

1.08 MAINTENANCE MANUALS: Organize maintenance data into sets of manageable size. Bind in individual heavy-duty 2-inch, 3-ring vinyl-covered binders, with pocket folders for folded sheet information. Mark identification on front and spine of each binder. Include the following information:

Emergency instructions.
Copies of warranties.
Recommended "turn around" cycles.
Shop Drawings and Product Data.
Spare parts list.
Wiring diagrams.
Inspection procedures.
Fixture lamping schedule.

1.09 OPERATING AND MAINTENANCE INSTRUCTIONS: Arrange for the installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. Include a detailed review of the following:

Maintenance manuals.
Tools.
Control sequences.
Warranties and bonds.
Spar parts and materials.
Lubricants.
Hazards.
Maintenance agreements and similar continuing commitments.

As part of instruction for operating equipment, demonstrate the following procedures:

Start-up and shutdown.
Noise and vibration adjustments.
Emergency operations.
Safety procedures.

All operation and training sessions shall be video taped and two (2) copies provided to Owner. Verify with Owner the appropriate format of taping that should be used.

1.10 FINAL CLEANING: Employ experienced workers for final cleaning. Clean each surface to the condition expected in a commercial building cleaning and maintenance program. Complete the following, as a minimum before requesting inspection for certification of Substantial Completion:

A. Remove labels that are not permanent labels.

B. Clean transparent materials. Remove glazing compound. Replace chipped or broken glass.

C. Clean exposed hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean.

D. Vacuum carpeted surfaces.

E. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.

F. Clean the site of rubbish, litter and other foreign substances. Sweep paved areas; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth even-textured surface.

1.11 REMOVAL OF PROTECTION: Remove temporary protection and facilities.

1.12 COMPLIANCE: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Remove waste materials from the site and dispose of in a lawful manner.

END OF SECTION 017700

SECTION 017800 - WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 STANDARD PRODUCT WARRANTIES are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner. Note: All Standard Product Warranties are to be provided.

1.02 SPECIAL WARRANTIES are written warranties required by or incorporated in Contract Documents, to extend time limits provided by standard warranties or to provide greater rights for the Owner. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.

A. Requirements for warranties for products and installations that are specified to be warranted, are included in the individual Sections of Divisions-2 through -16.

1.03 DISCLAIMERS AND LIMITATIONS: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and Subcontractors required to countersign special warranties with the Contractor.

1.04 RELATED DAMAGES AND LOSSES: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

1.05 REINSTATEMENT OF WARRANTY: When Work covered by a warranty has failed and been corrected, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

1.06 REPLACEMENT COST: On determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through part of its useful service life.

1.07 OWNER'S RECOURSE: Written warranties made to the Owner are in addition to implied warranties, and shall not limit duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.

A. Rejection of Warranties: The Owner reserves the right to reject warranties and limit selections to products with warranties not in conflict with requirements of the Contract Documents. The Owner reserves the right to refuse to accept Work where a special warranty, or similar commitment is required, until evidence is presented that entities required to countersign commitments are willing to do so.

1.08 SUBMIT WRITTEN WARRANTIES to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion, submit written warranties on the Architect's request.

A. When a designated portion of the Work is completed and occupied or used, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within fifteen days of completion of that designated portion of the Work.

B. When a special warranty is to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Architect for approval prior to final execution.

C. Refer to individual Sections of Divisions-2 through -16 for specific content, and particular requirements for submittal of special warranties.

D. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.

E. Provide heavy paper dividers with celluloid covered tabs for each warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.

F. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS", the Project title or name, and the name of the Contractor.

G. When operating and maintenance manuals are required for warranted construction, provide additional copies of each warranty, as necessary, for inclusion in each required manual.

END OF SECTION 017800

SECTION 031100 – CONCRETE FORMWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. The extent of formwork is indicated by the cast-in-place concrete structures shown on the Drawings.

B. The Work includes providing formwork, and shoring, for cast-in-place concrete and installation into formwork of items furnished by others, such as anchor bolts, setting plates, bearing plates, anchorages, inserts, frames, nosings, and other items to be embedded in concrete (but not including reinforcing steel).

1.3 SUBMITTALS

A. Product Data; Concrete Formwork: Submit 2 copies of manufacturer's data and installation instructions for proprietary materials including form coatings manufactured form systems, form liners, ties, accessories, and other items specified herein.

B. Concrete Shoring Formwork: Provide shop drawings, catalog cuts, and calculations signed and sealed by a Professional engineer registered in the State of Washington for all elevated formwork that is shored.

1.4 QUALITY ASSURANCE

A. Examine the substrate and the conditions under which concrete formwork is to be performed and notify the Architect in writing of unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions have been corrected. Contractors shall be licensed and exhibit 5 years experience in similar projects.

B. Codes and Standards: Unless otherwise shown or specified, design, construct, erect, maintain, and remove forms and related structures for cast-in-place concrete Work in compliance with the current accepted American Concrete Institute Standard ACI 347, "Guide to Formwork for Concrete."

C. Allowable Tolerances

1. Construct formwork to provide completed cast-in-place concrete surfaces complying with the tolerances specified in ACI 347 and as follows:

   a. Variation from plumb in lines and surfaces of columns, piers, walls, and arises; 1/4 inch per 10 feet, but not more than one inch. For exposed corner columns, control joint grooves, and other conspicuous lines, 1/4 inch in a bay or 20 feet maximum; 1/2" maximum in 40 ft. or more.
   b. Variation in sizes and locations of sleeves, floor openings, and wall openings, 1/4 inch.
   c. Variations in footings plan dimensions, minus 1/2 inch and plus 2 inches; misplacement or eccentricity, 2 percent of the footing width in direction of misplacement but not more than 2 inches; thickness reduction, minus 5 percent.

2. Before concrete placement, check the lines and levels of erected formwork. Make corrections and adjustments to ensure proper size and locations of concrete members and stability of forming systems.

3. During concrete placement, check formwork and related supports to ensure that forms are not displaced and that completed Work will be within specified tolerances.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

A. Forms for Exposed Finish Concrete

1. Unless otherwise shown or specified, construct formwork for exposed concrete surfaces with plywood, metal, metal-framed, plywood-faced, or other panel type materials acceptable to Architect, to provide continuous, straight, smooth as-cast surfaces. Plywood grain indentations are not acceptable. Furnish in largest practicable sizes to minimize number of joints to conform to joint system shown on Drawings. Provide form material with sufficient thickness to withstand pressure of newly placed concrete without bow or deflection.

a. Plywood: APA grade-trademarked "B-B Plyform Exterior," mill oiled.

2. Provide form coatings on forms for all exposed finished concrete. Plywood grain indentations or patterns left in the concrete as a result of the forms are not acceptable.

B. Forms for Unexposed Finish Concrete: Form concrete surfaces which will be unexposed in the finished structure with plywood, lumber, metal, or other acceptable material. Provide lumber that is dressed on at least 2 edges and one side for tight fit.

C. Form Units

1. Provide factory-fabricated, adjustable-length, removable, or snap-off metal form ties; design to prevent form deflection and to prevent spalling concrete surfaces upon removal.
2. Unless otherwise shown, provide ties so that portion remaining within concrete after removal of exterior parts is at least one inch from outer concrete surface. Unless otherwise indicated, provide form ties which will leave a hole not larger than one inch diameter in concrete surfaces.
3. Form ties fabricated on the project site and wire ties are not acceptable.

D. Form Coatings: Commercial formulation form-coating compounds that will not bond with, stain, nor adversely affect concrete surfaces and will not impair subsequent treatment of concrete surfaces bond or adhesion, nor impede the wetting of surfaces to be cured with water or curing compounds.

E. Inserts

1. Provide metal inserts for anchorage of materials or equipment to concrete construction not supplied by other trades and as required for the Work.
2. Provide Fry original reglet as manufactured by Fry Reglet Corporation, Alhambra, California. Reglet shall be made of .050 polyvinylchloride, meeting ASTM Spec. D-1874. Provide steel spacer channel for positive alignment and barrier to grout.
3. Vinyl Chamfer Strips: Shall be Vinylex CSN-1/2 as manufactured by Vinylex Corporation, Knoxville, Tennessee 37921.

2.2 DESIGN OF FORMWORK

A. Design, erect, support, brace, and maintain formwork so that it will safely support vertical and lateral loads that might be applied, until such loads can be supported by the concrete structure. Carry vertical and lateral loads to ground by formwork system and in-place construction that has attained adequate strength for that purpose. Construct formwork so that concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances and surface irregularities complying with the following ACI 347 limits:

1. Provide Class A tolerances for concrete surfaces exposed to view.
2. Provide Class C tolerances for other concrete surfaces.

B. Design forms and falsework to include assumed values of live load, dead load, weight of moving equipment operated on formwork, concrete mix, height of concrete drop, vibrator frequency, ambient temperature, foundation pressures, stresses, lateral stability, and other factors pertinent to safety of structure during construction.

C. Construct forms to sizes, shapes, lines, and dimensions shown and to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in the Work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent cement paste from leaking.

D. Design formwork to be readily removable without impact, shock, or damage to cast-in-place concrete surfaces and adjacent materials. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like for easy removal.

E. Provide formwork sufficiently tight to prevent leakage of cement paste during concrete placement. Solidly butt joint and provide backup material at joints as required to prevent leakage and fins.

F. Provide temporary openings for cleanouts and inspections where interior area of formwork is inaccessible before and during concrete placement. Securely brace temporary openings and set tightly to forms to prevent losing concrete mortar. Locate temporary openings in forms at inconspicuous locations.

G. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before placing concrete. Re-tighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

H. Provisions for other Trades: Coordinate openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.

PART 3 - EXECUTION

3.1 FORM CONSTRUCTION

A. Construct forms complying with ACI 347 to the exact sizes, shapes, lines, and plumb work in finish structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required. Use selected materials to obtain required finishes.

B. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where the slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and assure ease of removal.

C. Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Brace temporary closures and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms in as inconspicuous location as possible, consistent with project requirements.

1. Form intersecting planes to provide true, clean-cut corners, with edge grain of plywood not exposed as form for concrete.

D. Provide formwork sufficiently tight to prevent leakage of cement paste during concrete placement. Solidly butt joints and provide backup material at joints as required to prevent leakage and fins.

E. Falsework

1. Erect falsework and support, brace and maintain it to safely support vertical, lateral, and asymmetrical loads applied until such loads can be supported by in-place concrete structures. Construct falsework so that adjustments can be made for take-up and settlement.
2. Provide wedges, jacks, or camber strips to facilitate vertical adjustments. Carefully inspect falsework and formwork during and after concrete placement operations to determine abnormal deflection or signs of failure; make necessary adjustments to produce Work or required dimensions.
3. Support form facing materials by members spaced sufficiently close to prevent deflection. Fit forms placed in successive units for continuous surfaces to accurate alignment, free from irregularities and within allowable tolerances.
4. Provide camber in formwork as required for anticipated deflections due to weight and pressures of fresh concrete and construction loads for longspan members without intermediate supports.
5. Carefully inspect falsework and formwork during and after concrete placement operations to determine abnormal deflection or signs of failure; make necessary adjustments to produce Work of required dimension.

F. Forms for Exposed Concrete

1. Drill forms to suit ties used and to prevent leakage of concrete mortar around tie holes. Do not splinter forms by driving ties through improperly prepared holes.
2. Do not use metal cover plates for patching holes or defects in forms.
3. Provide sharp, clean corners at intersecting planes without visible edges or offsets. Back joints with extra studs or girts to maintain true, square intersections.
4. Use extra studs, whalers, and bracing to prevent bowing of forms between studs and to avoid bowed appearance in concrete. Do not use narrow strips of form material which will produce bow.
5. Assemble forms so they may be readily removed without damage to exposed concrete surfaces.
6. Form molding shapes, recesses, and projections with smooth-finish materials and install in forms with sealed joints to prevent displacement.
7. Back-up strips shall be used as continuous support for the unsupported portions of the shiplap form liner. Span the entire length of the form liner.

G. Corner Treatment

1. Form chamfers with ½" round strips, unless otherwise shown, accurately formed and surfaced to produce uniformly straight lines and tight edge joints. Extend terminal edges to required limit and miter chamfer strips at changes in direction.
2. Unexposed corners may be formed either square or chamfered.

H. Provision for Other Trades: Provide openings in concrete formwork to accommodate Work of other trades including those under separate prime contracts. Size and location of openings, recesses, and chases are the responsibility of the trade requiring such items. Accurately place and securely support items to be built into form.

I. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before concrete is to be placed. Retighten forms immediately after concrete placement as required to eliminate mortar leaks.

J. Construction Joints: Where footings and walls are divided by construction joints, joints shall have keyways formed. Keyways shall be 1/3 of the dimension of the element in both directions and shall be at least 2 inches thick, unless otherwise noted.

3.2 FORM COATINGS

A. Coat form contact surfaces with form-coating compound before reinforcement is placed. Do not allow excess form coating material to accumulate in the forms or to come in contact with surfaces which will be bonded to fresh concrete. Apply in compliance with Manufacturer's instructions.

B. Coat steel forms with a non-staining, rust-preventative form oil or otherwise protect against rusting. Rust-stained steel formwork is not acceptable.

3.3 INSTALLATION OF EMBEDDED ITEMS

A. General: Set and build into the Work anchorage devices and other embedded items required for other Work that is attached to, or supported by, cast-in-place concrete. Use setting Drawings, diagrams, instructions, and directions provided by suppliers of the items to be attached thereto.

B. Edge Forms and Screed Strips for Slabs: Set edge form or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in the finished slab surface. Provide and secure units to support types of screeds required.

1. Forms for concrete curbs and bases shall be rigidly held straight and tight so that finished concrete will be level and even.

3.4 REMOVAL OF FORMS

A. General: Formwork not supporting concrete, such as sides of beams, walls, columns, and similar parts of the Work, may be removed after cumulatively curing at not less than 50 degrees F for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operation; and provided that curing and protection operations are maintained.

B. Formwork supporting weight of concrete, such as beam soffits, joists, slabs, and other structural elements may not be removed in less than 14 days, and not until concrete has attained design minimum 28 day compressive strength.

C. Form facing material may be removed 24 hours after placement, only if shores and other vertical supports have been arranged to permit removal of form facing material without loosening or disturbing shores and supports.

3.5 REUSE OF FORMS

A. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form facing material will not be acceptable. Apply new form coating compound material to concrete contact surfaces as specified for new formwork.

B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close all joints. Align and secure joints to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to the Architect.

END OF SECTION 031100

SECTION 032000 – CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. The extent of concrete reinforcement is shown on the Drawings and in schedules.

B. The Work includes fabrication and placement of reinforcement for cast-in-place concrete including bars, ties, and supports.

1.3 SUBMITTALS

A. Product Data: Submit 2 copies of manufacturer's specifications and installation instructions for proprietary materials and reinforcement accessories.

B. Shop Drawings: For fabrication, bending, and placement of concrete reinforcement. Comply with the current accepted ACI 315 "Details and Detailing of Concrete Reinforcement." Show bar schedules, stirrup spacing, diagrams of bent bars, arrangements, and assemblies as required for the fabrication and placement of concrete reinforcement. Show building plans with bar sizes, spacing, and quantities for all bent and straight reinforcing bars.

C. Shop Drawing packages shall be submitted by building order of Contractor’s schedule of construction.

1.4 QUALITY ASSURANCE

A. The Installer must examine the substrate and the conditions under which concrete reinforcement is to be placed and notify the Contractor in writing of unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

B. Codes and Standards: Comply with requirements of the latest edition of the following codes and standards, except as herein modified:

1. American Welding Society, AWS D1.4/D1.4M:2005 - "Structural Welding Code - Reinforcing Steel."
2. Concrete Reinforcing Steel Institute, "Manual of Standard Practice."
3. American Concrete Institute, ACI 318 "Building Code Requirements for Structural Concrete and Commentary."

1.5 DELIVERY, HANDLING, AND STORAGE

A. Deliver reinforcement to the project site bundled, tagged, and marked. Use metal tags indicating bar size, lengths, and other information corresponding to markings shown on placement diagrams.

B. Store concrete reinforcement materials at the site to prevent damage and accumulation of dirt or excessive rust.

PART 2 - PRODUCTS

2.1 MATERIAL

A. Reinforcing Bars (ReBar): ASTM A615, and as follows.

1. Provide Grade 60 for bars No. 3 to 11.

B. Steel Wire: ASTM A1064.

C. Welded Wire Fabric (WWF): ASTM A1064.

D. Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcement in place.

1. Use wire bar type supports complying with CRSI recommendations, unless otherwise indicated. Do not use wood, brick, and other unacceptable materials.
2. For slabs on grade, use supports with sand plates or horizontal runners where base material will not support chair legs.
3. Over waterproof membranes, use precast concrete chairs to prevent penetration of the membrane
4. For footings, trench footings, and grade beams use precast concrete bricks (f'c = 4000 psi min. at 28 days). (Concrete masonry bricks not acceptable).
5. For concrete masonry bond beams use ##5 bar laterally, tied to each longitudinal reinforcing bar below to hold bars apart and up from bottom. Space ##5 bars at 48 inches o.c. Unless otherwise noted per plan.

E. Grouted Anchor Bolts: Refer to Structural drawings.

F. Rebar Ties: Nylon or annealed tie wire as recommended by the ACI.

2.2 FABRICATION

A. Fabricate reinforcing bars to conform to required shapes and dimensions, with fabrication tolerances complying with CRSI "Manual of Standard Practice." In case of fabricating errors, do not re-bend or straighten reinforcement in a manner that will injure or weaken the material.

B. Unacceptable Materials: Reinforcement with any of the following defects will not be permitted in the work.

1. Bar lengths, depths, and bends exceeding specified fabrication tolerances.
2. Bends or kinks not indicated on Drawings or final shop drawings.
3. Bars with reduced cross-section due to excessive rusting or other cause.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine the conditions under which concrete reinforcement is to be placed. Do not proceed with the Work until unsatisfactory conditions have been corrected.

B. Notify Architect when steel placement for a concrete pour is nearing a completion so that the Work may be observed.

3.2 INSTALLATION

A. Comply with the specified codes and standards and Concrete Reinforcing Steel Institute recommended practice for "Placing Reinforcing Bars," for details and methods of reinforcement placement and supports, and as herein specified.

B. Clean reinforcement to remove loose rust and mill scale, earth, ice, and other materials which reduce or

destroy bond with concrete. Reinforcing steel should be free of kinks and non-shop bends. Field bends should only be as directed by the architect.

C. Position, support, and secure reinforcement against displacement by formwork construction, or concrete placement operations. Locate and support reinforcing by precast concrete brick, metal chairs, runners, bolsters, spacers, and hangers as required.

D. Place reinforcement to obtain the minimum coverages for concrete protection. Arrange, space, and securely tie bars and bar supports together with 16 gauge wire to hold reinforcement accurately in position during concrete placement operations. Set wire ties so that twisted ends are directed away from exposed concrete surfaces.

E. Install welded wire fabric in as long lengths as practicable. Lab adjoining pieces at least one full mesh and lace splices with 16-gauge wire. Do not make end laps midway between supporting beams or directly over beams of continuous structures. Offset end laps in adjacent widths to prevent continuous laps.

F. Provide sufficient numbers of supports and of strengths to carry reinforcement. Do not place reinforcing bars more than 2 inches beyond the last leg of continuous bar support. Do not use supports as bases for runaways for concrete conveying equipment and similar construction loads.

G. Provide standard reinforcing splices by lapping ends, placing bars in contact, and tightly tying wire. Comply with requirements of ACI 318 for minimum lap of spliced bars.

H. Reinforcing steel installed in continuous footings shall run continuous. This shall include specially shaped components with proper lap where corner reinforcing and step footings occur.

I. Provide additional reinforcing around required openings in footings, and slabs having at least a one-foot dimension.

J. Flame cutting of reinforcing steel is prohibited.

END OF SECTION 032000

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SECTION 033000 - BUILDING CONCRETE WORK

PART 1 - GENERAL

1.01 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of following codes, specifications and standards, except where more stringent requirements are shown or specified:

ACI 301 "Specifications for Structural Concrete for Buildings."

ACI 318 "Building Code Requirements for Reinforced Concrete."

ACI 347 "Recommended Practice for Concrete Formwork."

Concrete Reinforcing Steel Institute, "Manual of Standard Practice."

1.02 SUBMITTALS: Submit manufacturer's product data with installation instructions for proprietary materials including reinforcement and forming accessories, admixtures, joint materials, hardeners, curing materials and others as requested by Architect.

A. Submit design mixes of each individual type of concrete to be used on the project prior to the start of concrete work. Tests shall be made for compressive strength, slump and air entrainment. Proportion mixes in compliance with mix design procedures specified in ACI 301 and requirements stated on the plans.

B. Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, diagrams of bent bars, arrangement of concrete reinforcement. Include special reinforcement required for openings through concrete structures.

C. Concrete Testing Service: The Contractor shall employ, at his sole expense, an independent testing agency acceptable to the Architect/Engineer to perform sampling and testing during concrete placement as follows. Refer to Section 01400 for additional requirements for Testing Agency.

1. Sampling: ASTM C 172.
2. Slump: ASTM C 143, one of test for each load at **point of discharge**.
3. Air Content: ASTM C 173, one for each set of compressive strength specimens.
4. Compressive Strength: ASTM C 39, Three sets for each 25 cu. yds. or fraction thereof of each class of concrete; one specimen tested at 7 days, two specimens tested at 28 days, and one retained for later testing if required. When the total quantity of a given class of concrete is less than 25 cu. yds., strength tests may be waived by Architect if field experience indicates evidence of satisfactory strength.
5. Test Results will be reported in writing to Architect, Contractor, and concrete producer within 24 hours after tests are made.

PART 2 - PRODUCTS

2.01 FORM MATERIALS

A. Forms for Exposed Finish Concrete: Unless otherwise indicated, construct formwork for exposed concrete surfaces with plywood, metal, metal-framed plywood faced or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings. Provide form material with sufficient thickness to withstand pressure of newly-placed concrete without bow or deflection.

1. Use plywood complying with U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood," Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.

B. Forms for Unexposed Finish Concrete: Form concrete surfaces which will be unexposed in finished structure with plywood, lumber, metal or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.

C. Cylindrical Columns and Supports: Form round-section members with metal, fiberglass reinforced plastic, or paper or fiber tubes. Construct paper or fiber tubes of laminated plies using water-resistant adhesive with wax-impregnated exterior for weather and moisture protection. Provide units with sufficient wall thickness to resist loads imposed by wet concrete without deformation.

D. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.

2.02 REINFORCING MATERIALS

A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.

B. Supports for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI specifications, unless otherwise acceptable.

2.03 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I, unless otherwise acceptable to Architect.

Use one brand of cement throughout project, unless otherwise acceptable to Architect.

B. Normal Weight Aggregates: ASTM C 33, and as herein specified. Provide aggregates from a single source for exposed concrete.

1. Local aggregates not complying with ASTM C 33 but which have shown by special test or actual service to produce concrete of adequate strength and durability may be used when acceptable to Architect.
2. The aggregate shall not exceed 1" in its maximum dimensions for foundation and slab work nor 3/8" (pea gravel) for concrete block lintels and filled cells.
3. Lightweight Aggregates: ASTM C 330.
4. Water: Drinkable.
5. Air-Entraining Admixture: ASTM C 260.
   a. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to the following:

      "Sika Aer"; Sika Corp
      "MB-VR or MB-AE"; Master Builders
      "Dorex AEA"; W.R. Grace
      "Edoco 2001 or 2002"; Edoco Technical Product

2.04 RELATED MATERIALS: Submit any product not specifically listed in this specification to Architect for approval.

A. Vapor Barrier: Provide vapor barrier cover over prepared base material where indicated. Use only materials which meet ASTM 1745-09, not less than 15 mils thick, and are resistant to decay when tested in accordance with ASTM E154. Product must maintain a permeance of less than 0.01 perms after mandatory conditioning tests include in ASTM E 1745-09, Section 7.12, 7.1.3, 7.1.4 and 7.1.5. Install material according to ASTM E 1643-09. Lap vapor barrier a minimum of 6” at all locations.

B. Non-Shrink Grout: CRD-C 621, factory pre-mixed grout.

1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
   a. Non-metallic

      "Masterflow 713"; Master Builders
      "Euco-NS"; Euclid Chemical Co.

C. Liquid Membrane Forming Curing Compound: Liquid type membrane-forming curing compound complying with ASTM C 309, Type I, Class A unless other type acceptable to Architect. Moisture loss not more than 0.055 gr./sp. cm. when applied at 200 sq. ft./gal.

1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

   "Masterseal"; Master Builders
   "Ecocure"; Euclid Chemical Co.
   "Clear Seal"; A. C. Horn
   "Kure-N-Seal"; Sonneborn-Contech

D. Cure, Sealer and Dustproofer: ASTM C-309, containing 250% solids. 'Day-Chem Cure & Seal' (J-22) by Dayton Superior OR approved equal. Surface shall have a high gloss finish.

2.05 PROPORTIONING AND DESIGN OF MIXES

A. Prepare design mix for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. If trial batch method is used, use an independent testing facility acceptable to Architect for preparing an reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing unless otherwise acceptable to Architect.

B. Submit written reports to Architect of each proposed mix for each class of concrete at lease 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed by Architect.

C. Design mixes to yield normal weight concrete with the following properties, as indicated on drawings and schedules:

Concrete in slabs and footings shall have a minimum compressive strength of 3000 strength psi and in beams and columns a minimum compressive strength of 4000 psi at 28-days; the maximum W/C ratio shall be 0.46 maximum (air-entrained).

RETEMPERING OR ADDING WATER AT THE JOBSITE IS PROHIBITED.

D. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in work.

E. Admixtures: Use air-entraining admixture in exterior exposed concrete, unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus-or-minus 1-1/2% within following limits:

Concrete structures and slabs exposed to freezing and thawing, deicer chemicals, or subjected to hydraulic pressure:

4.5% (moderate exposure); 5.5% (severe exposure) 1-1/2" max. aggregate.
5.0% (moderate exposure); 6.0% (severe exposure) 3/4" max. aggregate.

Other Concrete: 2% to 4% air.

F. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:

Ramps, slabs, and sloping surfaces: 4" (+/-1").

Reinforced foundation systems: 4" (+/-1").

Pea gravel pump mix for filled masonry cells (3000 psi) C 8" to 11".

Other concrete: Not more than 4", except when slump is increased by use of super plasticizers.

2.06 CONCRETE MIXES

A. Ready-Mix Concrete: Comply with requirements of ASTM C 94, and as herein specified.

During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C 94 may be required.

When air temperature is between 85°F (30°C) and 90°F (32°C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90°F (32°C), reduce mixing and delivery time to 60 minutes.

Exposed concrete slab concrete shall not be pumped unless it contains super plasticizers, and 'Recover' admixture as manufactured by W.R.Grace Co.

B. The following are strictly prohibited:

a. Partially hardened concrete.
b. Contaminated concrete.
c. Re-tempered concrete.
d. Concrete that has been re-mixed after it has taken its initial set.

2.07 CONCRETE TOPPING

A. Provide Level-Right Self-Leveling Floor Underlayment by Maxxon Corporation in locations indicated on drawings. Comply with manufacturer's requirements and the following:

1.	Compressive Strengths:	Modified ASTM C 109; up to 3000 psi (3 day).
2.	Tensile Strength:	ASTM C 190; 720 psi (28 day).
3.	Surface Buring Characteristic:	Flame Spread - 0. Fuel Contribution - 0. Smoke Development - 0. (ASTM E 84).
4.	Fire Ratings:	U.L. Design #J919, L514, L528, L530

PART 3 - EXECUTION

3.01 FORMS

A. Design, erect, support, brace and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation and position.

B. Design formwork to be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials.

C. Construct forms to sizes, shapes, lines and dimensions shown, and to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, keyways, recesses, blocking, screeds, bulkheads, anchorages and inserts, and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide back-up at joints to prevent leakage of cement paste.

D. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and for easy removal.

E. Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings and set time to forms to prevent loss of concrete mortar. Locate temporary openings on forms at inconspicuous locations.

F. Chamfer exposed corners and edges as indicated, using wood, metal, PVC or rubber chamfer strips fabricated to product uniform smooth lines and tight edge joints.

G. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses and chases from trades providing such items. Accurately place and securely support items built into forms.

H. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is placed. Retighten forms and bracing after concrete placement is required to eliminate mortar leaks and maintain proper alignment.

3.02 PLACING REINFORCEMENT: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars," for details and methods of reinforcement placement and supports, and as herein specified.

A. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete. Reinforcing must also be free of non-shop bends or kinks.

B. Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.

C. Place reinforcement to obtain at least minimum coverages for concrete protection and lap as specified by ACI. Arrange, space and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

D. Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.

E. Reinforcing bars shall be free of kinks and non-shop bends. Field bends shall only be installed as directed by the Architect.

3.03 JOINTS

A. Construction Joints: Locate and install keyed construction joints as indicated or, if not indicated,

locate so as not to impair strength and appearance of the structure, as acceptable to Architect.

B. Provide keyways at least 1-1/2" deep in construction joints in walls, slabs and between walls and footings; accepted bulkheads designed for this purpose may be used for slabs.

C. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints.

D. Isolation Joints in Slabs-on-Ground: Construct isolation joints in slabs-on-ground at points of contact between slabs on ground and vertical surfaces, such as column pedestals, foundation walls, grade beams and elsewhere as indicated.

Joint filler and sealant materials are specified in Division-7 sections of these specifications.

E. Contraction (Control) Joints in Slabs-on-Ground: Construct contraction joints in slabs-on-ground to form panels of patterns as shown. If not shown, provide joints recommended by ACI Standards 12’ x 12’ grid. Use inserts 1/8" to 1/4" wide x 1/4 of slab depth, unless otherwise indicated.

F. Form contraction joints by inserting premolded plastic, hardboard or fiberboard strip into fresh concrete until top surface of strip is flush with slab surface. Tool slab edges round on each side of insert. After concrete has cured, remove inserts and clean groove of loose debris.

Contraction joints may be formed by saw cuts as soon as possible after slab finishing and without dislodging aggregate. Depth of saw cut to be 1/4 of slab thickness.

G. Joint sealant material is specified in Division-7 sections of these specifications.

H. Clean construction joints prior to placement of concrete including removal of all laitance. Immediately before concrete is placed, wet all construction joints and remove all standing water.

3.04 INSTALLATION OF EMBEDDED ITEMS: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in- place concrete. Use setting drawings, diagrams, instructions and directions provided by suppliers of items to be attached thereto.

A. Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface. Provide and secure units sufficiently strong to support types of screed strips by use of strike-off templates or accepted compacting type screeds.

3.05 PREPARATION OF FORM SURFACES

A. Clean re-used forms of concrete matrix residue, repair and patch as required to return forms to acceptable surface condition.

B. Coat contact surfaces of forms with a form-coating compound before reinforcement is placed.

C. Thin form-coating compounds only with thinning agent of type, and in amount, and under conditions of form-coating compound manufacturer's directions. Do not allow excess form-

coating material to accumulate in forms or to come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.

3.06 CONCRETE PLACEMENT

A. Preplacement Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast- in. Notify other crafts to permit installation of

their work, cooperate with other trades in setting such work. Moisten wood forms immediately before placing concrete where form coatings are not used.

B. Coordinate the installation of joint materials and moisture barriers with placement of forms and reinforcing steel.

C. General: Comply with ACI 304 "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete," and as herein specified.

D. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete as nearly as practicable to its final location to avoid segregation.

E. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24" and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic, to avoid cold joints. Concreting operations shall be carried on at such a rate that the concrete is at all times plastic.

F. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand- spading, Roding or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.

G. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6" into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.

H. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.

I. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.

J. Bring slab surfaces to correct level with straightedge and strike off. Use bull floats or darbies to smooth surface, free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.

K. Maintain reinforcing in proper position during concrete placement operations.

L. Cold Weather Placing: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306.

M. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

N. Do not use calcium chloride, salt and other materials containing antifreeze agents or chemical accelerators, unless otherwise accepted in mix designs.

O. Hot Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305.

P. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.

Q. Concrete is prohibited from being placed if the concrete is partially hardened, contaminated, re-tempered, or if it has been re-mixed after its initial set.

3.07 FINISH OF FORMED SURFACES

A. Rough Form Finish: For formed concrete surfaces not exposed-to-view in the finish work or by other construction, unless otherwise indicated. This is the concrete surface having texture imparted by form facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4" in height rubbed down or chipped off.

B. Smooth Form Finish: For formed concrete surfaces exposed to view, or that are to be covered with a coating material applied directly, to concrete, or a covering material applied directly to concrete, such as waterproofing, damp-proofing, painting or other similar system. This is as-cast concrete surface obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams. Repair and patch defective areas with fins or other projections completely removed and smoothed.

C. Grout Cleaned Finish: Provide grout cleaned finish to cylindrical column surfaces which have received smooth form finish treatment.

Combine one-part Portland cement to 1-1/2 parts fine sand by volume, and mix with water to consistency of thick paint. Proprietary additives may be used at Contractor's option. Blend standard Portland cement and white Portland cement, amounts determined by trial patches, so that final color of dry grout will match adjacent surfaces.

Thoroughly wet concrete surfaces and apply grout to coat surfaces and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.

3.08 MONOLITHIC SLAB FINISHES

A. Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed-to-view, and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint or other thin film finish coating system.

After floating, begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand- troweling operation, free of trowel marks, uniform in texture and appearance, and with a level surface plane so that depressions between high spots do not exceed 1/8" under a 10' straightedge. Grind smooth surface defects which would telegraph through applied floor covering system.

B. Non-Slip Broom Finish: Apply non-slip broom finish to exterior concrete sidewalks, steps and ramps, and elsewhere as indicated.

Immediately after trowel finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.09 CONCRETE CURING AND PROTECTION: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Keep continuously moist for not less than 7 days at 50ºF. minimum

temperature. Begin final curing procedures immediately following initial curing and before concrete has dried. Continue final curing for at least 7 days in accordance with ACI 301 procedures. Avoid rapid drying at end of final curing period.

A. Curing Methods: Perform curing of concrete by curing and sealing compound, by moist curing, by moisture-retaining cover curing, and by combinations thereof, as herein specified.

Where sealed concrete is the ‘finish floor’, moist curing is required. Where interior slabs are to be covered with VCT, resilient flooring, or carpet, etc., curing method is Contractor=s Option.

B. Provide moisture curing by following methods.

Keep concrete surface continuously wet by covering with water.

Covering concrete surface with specified absorptive cover, thoroughly saturating cover with water and keeping continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4" lap over adjacent absorptive covers.

C. Provide moisture-cover curing as follows:

Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3" and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

D. Provide curing and sealing compound to interior slabs with resilient flooring, carpet over cushion; and to exterior slabs, walks, and curbs, as follows:

Applied specified curing and sealing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours). Apply uniformly in continuous operation by power-spray or roller in accordance with manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.

E. After moist curing of exposed concrete floor areas, provide two (2) coats of sealing compound.

Do not use membrane curing compounds on surfaces which are to be covered with coating material applied directly to concrete, liquid floor hardener, waterproofing, damp-proofing, membrane roofing, flooring (such as ceramic or quarry tile, glue-down carpet), painting, and other coatings and finish materials, unless otherwise acceptable to Architect.

F. Curing Formed Surfaces: Cure formed concrete surfaces, including undersides of beams, supported slabs and other similar surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.

G. Curing Unformed Surfaces: Cure unformed surfaces, such as slabs, floor topping, and other flat surfaces by application of appropriate curing method.

Final cure concrete surfaces to receive liquid floor hardener or finish flooring by use of moisture-retaining cover, unless otherwise directed.

H. Sealer and Dustproofer: Apply a second coat of specified curing and sealing compound only to surfaces given a first coat.

3.10 REMOVAL OF FORMS AND SHORING

A. Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar

parts of the work, may be removed after cumulatively curing at not less than 50° F (10° C) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protection operations are maintained.

B. Formwork or shoring supporting weight of concrete, such as beam soffits, joints, slabs and other structural elements, may not be removed in less than 14 days and until concrete has attained design minimum compressive strength at 28-days. Determine potential compressive strength of in place concrete by testing field-cured specimens representative of concrete location or members.

C. Form facing material may be removed 4 days after placement, only if shores and other vertical supports have been arranged to permit removal of form facing material without loosening or disturbing shores and supports.

3.11 RE-USE OF FORMS: Clean and repair surfaces of forms to be re-used in work. Split, frayed, delaminated or otherwise damaged from facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new formwork.

3.12 MISCELLANEOUS CONCRETE ITEMS

A. Filling-In: Fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections and terminations slightly rounded.

C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations, as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with certified diagrams or templates of manufacturer furnishing machines and equipment.

D. Grout base plates and foundations as indicated, using specified non-shrink grout. Use non-metallic grout for exposed conditions, unless otherwise indicated.

E. Reinforced Masonry: Provide concrete for reinforced masonry lintels and bond beams where indicated on drawings and as scheduled. Maintain accurate location of reinforcing steel during concrete placement.

F. Waterstops shall be provided at below grade CIP intersections of footing to vertical CIP wall footings. SIKA Greenstreak PVC Waterstops shall be basis of design. Provide Waterproofing membrane on all exterior below grade CIP footings on vertical face and top of footing. SIKALASTIC HM 5000 GC to be basis of design for these conditions.

3.13 CONCRETE SURFACE REPAIRS

A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Architect.

Cut out honeycomb, rock pockets, voids over 1/4" in any dimension, and holes left by tie rods and bolts, down to solid concrete but, in no case to a depth of less than 1". Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water and brush- coat the area to be patched with specified bonding agent. Place patching mortar after bonding compound has dried.

B. For exposed-to-view surfaces, blend white portland cement and standard portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

C. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects, as such, include color and texture

irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets; fins and other projections on surface; and stains and other discolorations that cannot be removed by cleaning; flush out form tie holes, fill with dry pack mortar, or precast cement cone plugs secured in place with bonding agent.

D. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of

concrete. If defects cannot be repaired, remove and replace concrete.

E. Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness using a template having required slope.

F. Repair finished unformed surfaces that contain defects which affect durability of concrete. Surface defects, as such, include crazing, cracks in excess of 0.01" wide or which penetrate to reinforcement of completely through non-reinforced sections regardless of width, spalling, pop-outs, honeycomb, rock pockets and other objectionable conditions.

G. Correct high areas in unformed surfaces by grinding, after concrete has cured at least 14 days.

H. Correct low areas in unformed surfaces during, or immediately after completion of surface finishing operations by cutting out low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary patching compounds may be used when acceptable to Architect.

I. Repair defective areas, except random cracks and single holes not exceeding 1" diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4" clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding compound. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact and finish to blend with adjacent finish concrete. Cure in same manner as adjacent concrete.

J. Repair isolated random cracks and single holes not over 1" in diameter by dry-pack method. Groove top of cracks and cut-out holes to sound concrete and clean of dust, dirt and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Mix dry-pack, consisting of one part portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Place dry-pack after bonding compound has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for not less than 72 hours.

K. Perform structural repairs with prior approval of Architect or method and procedure, using specified epoxy adhesive and mortar.

L. Repair methods not specified above may be used, subject to acceptance of Architect.

3.14 QUALITY CONTROL TESTING DURING CONSTRUCTION

A. The Contractor will employ a testing laboratory to perform tests and to submit test reports.

B. Sampling and testing for quality control during placement of concrete includes the following, as directed by Architect.

C. Sampling Fresh Concrete: ASTM C172, except modified for slump to comply with ASTM C94.

1. Slump: ASTM C143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.

2. Air Content: ASTM C 173; volumetric method for lightweight or normal weight concrete; ASTM C 231 pressure method for normal weight concrete; one for each day's pour of each type of air- entrained concrete.

3. Concrete Temperature: Test hourly when air temperature is 40ºF 4ºC) and below, and when 80ºF (27ºC) and above; and each time a set of compression test specimens made.

4. Compression Test Specimen: ASTM C31; one set of 4 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens.

5. Compressive Strength Tests: ASTM C39; one set for each day's pour exceeding 5 cu. yds. plus additional sets for each 25 cu. yds. over and above the first 25 cu. yds. of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.

   When frequency of testing will provide less than 2 strength tests for a given class of concrete, conduct testing from each batch.

6. Acceptance of Concrete Strength:
   The concrete strength will be considered satisfactory if both the following requirements are met:

   A. Every arithmetic average of nay three consecutive strength tests equals or exceeds f'c.

   B. No individual strength test (average of two cylinders) falls below the f'c by more than 500 psi.

D. Test results will be reported in writing to Architect. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, compressive breaking strength and type of break for both 7-day tests and 28-day tests.

E. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Architect. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42, or by other methods as directed. Contractor shall pay for such tests conducted, and any other additional testing as may be required when unacceptable concrete is verified.

END OF SECTION 033000

SECTION 042000 - UNIT MASONRY

PART 1 - GENERAL

1.01 QUALITY ASSURANCE

A. Single Source Responsibility for Masonry Units: Obtain exposed masonry units of uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from one manufacturer for each different product required for each continuous surface or visually related surfaces.

B. Single Source Responsibility for Mortar Materials: Obtain mortar ingredients of uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source and producer for each aggregate.

C. Preconstruction Tests by Unit Test Methods: Test the following materials by methods indicated:

1. Concrete Masonry Units: Test each type, class and grade of concrete masonry unit per ASTM C 140.
2. Mortar Tests: Test each mortar type per ASTM C780.

D. Preconstruction Tests by Prism Methods: For each type of wall construction indicated for testing, test masonry prisms per ASTM E 447, Method B and as follows:

1. Prepare one set of prisms for testing at 7 days and one set for testing at 28 days.
2. Fabricate concrete masonry prisms with height-to-thickness ratio of not less than 1.33 nor more than 3.0.
3. Flexural Bond Strength Tests: Where indicated, also test prisms per ASTM C 518; place prisms with tooled joints facing downward.

1.02 SUBMITTALS

A. Product Data: Submit manufacturer's product data for each type of masonry unit, accessory, and other manufactured products, including certifications that each type complies with specified requirements.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Deliver masonry materials to project in undamaged condition.

B. Store and handle masonry units to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion or other causes.

1. Limit moisture absorption of concrete masonry units during delivery and until time of installation to the maximum percentage specified for Type I units for the average annual relative humidity as reported by the U.S. Weather Bureau Station nearest project site.
2. Store cementitious materials off the ground, under cover and in dry location.
3. Store aggregates where grading and other required characteristics can be maintained.
4. Store masonry accessories including metal items to prevent deterioration by corrosion and accumulation of dirt.

1.04 PROJECT CONDITIONS

A. Protection of Work: During erection, cover top of walls with waterproof sheeting at end of each day's work. Cover partially completed structures when work is not in progress.

B. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.

C. Do not apply uniform floor or roof loading for at least 12 hours after building masonry walls or columns.

D. Do not apply concentrated loads for at least 3 days after building masonry walls or columns.

E. Staining: Prevent grout or mortar or soil from staining the face of masonry to be left exposed or painted. Remove immediately grout or mortar in contact with such masonry.

F. Protect base of walls from rain-splashed mud and mortar splatter by means of covering spread on ground and over wall surface.

G. Protect sills, ledges and projections from droppings of mortar.

H. Cold Weather Protection:

1. Do not lay masonry units which are wet or frozen.
2. Remove any ice or snow formed on masonry bed by carefully applying heat until top surface is dry to the touch.
3. Remove masonry damaged by freezing conditions.

PART 2 - PRODUCTS

2.01 CONCRETE MASONRY UNITS: Comply with referenced standards and other requirements indicated below applicable to each form of concrete masonry unit required.

A. Provide special shapes where required for lintels, corners, jambs, sash, control joints, headers, bonding and other special conditions. Use 45E block at all locations where walls intersect at a 45E angle.

B. Provide square-edged units for outside corners, except where indicated as bullnose.

C. Grade N except Grade S may be used above grade in exterior walls with weather protective coatings and in walls not exposed to weather.

D. Typical Size: Manufacturer's standard units with nominal face dimensions of 16" long x 8" high (15-5/8" x 7-5/8" actual) x thicknesses indicated.

E. Block Shapes:

1. Standard Block: 8" x 8" x 16" standard gray.

F. Type II, non-moisture controlled units.

G. Exposed Faces: Manufacturer's standard color and texture, unless otherwise indicated.

Note: All CMU, visible to view and not designated to receive a finish on Finish Schedule or elsewhere in the documents, shall receive block filler and paint as specified in Section 09900, except mechanical chases. Mechanical chases are not to be painted.

H. Hollow Loadbearing Block: Requirements for block when delivered to job site. ASTM C 90 and as follows:

1. Weight Classification: Light weight.
2. Minimum Compressive Strength: 1900 psi (average of 3 units).
3. Maximum Percent with Slight Cracks and Chips: 5%.

2.02 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I, except Type III may be used for cold weather construction. Provide natural color or white cement as required to produce required mortar color.

B. Water: Clean and potable.

2.03 JOINT REINFORCEMENT, TIES, AND ANCHORING DEVICES:

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

Dur-O-Wall, Inc.
Masonry Reinforcing Corp. of America
National Wire Products Corp.

B. Materials: Comply with requirements indicated below for basic materials and with requirements indicated under each form of joint reinforcement, tie and anchor for size and other characteristics:

1. Hot-Dip Galvanized Steel Wire: ASTM A 82 for uncoated wire and ASTM A 153 for zinc coated wire.
2. Application: Use for masonry exposed to exterior and in contact with earth.

C. Joint Reinforcement: Provide welded-wire units prefabricated with deformed continuous side rods and plain cross rods into straight lengths of not less than 10', with prefabricated corner and tee units, and complying with requirements indicated below:

1. Width: Fabricate joint reinforcements in units with widths of approximately 2" less than nominal width of walls and partitions as required to provide mortar coverage of not less than 5/8" on joint faces exposed to exterior and 1/2" elsewhere.
2. Wire Size for Side Rods: 9 gauge.
3. Wire Size for Cross rods: 9 gauge.
4. For single-wythe masonry provide type as follows with single pair of side rods: Ladder design spaced not more than 16" o.c.

D. Anchor Bolts: Provide steel bolts with hex nuts and flat washers complying with ASTM A 307, Grade A, hot-dip galvanized to comply with ASTM C 153, Class C, in sizes and configuration indicated.

2.04 MASONRY CLEANERS

A. Job-Mixed Detergent Solution: Solution of trisodium phosphate (1/2 cup dry measure) and laundry detergent (1/2 cup dry measure) dissolved in one gallon of water. **Verify with block manufacturer.**

2.05 MORTAR AND GROUT MIXES: Do not add admixtures including coloring pigments, air-entraining agents, accelerators, retarders, water repellent agents, anti-freeze compounds or other admixtures, unless otherwise indicated.

Do not use calcium chloride in mortar or grout.

A. Mixing: Combine and thoroughly mix cementitious, water and aggregates in a mechanical batch mixer; comply with referenced ASTM standards for mixing time and water content.

B. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification, for types of mortar required, unless otherwise indicated.

1. Use Type S mortar for reinforced masonry and where indicated.

2. Use Type N mortar for exterior, above-grade non-loadbearing walls; for interior non-loadbearing walls; and for other non-loadbearing applications where another type is not indicated.

C. Grout (Pea Gravel Conc.) for Unit Masonry: Comply with ASTM C 476 for grout for use in construction of reinforced and nonreinforced unit masonry. Use grout of consistency indicated or if not otherwise indicated, of consistency (fine or coarse) at time of placement which will completely fill all spaces intended to receive grout. Concrete used as block fill for reinforced masonry cells shall have a minimum 28 day compressive strength of 3000 psi.

1. Use coarse grout in grout spaces 4" or more in least horizontal dimension, unless otherwise indicated.
Grout all cells on Sheriff side of building for impact and ballistic.

2.06 VERTICAL EXPANSION JOINTS: Provide "Slot Seal Wide Flange 2016-3" expansion joints by Williams Products, Inc. OR approved equal, unless detailed on drawings otherwise.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Do not wet concrete masonry units.

B. Cleaning Reinforcing: Before placing, remove loose rust, ice and other coatings from reinforcing.

C. Thickness: Build cavity and composite walls, floors and other masonry construction to the full thickness shown. Build single-wythe walls (if any) to the actual thickness of the masonry units, using units of nominal thickness indicated.

D. Leave openings for equipment to be installed before completion of masonry work. After installation of equipment, complete masonry work to match work immediately adjacent to the opening.

E. Cut masonry units using motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide continuous pattern and to fit adjoining work. Use full-size units without cutting where possible.

Use dry cutting saws to cut concrete masonry units.

F. Minimum length of masonry lintels is 16” longer than the required opening (8” minimum bearing each end).

3.02 CONSTRUCTION TOLERANCES

A. Variation from Plumb: For vertical lines and surfaces of columns, and walls, do not exceed 1/4" in 10', or 3/8" in a story height not to exceed 20', nor 1/2" in 40' or more. For external corners, expansion joints, control joints and other conspicuous lines, do not exceed 1/4" in any story or 20' maximum, nor 1/2" in 40' or more. For vertical alignment of head joints do not exceed plus or minus 1/4" in 10', 1/2" maximum.

B. Variation from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines, do not exceed 1/4" in any bay or 20' maximum, nor 1/2" in 40' or more. For top surface of bearing walls do not exceed 1/8" between adjacent floor elements in 10' or 1/16" within width of a single unit.

C. Variation of Linear Building Line: For position shown in plan and related portion of columns, walls and partitions, do not exceed 1/2" in any bay or 20' maximum, nor 3/4" in 40' or more.

D. Variation in Cross-Sectional Dimensions: For columns and thickness of walls, from dimensions shown, do not exceed minus 1/4" nor plus 1/2".

E. Variation in Mortar Joint Thickness: Do not exceed bed joint thickness indicated by more than plus or minus 1/8", with a maximum thickness limited to 1/2". Do not exceed head joint thickness indicated by more than plus or minus 1/8".

3.03 LAYING MASONRY WALLS

A. Layout walls in advance for accurate spacing of surface bond patterns with uniform joint widths and to accurately locate openings, movement-type joints, returns and offsets. Avoid the use of less-than-half-size units at corners, jambs and wherever possible at other locations. Closure at top of CMU walls to underside of deck (Metal Deck) shall be grouted or sealed with sealant for closing off all gaps in wall construction.

B. Lay-up walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other work.

C. Pattern Bond: Lay exposed masonry in running bond with vertical joint in each course centered on units in courses above and below. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2". Bond and interlock each course of each wythe at corners. do not use units with less than nominal 4" horizontal face dimensions at corners or jambs.

D. Stopping and Resuming Work: Rack back 1/2-unit length in each course; do not tooth. Clean exposed surfaces of set masonry, wet units lightly (if required) and remove loose masonry units and mortar prior to laying fresh masonry.

E. Built-in Work: As the work progresses, build-in items specified under this and other sections of these specifications. Fill in solidly with masonry around built-in items.

1. Fill space between hollow metal frames and masonry solidly with mortar, unless otherwise indicated.
2. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.
3. Fill cores in hollow concrete masonry units with grout under bearing plates, beams, lintels, posts and similar items, unless otherwise indicated.

F. Inspection and clean out holes shall be utilized when grouting height exceeds five (5) feet. Clean out holes shall be the width of the masonry cell and a minimum of 3” high. Grout space requirements for various pour heights shall conform to Table 1.15.1, ACI 530-02.

3.04 MORTAR BEDDING AND JOINTING

A. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course on footings and in all courses of piers, columns and pilasters, and where adjacent to cells or cavities to be reinforced or filled with concrete or grout. For starting course on footings where cells are not grouted, spread out full mortar bed including areas under cells.

B. Maintain joint widths shown, except for minor variations required to maintain bond alignment. If not shown, lay walls with 3/8" joints.

C. Cut joints flush for masonry walls which are to be concealed or to be covered by other materials, unless otherwise indicated.

D. Tool exposed joints slightly concave using a jointer larger than joint thickness, unless otherwise indicated.

E. Remove masonry units disturbed after laying; clean and reset in fresh mortar. Do not pound corners or jambs to shift adjacent stretcher units which have been set in position. If adjustments are required, remove units, clean off mortar and reset in fresh mortar.

3.05 HORIZONTAL JOINT REINFORCEMENT: Provide continuous horizontal joint reinforcement at 16" C-C. Install longitudinal side rods in mortar for their entire length with a minimum cover of 5/8" on exterior side of walls 1/2" elsewhere. Lap reinforcing a minimum of 6".

A. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.

B. Provide continuity at corners and wall intersections by use of prefabricated "L" and "T" sections. Cut and bed reinforcement units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures and other special conditions.

Space continuous horizontal reinforcement as follows:

For single-wythe walls, space reinforcement at 16" o.c. vertically, unless otherwise indicated.

C. Reinforce masonry openings greater than 1'-0" wide, with horizontal joint reinforcement placed in 2 horizontal joints approximately 8" apart, immediately above the lintel and immediately below the sill. Extend reinforcement a minimum of 2'-0" behind jambs of the opening except at control joints.

3.06 CONTROL AND EXPANSION JOINTS

A. Vertical Control Joints: Provide control joints in CMU walls to allow for movement resulting from shrinkage and creep. Provide control joints as detailed and at locations shown on drawings, or if not shown, as indicated below. Provide control joints in both exterior and interior walls, and in both loadbearing and non-loadbearing conditions.

1. At maximum spacing of 50 feet on center.
2. At all abrupt changes in wall height.
3. At all changes in wall thickness, such as those at pipe or duct chases and those adjacent to columns or pilasters.
4. Above joints in foundations and floors.
5. Below joints in roofs and floors that bear on the wall.
6. At a distance of not over one-half the allowable joint spacing from bonded intersections or corners.
7. At one or both sides of all door and window openings unless other crack control measures are used such as joint reinforcement or bond beams.

B. Vertical Expansion Joints: Provide sheer lugs at expansion joints in exterior masonry veneer to allow for movement resulting from changes in temperature, moisture expansion, etc. Provide expansion joints as detailed and at locations shown on drawings, or as indicated below.

Wall/building expansion joints shall be aligned thru entire wall construction.

Control joints in veneer masonry need no be aligned with back-up masonry in cavity wall construction.

CONTROL JOINT SPACING FOR MOISTURE CONTROLLED
TYPE I
CONCRETE MASONRY UNITS

Recommended Spacing of Control Joints	Vertical Spacing of Joint Reinforcement			
	None	24"	16"	8"
Expressed as ratio of Panel length to height L/H	2	2-1/2	3	4
With Panel Length (l) Not to Exceed:	40'	45'	50'	60'

3.07 FIELD QUALITY CONTROL

A. Contractor shall employ, at his own expense, a testing laboratory experienced in performing types of masonry field quality control tests for masonry indicated. Comply with requirements for qualification and acceptance of testing laboratory specified in Part 1 for preconstruction testing service.

B. Remove and replace masonry units which have cracked do to shrinkage or settlement problems. Provide new units to match adjoining units and install in fresh mortar, pointed to eliminate evidence of replacement.

C. Unit Test Method:

1. Concrete Masonry Unit Tests: For each type, class and grade of concrete masonry unit indicated, test units by method of sampling and testing of ASTM C 140.
2. Mortar Tests: For each type indicated, test mortar by methods of sampling and testing of ASTM C 780. Conduct tests no less frequently than that required to evaluate mortar used to install each increment of masonry units indicated above from which samples are taken for testing.

D. Prism Test Method:

1. Compression Test: For each type of wall construction indicated for testing, test masonry prisms by methods of sampling and testing of ASTM E 447, Method B, and as follows:

   Prepare one set of prisms for testing at 7 days and one set for testing at 28 days.

E. Report test results in writing and in form specified under each test method, to Architect and Contractor, on same day tests are made.

F. Evaluation of Quality Control Tests: Masonry work, in absence of other indications of noncompliance with requirements, will be considered satisfactory if results from construction quality control tests comply with minimum requirements indicated.

3.08 REPAIR, POINTING AND CLEANING

A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.

B. Remove and replace masonry units which have cracked due to shrinkage or settlement problems. Provide new units to match adjoining units and install in fresh mortar, pointed to eliminate evidence of replacement.

C. Pointing: During the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point-up all joints, including corners, openings, and adjacent work, to provide a neat, uniform appearance, prepared for application of sealants.

D. Final Cleaning: After mortar is thoroughly set and cured, clean masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and non-metallic scrape hoes or chisels.
2. Test cleaning methods on sample wall panel; leave 1/2 panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
3. Clean concrete unit masonry to comply with masonry manufacturer's directions and applicable NCMA "Tek" bulletins.
4. Do not use acid or abrasives on finish surfaces of ground faced accent block.

E. Protection: Provide final protection and maintain conditions in a manner acceptable to Installer, which ensures unit masonry work being without damage and deterioration at time of substantial completion.

END OF SECTION 042000

SECTION 051200 - STRUCTURAL STEEL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS: Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK:

A. Extent of structural steel work is shown on drawings, including schedules, notes and details to show size and location of members, typical connections, and type of steel required.

B. Structural steel is that work defined in AISC "Code of Standard Practice" and as otherwise shown on drawings.

C. Miscellaneous Metal Fabrications are specified elsewhere in Division 5.

1.03 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of following, except as otherwise indicated:

1. AISC "Code of Standard Practice for Steel Buildings and Bridges"

2. Paragraph 4.2.1 of the above code is hereby modified by deletion of the following sentence: "This approval constitutes the Design Builder's acceptance of all responsibility for the decision adequacy of any connections designed by the fabricator as a part of his preparation of these shop drawings."

3. AISC "Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings," including "Commentary" and Supplements thereto as issued.

4. AISC "Specifications for Structural Joints using ASTM A 325 or A 490 Bolts" approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation.

5. AWS D1.1 "Structural Welding Code"

6. ASTM A6 "General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use"

B. Qualifications for Welding Work: Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure." Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests. Certification must be current. If recertification of welders is required, retesting will be Contractor's responsibility. Contractor must furnish a copy of each welders current certification prior to welder performing work on the project.

C. Installer Qualifications: Engage an experienced installer who has completed structural steel work similar in material, design, and extent to that indicated for this project and with a record of successful in-service performance.

D. Fabricator Qualifications: Engage a firm experienced in fabricating structural steel similar to that indicated for this project and with a record of successful in-service performance, as well as sufficient production capacity to fabricate structural steel without delaying the work.

1. Fabricator must participate in the AISC Quality Certification Program and be designated an AISC-Certified Plant as follows:
   a. Category: Category I, conventional steel structures.
   b. Fabricator shall be registered with and approved by authorities having jurisdiction.

E. Firms wishing to bid the work, but not participating in the AISC Certification, may seek pre-qualification by making submittals as listed in paragraph 1.04 Submittals, Para. D. of this section.

F. Whether by Certification or by Pre-Qualification, the steel fabricator shall have in their employ a specialty Engineer responsible for designing and detailing all structural connections and have responsible charge of shop drawing preparation. Fabricator shall anticipate and include in his bid all miscellaneous plates, angles, welds, or bolts necessary to accomplish the connection. Specialty Engineer shall sign and seal shop drawings indicating responsibility for connections only, and certifying that main members are as indicated on the contract documents. Connections shall be capable of resisting forces equal to the strength of the member being connected, when such forces are not shown on the plans.

1.04 SUBMITTALS

A. Product Data: Submit producer's or manufacturer's specifications and installation instructions for following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).

1. Structural steel (each type).
2. High-strength bolts (each type), including nuts and washers.
3. Structural steel primer paint.
4. Shrinkage-resistant grout.

B. Shop Drawings: Submit shop drawings, including complete details and schedules for fabrication and assembly of structural steel members procedures and diagrams. Include details of cuts, connections, camber, holes, and other pertinent data. Indicate welds by standard AWS symbols, and show size, length, and type of each weld. Provide setting drawings, templates, and directions for installation of anchor bolts and other anchorages to be installed by others.

Shop drawings relating to the connections shall be signed and sealed by the fabricators engineer, who is registered in the project state.

Any submittal or RFI shall be incorporated as part of the shop drawings. The first and all shop drawing submittals shall include the signature and seal of the Specialty Engineer, noting the purpose of the submittal.

C. Test Reports: Submit copies of reports of tests conducted on shop and field bolted and welded connections. Include data on type(s) of tests conducted and test results.

D. Qualification data for firms and persons specified in the AQuality Assurance@ Article to demonstrate their capabilities and experience. Include lists of completed projects with project name and address, name and address of Architect and Design Builder, and the name and address of the Specialty Engineer proposed for the work.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to site at such intervals to insure uninterrupted progress of work.

B. Deliver anchor bolts and anchorage devices, which are to be embedded in cast-in-place concrete or masonry, in ample time to not to delay work.

C. Store materials to permit easy access for inspection and identification. Keep steel members off ground, using pallets, platforms, or other supports. Protect steel members and packaged materials from erosion and deterioration.

D. Do not store materials on structure in a manner that might cause distortion or damage to members or supporting structures. Repair or replace damaged materials or structures as directed.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Metal Surfaces, General: For fabrication of work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness. Remove such blemishes by grinding, or by welding and grinding, prior to cleaning, treating and application of surface finishes.

B. Structural Steel Shapes, Plates and Bars: ASTM A 572, except channels, angles, bars, plates and other miscellaneous items shall be ASTM A36.

C. Cold-Formed Steel Tubing: ASTM A 500, Grade B.

D. Steel Pipe: ASTM A 53, Type E or S, Grade B.

E. Anchor Bolts: ASTM A 307, nonheaded type unless otherwise indicated.

F. High-Strength Threaded Fasteners: Heavy hexagon structural bolts, heavy hexagon nuts, and hardened washers, as follows:

1. Quenched and tempered medium-carbon steel bolts, nuts and washers, complying with ASTM A 325.
2. Direct tension indicator washers may be used at Contractor's option.

G. Electrodes for Welding: Comply with AWS Code.

H. Structural Steel Primer Paint: Fabricator's standard rust-inhibiting primer.

I. Non-metallic Shrinkage-Resistant Grout: Pre-mixed, non-metallic, non-corrosive, non-staining product containing selected silica, sands, portland cement, shrinkage compensating agents, plasticizing and water reducing agents, complying with CRD-C621.

Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

Euco N.S.; Euclid Chemical Co.
Masterflow 713; Master Builders
Five Star Grout; U.S. Grout Corp.

2.02 FABRICATION

A. Shop Fabrication and Assembly: Fabricate and assemble structural assemblies in shop to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final shop drawings. Provide camber in structural members where indicated. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence which will expedite erection and minimize field handling of materials.

B. Connections: Weld or bolt shop connections, as indicated. Weld field connections, except where bolted connections or other connections are indicated.

1. Provide high-strength threaded fasteners for principal bolted connections, except where unfinished bolts are indicated.
2. Provide unfinished threaded fasteners for only bolted connections of secondary framing members to primary members (including purlins, girts, and other framing members taking only nominal stresses) and for temporary bracing to facilitate erection.

C. High-Strength Bolted Construction: Install high-strength threaded fasteners in accordance with AISC "Specifications for Structural Joints using ASTM A 325 or A 490 Bolts" (RCRBSJ).

D. Welded Construction: Comply with AWS Code for procedures, appearance and quality of welds, and methods used in correcting welding work. Build up welded door frames attached to structural steel framing. Weld exposed joints continuously and grind smooth. Plug weld steel bar stops to frames, except where shown removable. Secure removable stops to frames with countersunk, cross-recessed head machine screws, uniformly spaced not more than 10" o.c., unless otherwise indicated.

E. Holes for Other Work: Provide holes required for securing other work to structural steel framing, and for passage of other work through steel framing members, as shown on final shop drawings. Provide threaded nuts welded to framing, and other specialty items as indicated to receive other work. Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame cut holes or enlarge holes by burning. Drill holes in bearing plates.

2.03 SHOP PAINTING

A. General: Shop paint structural steel, except those members or portions of members to be embedded in concrete or mortar or that is scheduled to receive sprayed on fireproofing. Paint embedded steel which is partially exposed on exposed portions and initial 2" of embedded areas only.

1. Do not paint surfaces which are to be welded or high-strength bolted with friction-type connections.
2. Apply 2 coats of paint to surfaces which are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

B. Surface Preparation: After inspection and before shipping, clean steel work to be painted. Remove loose rust, loose mill scale, and spatter, slag or flux deposits. Clean steel in accordance with Steel Structures Painting Council (SSPC) as follows:

1. SP-2 "Hand Tool Cleaning"
2. SP-3 "Power Tool Cleaning"

C. Painting: Immediately after surface preparation, apply structural steel primer paint in accordance with manufacturer's instructions and at a rate to provide dry film thickness of not less than 1.5 mils. Use painting methods which result in full coverage of joints, corners, edges and exposed surfaces.

PART 3 - EXECUTION

3.01 ERECTION

A. Temporary Shoring and Bracing: Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads. Remove temporary members and connections when permanent members are in place and final connections are made. Provide temporary guy lines to achieve proper alignments of structures as erection proceeds.

B. Temporary Planking: Provide temporary planking and working platforms as necessary to effectively complete work.

C. Anchor Bolts: Furnish anchor bolts and other connectors required for securing structural steel to foundations and other in-place work. Furnish templates and other devices as necessary for presetting bolts and other anchors to accurate locations. Refer to Division 3 of these Specifications for anchor bolt installation requirements in concrete, and Division 4 for masonry installation.

D. Setting Bases and Bearing Plates: Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces. Clean bottom surface of base and bearing plates. Set loose and attached base plates and bearing plates for structural members on wedges or other adjusting devices.

E. Tighten anchor bolts 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 prior to backing with grout.

F. Pack grout solidly between bearing surfaces and bases or plates to ensure that no voids remain. Finish exposed surfaces, protect installed materials, and allow to cure. For proprietary grout materials, comply with manufacturer's instructions.

G. Field Assembly: Set structural frames accurately to lines and elevations indicated. Align and adjust various members forming part of complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces which will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure within specified AISC tolerances.
2. Splice members only where indicated and accepted on shop drawings.

H. Erection Bolts: On exposed welded construction, remove erection bolts, fill holes with plug welds and grind smooth at exposed surfaces.

I. Comply with AISC Specifications for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds. Do not enlarge unfair holes in members by burning or by use of drift pins, except in secondary bracing members. Ream holes that must be enlarged to admit bolts.

J. Gas Cutting: Do not use gas cutting torches in field for correcting fabrication errors in primary structural framing. Cutting will be permitted only on secondary members which are not under stress, as acceptable to Architect. Finish gas-cut sections equal to a sheared appearance when permitted.

K. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint. Apply paint to exposed areas using same material as used for shop painting. Apply by brush or spray to provide minimum dry film thickness of 1.5 mils.

3.02 QUALITY CONTROL

A. Engage an independent testing and inspection agency to inspect high-strength bolted connections and welded connections and to perform tests and prepare test reports. Testing agency shall conduct and interpret tests and state in each report whether test specimens comply with requirements, and specifically state any deviations therefrom. Provide access for testing agency to places where structural steel work is being fabricated or produced so that required inspection and testing can be accomplished.

B. Shop Bolted Connections: Inspect in accordance with AISC specifications.

C. Shop Welding: Inspect and test during fabrication of structural steel assemblies, as follows:

1. Use Current Certified welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
2. Perform visual inspection of all welds.

D. Field Bolted Connections: Inspect in accordance with AISC specifications.

E. Field Welding: Inspect and test during erection of structural steel as follows:

1. Use Current Certified welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.

F. Completion Certification: Upon completion of erection, fabricator engineer shall certify that all connections have been completed in accordance with the shop drawings and contract documents.

END OF SECTION 051200

SECTION 052100 - STEEL JOISTS

PART 1 - GENERAL

DESCRIPTION OF WORK:

Extent of steel joists is shown on drawings, including basic layout and type of joists required.

QUALITY ASSURANCE:

Provide joists fabricated in compliance with the following, and as herein specified.

Steel Joist Institute (SJI) Standard Specifications, Load Tables and Weight Tables for:

K-Series Open Web Steel Joists
LH and DLH-Series Longspan Joists
KCS-Series Joists
Joist Girders

Provide joists designed in accordance with SJI recommendations, except as may be modified by requirements within these specifications or on the plans.

Qualification of Field Welding: Qualify welding processes and welding operators in accordance with American Welding Society (AWS) "Standard Qualification Procedure". Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests. Certification must be current. If recertification of welders is required, retesting will be Contractor's responsibility. Contractor must furnish a copy of each welders current certification prior to welder performing work on the project.

Joists welded in place are subject to inspection and testing. Expense of removing and replacing any portion of steel joists for testing purposes will be born by Owner if welds are found to be satisfactory. Remove and replace work found to be defective and provide new acceptable work.

SUBMITTALS:

Product Data: Submit manufacturer's specifications and installation instructions for each type of joist and accessories. Include manufacturer's certification that joists comply with SJI "Specifications".

Shop Drawings: Submit detailed drawings showing layout of joist units, special connections, jointing and accessories. Include mark, number, type, location, spacing of joists and bridging, and shall bear the impressed seal and signature of the specialty engineer.

Provide templates or location drawings for installation of anchor bolts.

Documents shall indicate that the specialty engineer certifies that the steel joist bottom chords will safely resist the wind uplift.

DELIVERY, STORAGE AND HANDLING:

Deliver, store and handle steel joists as recommended in SJI "Specifications". Handle and store joists in a manner to avoid deforming members and to avoid excessive stresses.

PART 2 - PRODUCTS

MATERIALS:

Steel: Comply with SJI "Specifications".

Steel Prime Paint: Comply with SJI "Specifications".

Bedding Mortar: For joist ends bearing on concrete or masonry, provide bedding mortar as follows:

Non-metallic shrinkage-resistant mortar; premixed, non-corrosive, non-staining product containing selected silica sands, portland cement, shrinkage compensating agents, plasticizing and water reducing agents, complying with CRD-C621.

Products: Provide non-metallic, shrinkage resistant mortar as manufactured by one of the following:

Euco N.S.; Euclid Chemical Co.
Masterflow 713; Master Builders
Five Star Grout; U.S. Grout Corp.

FABRICATION:

General: Fabricate steel joists in accordance with SJI "Specification".

Holes in Chord Members: Provide holes in chord members where shown for securing other work to steel joists; however, deduct area of holes from the area of chord when calculating strength of member.

Extended Ends: Provide extended ends on joists where shown, complying with manufacturer's standards and requirements of applicable SJI "Specifications" and load tables.

Ceiling Extensions: Provide ceiling extensions in areas having ceilings attached directly to joist bottom chord. Provide either an extended bottom chord element or a separate unit, to suit manufacturer's standards, of sufficient strength to support ceiling construction. Extend ends to within 1/2" of finished wall surface unless otherwise indicated.

Bridging: Provide horizontal or diagonal type bridging for "open web" joists, complying with SJI "Specifications".

Provide bridging anchors for ends of bridging lines terminating at walls or beams.

Provide bridging at first panel point of all joists for wind uplift.

End Anchorage: Provide end anchorages to secure joists to adjacent construction, complying with SJI "Specifications", unless otherwise indicated.

Header Units: Provide header units to support all tail joists at openings in floor or roof system not framed with steel shapes.

Shop Painting: Remove loose scale, heavy rust, and other foreign materials from fabricated joists and accessories before application of shop paint.

Apply one shop coat of primer paint to steel joists and accessories, by spray, dipping, or other method to provide a continuous dry paint film thickness of not less than 1.0 mil.

Joists scheduled to receive sprayed on fireproofing shall not be painted.

PART 3 - EXECUTION:

ERECTION:

Place and secure steel joists in accordance with SJI "Specifications", final shop drawings, and as herein specified.

Anchors: Furnish anchor bolts and other devices to be built into concrete and masonry construction.

Furnish unfinished threaded fasteners for anchor bolts, unless otherwise indicated.

Refer to Division-3 sections for installation of anchors set in concrete.

Refer to Division-4 sections for installation of anchors set in masonry.

Placing Joists: Do not start placement of steel joists until supporting work is in place and secured. Place joists on supporting work, adjust and align in accurate locations and spacing before permanently fastening.

Provide temporary bridging, connections, and anchors to ensure lateral stability during construction.

Where "open web" joist lengths are 40 feet and longer, install a center row of bolted bridging to provide lateral stability before slackening of hoisting lines.

Bridging: Install bridging simultaneously with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords where terminating at walls or beams.

Fastening Joists:

Field weld joists to supporting steel framework in accordance with SJI "Specifications" for type of joists used. Coordinate welding sequence and procedure with placing of joists.

Touch-Up Painting: After joist installation, paint field bolt heads and nuts, and welded area, abraded or rusty surfaces on joists and steel supporting members. Wire brush surfaces and clean with solvent before painting. Use same type of paint as used for shop painting.

END OF SECTION 052100

SECTION 053000 - METAL DECKING

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Extent of metal decking is indicated on drawings, including basic layout and type of deck units required. Provide closure strips at exterior perimeter.

QUALITY ASSURANCE:

Codes and Standards: Comply with provisions of the following codes and standards, except as otherwise indicated or specified:

AISI "Specification for the Design of Cold-Formed Steel Structural Members".

AWS "Structural Welding Code".

SDI "Design Manual for Floor Decks and Roof Decks".

Qualification of Field Welding: Qualify field welding processes and welding operators in accordance with AWS "Standard Qualification Procedure".

Welded decking in place is subject to inspection and testing. Expense of removing and replacing portions of decking for testing purposes will be borne by Owner if welds are found to be satisfactory. Remove work found to be defective and replace with new acceptable work.

SUBMITTALS:

Product Data: Submit manufacturer's specifications and installation instructions for each type of decking and accessories. Include manufacturer's certification as may be required to show compliance with these specifications.

Shop Drawings: Submit detailed drawings showing layout and types of deck panels, anchorage details, including fastener type, size and pattern and conditions requiring closure panels, supplementary framing, sump pans, cant strips, cut openings, special jointing or other accessories. Shop drawings shall be signed and sealed by the engineer, registered in the project state, who supervised their preparation. Drawings shall certify that proposed roof fasteners will safely resist wind uplift.

See plans for additional requirements for roof decks.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

Metal Roof Deck Units:

- Bowman/E.G. Smith, Div. Cyclops Corp.
- Roll Form Products, Inc.
- United Steel Deck, Inc.
- Vulcraft/Div. Nucor Corp.
- Wheeling Corrugating Co.

Permanent Form Floor Deck Units:

- Bowman/E.G. Smith, Div. Cyclops Corp.
- Roll Form Products, Inc.
- United Steel Deck, Inc.
- Vulcraft/Div. Nucor Corp.
- Wheeling Corrugating Co.

MATERIALS:

Steel for Painted Metal Deck Units: ASTM A 611, Grade C.

Steel for Galvanized Metal Deck Units: ASTM A 653.

Miscellaneous Steel Shapes: ASTM A 36.

Sheet Metal Accessories: ASTM A 526, commercial quality, galvanized.

Galvanizing: ASTM A 525, G60.

Galvanizing Repair Paint: High zinc-dust content paint for repair of damaged galvanized surfaces complying with Military Specifications MIL-P-21035 (Ships).

Flexible Closure Strips: Manufacturer's standard vulcanized, closed-cell, synthetic rubber.

FABRICATION:

General: Form deck units in lengths to span 3 or more supports, with flush, telescoped or nested 2" laps at ends and interlocking or nested side laps, unless otherwise indicated.

Roof Deck Units: Provide deck configurations complying with SDI "Roof Deck Specifications", of metal thickness, depth and width as shown.

Metal Cover Plates: Fabricated metal cover plates for end-abutting floor deck units of not less than same thickness as decking. form to match contour of deck units and approximately 6" wide.

Metal Closure Strips: Fabricate metal closure strips, for openings between decking and other constructions, of not less than 0.045" min. (18 gage) sheet steel. Form to provide tight-fitting closures at open ends of cells or flutes and sides of decking.

PART 3 - EXECUTION

INSTALLATION:

General: Install deck units and accessories in accordance with manufacturer's recommendations and final shop drawings, and as specified herein.

Place deck units on supporting steel framework and adjust to final position with ends accurately aligned and bearing on supporting members before being permanently fastened. Do not stretch or contract side lap interlocks.

Place deck units flat and square, secured to adjacent framing without warp or excessive deflections.

Do not place deck units on concrete supporting structure until concrete has cured and is dry.

Coordinate and cooperate with structural steel erector in locating decking bundles to prevent overloading of structural members.
Do not use floor deck units for storage or working platforms until permanently secured.

Fastening Deck Units:

Fasten floor deck units to steel supporting members by not less than 3/4" diameter fusion welds or elongated welds of equal strength, using weld washers spaced not more than 12" o.c. with a minimum of 2 welds per unit at each support.

Tack weld at 4'-0" o.c. for fastening end closures.

Fasten roof deck units to steel supporting members as shown on the contract documents. Install sidelap fasteners at spacing as shown on the contract drawings. In addition, connect deck to perimeter supporting structure at 6" o.c. at all panel edges.

Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work.

Cutting and Fitting: Cut and neatly fit deck units and accessories around other work projecting through or adjacent to the decking, as shown.

Reinforcement at Openings: Provide additional metal reinforcement and closure pieces as required for strength, continuity of decking and support of other work shown.

Hanger Slots or Clips: Provide UL approved punched hanger slots between flutes of lower element where floor deck units are to receive hangers or support of ceiling construction, air ducts, diffusers, or lighting fixtures.

Locate slots or clips at not more than 14" o.c. in both directions, not over 9" from walls at ends, and not more than 12" from walls at sides, unless otherwise shown.

Joint Covers: Provide metal joint covers at abutting ends and changes in direction of floor deck units, except where taped joints are required.

Closure Strips: Provide metal closure strips at open uncovered ends and edges of decking, and in voids between decking and other construction. Weld into position to provide a complete decking installation.

Provide flexible closure strips instead of metal closures, at Contractor's option, wherever their use will ensure complete closure. Install with adhesive in accordance with manufacturer's instructions.

Touch-Up Painting: After decking installation, wire brush, clean and paint scarred areas, welds and rust spots on top and bottom surfaces of decking units and supporting steel members.

Touch-up galvanized surfaces with galvanizing repair paint applied in accordance with manufacturer's instructions.

In areas where shop-painted surfaces are to be exposed, apply touch-up paint to blend into adjacent surfaces.

END OF SECTION 053000

SECTION 054000 - COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS: Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.02 DESCRIPTION: Furnish, fabricate, deliver and erect all lightgage metal framing as shown on the drawings, or herein specified.

A. Wind design shall be per ASCE 7-05. See drawings for wind design criteria.

B. All bridging and bracing, including erection bracing, required for the finished product shall be designed and furnished. Bracing required for horizontal wind loads shall be designed for loads indicated on the plans and specifications, and as required by applicable codes

C. All framing connections shall be designed and furnished. Connections shall be designed for all loading conditions; including uplift and reactions from horizontal wind load transfer.

1.03 SUMMARY

A. Types of cold-formed metal framing units include SJ-shaped load-bearing steel studs.

B. Related Work Specified Elsewhere: Interior steel studs for gypsum drywall construction are specified in Section 092900.

1.04 SUBMITTALS:

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data and installation instructions for each item of cold-formed metal framing and accessories.

C. Shop Drawings: Submit shop drawings showing shapes and dimensions of members to be used, including pitch, span, chamber configuration, and spacing for each type of configuration. Show all bearing and anchorage details. Specify and detail all supplemental framing, strapping, complete bracing, bracing clips, bridging and other required for proper installation and to satisfy all designed requirements. Shop drawings and calculations must prepared by, and sealed, sealed and dated by, an engineer registered in the project state. Shop drawings bearing the seal, signature and date of the Florida registered engineer responsible for their preparation shall be submitted for approval.

1.05 QUALITY ASSURANCE:

A. Component Design: Calculate structural properties of studs and joists in accordance with American Iron and Steel Institute (AISI) "Specification for Design of Cold-Formed Steel Structural Members." Calculations shall be signed and sealed by a Specialty Engineer, registered in the State of Florida.

B. Welding: Use qualified welders and comply with American Welding Society (AWS) D1.3, "Structural Welding Code - Sheet Steel."

C. Fire-Rated Assemblies: Where framing units are components of assemblies indicated for a fire-resistance rating, including those required for compliance with governing regulations, provide units that have been approved by governing authorities that have jurisdiction.

PART 2 - PRODUCTS

2.01 MANUFACTURERS: Subject to compliance with requirements, provide products of one of the following:

Alabama Metal Industries Corp.
Dale Industries, Inc.
Dietrich Industries, Inc.
Marino \ Ware.
Wheeling Corrugating Co.
Superior Steel Studs, Inc.
USG Industries
United States Steel
Unimast Incorp.

2.02 DELIVERY AND STORAGE: Protect metal framing units from rusting and damage. Deliver to project site in manufacturer's unopened containers or bundles, fully identified with name, brand, type and grade. Store off ground in a dry ventilated space or protect with suitable waterproof coverings.

2.03 METAL FRAMING

A. System Components: Manufacturers' standard load-bearing steel studs of type, size, shape, and gage as indicated. With each type of metal framing required, provide manufacturer's standard, steel runners (tracks), blocking, lintels, clip angles, shoes, reinforcements, fasteners, and accessories for applications indicated, as needed to provide a complete metal framing system.

B. Materials and Finishes:

1. Fabricate metal framing components of commercial quality steel sheet with a minimum yield point of 50,000 psi; ASTM A 446, A 570, or A 611.
2. Provide galvanized finish to metal framing components complying with ASTM A 525 for minimum G 60 coating.
3. Studs: Manufacturer's standard load-bearing steel studs of size, shape, and gage indicated on drawings. Unless indicated otherwise on the drawings, stud flange width shall be 1.625" with flange return lip.

2.04 FABRICATION

A. General: Framing components may be prefabricated into assemblies before erection. Fabricate panels plumb, square, true to line, and braced against racking with joints welded. Perform lifting of prefabricated units to prevent damage or distortion.

B. Fastenings: Attach similar components by welding. Attach dissimilar components by welding, bolting, or screw fasteners, as standard with manufacturer.

C. Wire tying of framing components is not permitted.

D. All framing components shall be cut neatly to fit against abutting members.

D. Provide all angles, clips, and other miscellaneous pieces necessary to attach other materials to light gauge framing.

E. All components shall be set square in line and shall be held firmly in position until properly fastened.

F. Finished assemblies shall be free from twist, bends, or open joints with all members straight, square, and true to line.

J. All Light Gage trusses shall be shop fabricated. Field fabrication will not be allowed.

PART 3 - EXECUTION

3.01 INSTALLATION: General: Install metal framing systems in accordance with manufacturer's printed or written instructions and recommendations.

A. The Contractor is responsible for checking dimensions and assuring fit of all members before erection begins.

B. All work shall be erected plumb and level and to dimensions, spacing, and elevations indicated on drawings.

C. Members shall be of size and spacing shown on the approved shop drawings.

D. Provide temporary bracing as required.

E. Install permanent bracing and related components to withstand live and dead loads, wind uplift, material wind loads, and to comply with other indicated requirements.

3.02 RUNNER TRACKS: Install continuous tracks sized to match studs. Align tracks accurately to layout at base and tops of studs. Secure tracks as shown on drawings, or if not shown, as recommended by stud manufacturer for type of construction involved. Do not exceed 24 inches o.c. spacing for nail or power-driven fasteners or 16 inches o.c. for other types of attachment. Provide fasteners at corners and ends of tracks.

3.03 SET STUDS PLUMB, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.

3.04 WHERE STUD SYSTEM abuts structural columns or walls, including masonry walls, anchor ends of stiffeners to supporting structure.

3.05 INSTALL SUPPLEMENTARY FRAMING, blocking, and bracing in metal framing system wherever walls or partitions are indicated to support fixtures, equipment, services, casework, heavy trim and furnishings, and similar work requiring attachment to the wall or partition. Where type of supplementary support is not otherwise indicated, comply with stud manufacturer's recommendations and industry standards in each case, considering weight or loading resulting from item supported.

3.06 INSTALLATION OF WALL STUDS: Secure studs to top and bottom runner tracks by either welding or screw fastening at both inside and outside flanges.

3.07 FRAME WALL OPENINGS larger than 2 feet square with double stud at each jamb of frame except where more than two are either shown or indicated in manufacturer's instructions or on drawings. Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with stud shoes or by welding, and space jack studs same as full-height studs of wall. Secure stud system wall opening frame in manner indicated.

A. Frame both sides of expansion and control joints, as shown for wall system, with a separate stud and do not bridge the joint with components of stud system.

B. Install horizontal stiffeners in study system, spaced (vertical distance) at not more than 4'-0" o.c. Weld at each inter-section.

3.08 INSTALLATION OF JOISTS: Install level, straight, and plumb, complete with bracing and reinforcing as indicated on drawings. Provide not less than 1-1/2 inch end bearing.

A. Reinforce ends with end clips, steel hangers, steel angle clips, steel stud section, or as otherwise recommended by joist manufacturer.

B. Where required, reinforce joists at interior supports with single short length of joist section located directly over interior support, snap-on shoe, 30 percent side-piece lapped reinforcement, or other method recommended by joist manufacturer.

C. Secure joists to interior support systems to prevent lateral movement of bottom flange.

3.09 FIELD PAINTING: Touch-up damaged shop-applied protective coatings. Use compatible primer for prime-coated surfaces; use galvanizing repair system for galvanized surfaces.

END OF SECTION 054000

SECTION 055000 - METAL FABRICATIONS

PART 1 - GENERAL

1.01 STRUCTURAL PERFORMANCE: Provide the following assemblies capable of withstanding loadings indicated:

A. Handrails and Toprails: Concentrated load of 200 lbf applied at any point in any direction and a uniform load of 50 lbf per lin. ft. applied simultaneously in both vertical and horizontal directions.

1. All railings fabricated and installed shall comply with ADA requirements.

B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.02 SUBMITTALS: In addition to product data, submit shop drawings showing details of fabrication, assembly and installation including templates for anchor bolt placement.

A. Samples of materials and finished products as may be requested by Architect.

PART 2 - PRODUCTS

2.01 MATERIALS/FABRICATION: For work exposed to view use materials selected for their smoothness and freedom from surface blemishes.

A. Steel Plates, Shapes, and Bars: ASTM A 36.

B. Structural Steel Sheet: ASTM A 570 or ASTM A 611, Class 1; of grade required for design loading.

C. Galvanized Structural Sheet: ASTM A 446, of grade required for design loading; coating designation G90 or as indicated.

D. Steel Pipe: ASTM A 53, type and grade as required for design loading (if applicable), black finish unless galvanizing indicated; standard weight (Schedule 40) unless otherwise indicated. All handrails shall be 12@ o.d.

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

1. Extruded Tubing: ASTM B221, Alloy 6063-T5/T52.
2. Extruded Structural Pipe and Round Tubing: ASTM B 429, Alloy 6063-T6. Provide standard Weight (Schedule 40) pipe, unless otherwise noted.

F. Exterior Railings: Fabricate using Schedule 80 aluminum.

G. Stair Nosings: Provide stair nosings Type 3711 as manufactured by American Safety Tread Co., Helena, AL OR approved equal. The base shall consist of heat treated extruded aluminum alloy 6063-T6 with a abrasive filler. The abrasive ribs shall project a minimum of 1/16" above the extruded channels. Nosings shall be full length of steps less 1/8" clearance. Abrasive filler color shall be selected by Architect.

H. Stair Nosings: Roll-formed stainless steel to ASTM A167, Type 304 (V2A), heavy-traffic use, slip-resistant stair tread with integral perforated anchoring leg for setting the assembly into setting bed. Provide "TREP-E Stair Nosings" by Schluter Systems OR approved equal. Height of nosing shall be 10 mm or as required to suit application. Install as recommended by manufacturer. See cut sheet at end of this section for profile of nosing.

I. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either galvanized ferrous castings, malleable iron, cast steel; with steel bolts, washers and shims; hot-dip galvanized.

J. Non-Shrink Non-Metallic Grout: CE CRD-C621, non-staining, non-corrosive, non-gaseous; recommended by mfr. for types of applications indicated.

K. Fasteners: Provide bolts, nuts, lag bolts, machine screws, wood screws, toggle bolts, masonry anchorage devices, lock washers as required for application indicated and complying with applicable Federal standards. Hot-dip galvanize fasteners for exterior applications to comply with ASTM A 153.

2.02 SHOP PAINTING: Apply shop primer to surface of metal fabrications except those embedded in concrete or galvanized; comply with SSPC-PA1 and requirements indicated below:

A. Surface Preparation: Comply with SSPC-SP6 "Commercial Blast Cleaning" for exterior work, and with SSPC-SP3 "Power Tool Cleaning" for interior work.

B. Shop Primer: Fabricator's standard, fast-curing, lead-free, "universal" primer complying with performance requirements of FS TT-P-645.

C. Stripe paint edges, corners, crevices, bolts, welds and sharp edges.

2.03 GALVANIZING: ASTM A 386 for assembled products; ASTM A 123 for rolled, pressed and forged steel shapes, plates, bars and strip 1/8" and thicker; galvanizing repair paint: MIL-P-21035 or SSPC-Paint-20.

2.04 FABRICATION, GENERAL: Use materials of size and thickness shown, or, if not shown, of required size, grade and thickness to produce strength and durability in finished product. Shop-paint all items not specified to be galvanized after fabrication.

A. Weld corners and seams continuously; grind exposed welds smooth and flush.

B. Form exposed connections with hairline, flush joints; use concealed fasteners where possible.

2.05 ROUGH HARDWARE: Furnish custom-fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes for framing and supporting and anchoring woodwork. Galvanize, unless otherwise indicated.

2.06 MISCELLANEOUS FRAMING AND SUPPORTS: Provide as required to complete work. Fabricate of welded construction in as large units as possible; drill and tap as required to receive hardware and similar items. Include required anchors for building into other work; spaced not more than 24" o.c.

PART 3 - EXECUTION

3.01 INSTALLATION: Perform cutting, drilling and fitting required for installation; set work accurately in location, alignment and elevation, measured from established lines and levels. Provide anchorage devices and fasteners where necessary for installation to other work.

3.03 ALL RAILINGS shall be set in non-shrink, non-pourable grout. Grout shall be placed in a dome shape, higher than the surrounding grade.

3.02 TOUCH-UP SHOP PAINT after installation. Clean field welds, bolted connections and abraded areas, and apply same type paint as used in shop. Use galvanizing repair paint on damaged galvanized surfaces.

END OF SECTION 055000

SECTION 055150 - LADDERS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Aluminum access ladders.
B. Aluminum ship's ladders.
C. Aluminum cage ladders.

1.2 RELATED SECTIONS

A. Section 05500 - Metal Fabrications: Fasteners and installation requirements used to attach ladders to structure.
B. Section 14200 - Elevators: For pit ladders.
C. Section 15050 - Basic Electrical Materials and Methods: For electrical grounding of ladders.

1.3 REFERENCES

A. AA - Aluminum Association.
B. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
C. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
D. OSHA 1910.27 - Fixed Ladders.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.
B. Product Data: Manufacturer's data sheets on each product.
C. Shop Drawings:
    1. Detail fabrication and erection of each ladder indicated. Include plans, elevations, sections, and details of metal fabrications and their connections.
    2. Provide templates for anchors and bolts specified for installation under other Sections.
    3. Provide reaction loads for each hanger and bracket.
D. Qualification Data:
    1. Refer to Quality Assurance provisions for submittal requirements evidencing experience, certifications and resources.
E. Selection Samples: For each finish specified, two complete sets of color chips representing manufacturer's full range of available colors.
F. Verification Samples: For each finish specified, two samples, minimum size 6 inches (150 mm) square, represent actual product color.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm experienced in producing aluminum metal ladders similar to those indicated for this Project.
    1. Record of successful in-service performance.
    2. Sufficient production capacity to produce required units.
    3. Professional engineering competent in design and structural analysis to fabricate ladders in compliance with industry standards and local codes.
B. Installer Qualifications: Competent and experienced firm capable of selecting fasteners and installing ladders to attain designed operational and structural performance.
C. Product Qualification: Product design shall comply with OSHA 1910.27 minimum standards for ladders.
D. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
    1. Install ladder in area designated by Architect.

2. Do not proceed with remaining work until workmanship and installation are approved by Architect.
3. Rework mock-up as required to produce acceptable work.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions by field measurement before fabrication.
1. Established Dimensions: Where field measurements cannot be made without delaying the Work, indicate established dimensions on shop drawing submittal and proceed with fabrication.

1.8 WARRANTY

A. A. Manufacturer has responsibility for an extended Corrective Period for work of this Section for a period of 5 years commencing on the shipment date of the product against all the conditions indicated below, and when notified in writing from Owner, manufacturer shall promptly and without inconvenience and cost to Owner correct said deficiencies.
1. Defects in materials and workmanship.
2. Deterioration of material and surface performance below minimum OSHA standards as certified by independent third party testing laboratory. Ordinary wear and tear, unusual abuse or neglect excepted.
3. Within the warranty period, the manufacturer shall, at its option, repair, replace, or refund the purchase price of defective ladder.

B. Manufacturer shall be notified immediately of defective products, and be given a reasonable opportunity to inspect the goods prior to return. Manufacturer will not assume responsibility, or compensation, for unauthorized repairs or labor. Manufacturer makes no other warranty, expressed or implied, to the merchantability, fitness for a particular purpose, design, sale, installation, or use, of the ladder; and shall not be liable for incidental or consequential damages, losses of or expenses, resulting from the use of ladder products.

1.9 EXTRA MATERIALS

A. Furnish touchup kit for each type and color of paint finish provided.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: O’Keeffe’s, Inc.; 100 N Hill Drive, Suite 12, Brisbane, CA 94005. Toll Free Tel: (888) 653-3333. Tel: (415) 824-4900. Fax: (415) 824-5900. Email: info@okeeffes.com. Web: http://www.okeeffes.com.
B. Substitutions: Approved Equal
C. Requests for substitutions will be considered in accordance with provisions of Section 016000.

2.2 APPLICATIONS/SCOPE

A. Fixed Access Ladder with cage for low parapet:
1. Tubular Rail Low Parapet Access Ladder with Roofover Rail Extension.
a. Model 532 as manufactured by O’Keeffe’s Inc.

2.3 FINISHES

A. Mill finish. As extruded.

B. Clear Anodic Finish: AA-M10C22A41 Mechanical finish as fabricated. Architectural Class I, clear coating 0.018 mm or thicker.

C. Paint. Urethane over chemically pretreated substrate.
   1. Fire Red (RAL 2002).
   2. Alert Orange (RAL 2003).
   3. Warning Blue (RAL 5005).
   4. Caution Yellow (RAL 1018).
   5. Safety Green (RAL 6001).
   6. As scheduled on drawings.

2.4 MATERIALS

A. Aluminum Sheet: Alloy 5005-H34 to comply with ASTM B209.

B. Aluminum Extrusions: Alloy 6063-T6 to comply with ASTM B221.

2.5 FABRICATION

A. Rungs: Not less than 1-1/4 inches (32 mm) in section and 18–3/8 inches (467mm) long, formed from tubular aluminum extrusions. Squared and deeply serrated on all sides.
   1. Rungs shall withstand a 1,500 pound (454 kg) load without deformation or failure.

B. Channel Side Rails: Not less than 1/8 inch (3 mm) wall thickness by 3 inches (76 mm) wide.

C. Heavy Duty Tubular Side Rails: Assembled from two interlocking aluminum extrusions no less than 1/8 inch (3 mm) wall thickness by 3 inches (76 mm) wide. Construction shall be self-locking stainless steel fasteners, full penetration TIG welds and clean, smooth and burr-free surfaces.

D. Ship Ladders: Not less than 1-1/4 inches (32mm) high, 4-1/8 inch (105 mm) deep and 2 feet (610 mm) wide; tread spacing shall be 1 foot (305 mm) on center. Handrails shall be aluminum pipe, not less than 1-1/2 inches (38 mm) in diameter with hemispheric end caps.

E. Walk-Through Rail and Roof Rail Extension: Not less than 3 feet 6 inches (1067 mm) above the landing and shall be fitted with deeply serrated, square, tubular grab rails.

F. Landing Platform: 1-1/2 inches (38 mm) or greater diameter, tubular aluminum guardrails and decks of serrated aluminum treads.

G. Security Doors: Formed 1/8 inch (3 mm) thick aluminum sheet. Security panels shall extend on both sides, perpendicular to the door face, to within 2 inches (51 mm) of the wall. Security door shall be furnished with continuous aluminum piano hinge and heavy duty forged steel locking hasps.

H. Ship Ladder Seismic Bottom Support: Manufacturer’s standard; two isolation bearings per stringer.

I. Ladder Safety Post: Retractable hand hold and tie off.

J. Rail and Harness Fall Arrest System: Supplied where specified as alternate to safety cage and landing platforms, in accordance with OSHA regulation 1910.27; permanently mounted to ladder rungs and complete with necessary components.

K. Safety Cages:
   1. Fabricate ladder safety cages to comply with authority having jurisdiction. Assemble by welding. Spacing of primary hoops, secondary hoops and vertical bars shall not exceed that required by code.
   2. Safety cage hoops and vertical bars: 3/16 inch (5 mm) by 2 inches (51 mm) aluminum bar.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Coordinate anchorages. Furnish setting drawings, templates, and anchorage structural loads for fastener resistance.

B. Do not begin installation until supporting structure is complete and ladder installation will not interfere with supporting structure work.

C. If supporting structure is the responsibility of another installer, notify Architect of unsatisfactory supporting work before proceeding.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions and in proper relationship with adjacent construction.

3.3 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 055150

SECTION 061000 – ROUGH CARPENTRY

PART 1 - GENERAL

1.01 Lumber, General: Manufacture lumber, S4S and grade stamped, to comply with PS 20 and applicable grading rules of inspection agencies certified by ALSC's Board of Review. Provide seasoned lumber with 19 percent moisture content at time of dressing and shipment, for sizes 2" or less in thickness. **All lumber shall be fire-retardant treated.**

1.02 Blocking: All wood blocking shall be a minimum 3/4" plywood. This applies to backing supporting for millwork, headwalls, oak crash rails, toilet accessories, metal lockers, t.v. brackets, etc. or unless otherwise indicated in drawings or by manufacturer of the product being hung.

A. Wood blocking methods shall be approved by manufacturers of all wall supported systems.

1.03 Related Sections:

A. Section 102800 - Toilet and Bath Accessories for blocking requirements.

B. Section 111320 - Projection Screens.

PART 2 - PRODUCTS

2.01 Dimension Lumber:

A. Construction grade light-framing lumber (2"-4" thick, 2"-4" wide): Any species graded under WWPA or WCLIB rules or Southern Pine graded under SPIB rules or Western Spruce-Pine-Fir graded under NLGA rules.

B. Studs (2"-4" thick, 2"-6" wide, 10' and shorter): "Stud" or No. 3 Structural Light Framing grade, any species graded under WWPA, WCLIB, SPIB OR NLGA rules.

2.02 Lumber for Miscellaneous Uses: Unless otherwise indicated, provide Standard grade lumber for support of other work, including bucks, nailers, blocking, furring, grounds, stripping and similar members.

2.03 Fasteners and Anchorages: Of size, type, material and finish suited to application shown and of quality equal to products by Simpson Strong Tie Co., Inc. Provide metal hangers and framing anchors of size and type recommended for intended use by manufacturer. Hot-dip galvanize fasteners and anchorages for work exposed to weather, in ground contact and high relative humidity to comply with ASTM A 153.

2.04 Preservative pressure treat lumber with water-borne preservatives to comply with AWPA C2 and C9, respectively, and with AWPB LP-22 (Wood for Ground Contact Use) and AWPB LP-2 (Wood for Above-Ground Use).

A. Treat nailers, blocking, and similar items in conjunction with flashing and treat sills, blocking, furring, and similar items in direct contact with masonry or concrete.

2.05 WALL SUPPORT SYSTEM AND ROUGH-IN REQUIREMENTS: Provide blocking as recommended by the manufacturer for all wall hung items.

PART 3 - EXECUTION

3.01 Install rough carpentry work to comply with "Manual of House Framing" by National Forest Products Assoc. (N.F.P.A.) and with recommendations of American Plywood Association (APA), unless otherwise indicated. For sheathing and other products not covered in above standards, comply with recommendations of manufacturer of product involved for use intended. Set carpentry work to required levels and lines, with members plumb and true and cut to fit.

3.02 Securely attach carpentry work to substrates and supporting members using fasteners of size that will not penetrate members where opposite side will be exposed to view or receive finish materials. Install fasteners without splitting wood; fasten panel products to allow for expansion at joints unless otherwise indicated.

3.03 Provide wood framing members of size and spacing indicated; do not splice structural members between supports.

END OF SECTION 061000

SECTION 061600 - SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Include

1. Insulated Cement board Sheathing
2. Accessories

1.2 REFERENCES

A. ASTM International (ASTM):

1. ASTM C840 Standard Specification for Application and Finishing of Gypsum Board
2. ASTM C1002 Standard Specifications for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs
3. ASTM C1177/C117M Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing
4. ASTM C1280 Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing
5. ASTM C1289 Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
6. ASTM C1325 Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units
7. ASTM C1658/C1658M Standard Specification for Glass Mat Gypsum Panels
8. ASTM D3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
9. ASTM E72 Standard Test Methods of Conducting Strength Tests of Panels for Building Construction
10. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
11. ASTM G21 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

B. Gypsum Association (GA):

1. GA-216 Application and Finishing of Gypsum Panel Products
2. GA-253 Application of Gypsum Sheathing

1.3 ACTION SUBMITTALS

A. Product Data:

1. Each type of product.

PART 2 - PRODUCTS

2.1 MAGNESIUM BOARD

A. Magnesium Board Sheathing, Wall : ASTM E72.

1. Basis of Design: Twin Oaks Facilities International, 799 SW Pickney Street, Madison, Fl 32340; 850-559-5807: ½” (12mm) Sulfate based MGo Board

B. Insulated Cement Board Sheathing, Wall and Soffit: ASTM C1289, Type I or Type II, Class 2, rigid, cellular, polyisocyanurate thermal insulation bonded to 1/4 inch cement board.

1. Basis of Design: PermaBASE Building Products, LLC provided by National Gypsum Company:

    a. PermaBASE® CI™ Insulated Cement Board

2. Thickness: **2 inch (50.8 mm)**
3. R-Value: ASTM C518 **10**, minimum.
4. Edges: Square.

2.2 ACCESSORIES

A. Fasteners for Magnesium Board: ASTM C1002.

1. Basis of Design: PermaBASE Building Products, LLC provided by National Gypsum Company:

    a. PermaBASE™ Cement Board Screws Hi-Lo.

        1) Wafer head, corrosion-resistant.
        2) Thickness, overall: **[1-1/4 inch (mm)][2 inch (mm)][2-1/2 inch (mm)]**

    b. PermaBASE™ Cement Board Screws Drill Point.

        1) Wafer head, corrosion-resistant.
        2) Thickness, overall: **[1-1/4 inch (mm)][2 inch (mm)][2-1/2 inch (mm)]**

B. Fasteners for Insulated Cement Board Sheathing:

1. Fasteners for **[1 inch (25.4 mm)][2 inch (50.8 mm)][3 inch (76.2 mm)][4 inch (101.6 mm)]** thick panels.

    a. Metal Framing:

        1) Triangle Fasteners, Concealor Pancake Head Self-Drilling Screw, www.trianglefastener.com.
        2) TRUFAST, TRUFAST SIP & Nail Base Fastener, www.trufast.com.
        3) OMG/FastenMaster, Fastenmaster HeadLOK Fastener, www.fastenmaster.com.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Install in accordance with:

1. Manufacturer recommendations.
2. ASTM C840.
3. ASTM C1280.
4. GA-216.
5. GA-253.

END OF SECTION 061600

SECTION 064123 - PLASTIC LAMINATE CLAD CABINETS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1, apply to work of this section.

1.02 DESCRIPTION OF WORK

A. Extent of each type of architectural millwork is indicated on drawings. Types of architectural millwork include laminate clad cabinets including tops and opaque shelving.

1.03 QUALITY ASSURANCE

A. AWI Quality Standard: Comply with applicable requirements of "Architectural Woodwork Quality Standards" published by the Architectural Woodwork Institute (AWI) and American Laminators Association (ALA), except as otherwise indicated.

B. Installer Qualifications: Arrange for installation of architectural millwork items by same firm which fabricated them.

1.04 SUBMITTALS

A. Shop Drawings: Submit shop drawings showing location of each item, dimensioned plans and elevations, large scale details, joinery, attachment devices and other components. All shop drawings shall indicate use of particle board with minimum density of 45# throughout panels, or plywood where specified.

B. Samples: Submit samples of plastic laminate and all cabinet hardware, one unit of each type and finish.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect millwork during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

B. Do not deliver millwork, until painting, wet work, grinding and similar operations which could damage, soil or deteriorate millwork have been completed in installation areas. If, due to unforeseen circumstances, millwork must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

1.06 PROJECT CONDITIONS

A. Conditioning: Millwork Manufacturer and Installer shall advise Contractor of temperature and humidity requirements for millwork installation and storage areas. Do not install millwork until required temperature and relative humidity have been stabilized and will be maintained in installation areas.

B. Maintain temperature and humidity in installation area as required to maintain moisture content of installed millwork within a 1.0 percent tolerance of optimum moisture content, from date of installation through remainder of construction period. Require Millwork Manufacturer to establish optimum moisture content and required temperature and humidity conditions.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Manufacturer: Wilsonart, Formica, Pionite, Nevamar or approved equal.

2.02 MATERIALS

A. ARCHITECTURAL CABINETS AND SHELVING UNITS, LAMINATE CLAD: Comply with the following requirements:

Grade: Custom.
Construction: Semi-Reveal Overlay. Panel Type Construction.

Note: 1. All particleboard construction shall be 45# density throughout panel.
2. All cabinets over 36" wide to have 3/4" continuous top.
3. Shelving units over 33" wide shall have vertical divider support or reinforced.
4. Drawer bottoms over 24" wide shall be reinforced.
5. Cabinets shall have a separate and continuous pressure treated sub-base. Cabinet sides to floor will not be acceptable.

Plastic Laminate for Exposed and Semi-Exposed Surfaces: Vertical grade (VGP-0.028") for vertical surfaces.
Edge Treatment: Doors, drawers, and open shelving faces shall receive 3mm PVC banding, machine applied with waterproof hot melt adhesive with external edges and outside corners machine profiled to 1/8" radius for safety; Cabinet bodies and shelving shall receive 1mm PVC banding, machine applied with waterproof hot melt adhesive. Shelves in closed cabinets shall have 1mm PVC banding on all four sides. Shelving in open cabinets shall have 3mm PVC edge banding on front and back edges. Sides shall be 1mm PVC edge banding. Cabinet bodies in open cabinets shall have 3mm PVC edge banding.
Concealed Surfaces: 120 gram minimum Thermofused Melamine finish. Color to be selected by Architect.
Colors: See Finish Plans for Color Legend.
Comply with AWI Section 400 and its Division 400B.

B. ARCHITECTURAL CABINET TOPS: Plastic laminate and solid surfacing, as detailed in the drawings: (See section 0966510 for solid surfacing.)

Grade: Custom.
Plastic Laminate for Exposed Surfaces: Horizontal grade (HGS – 0.048") for horizontal surfaces.
Edge Treatment: 3mm PVC banding, machine applied with waterproof hot melt adhesive with external edges and outside corners machine profiled.
Colors: See Color Legend in Finish Plans. PVC color selections shall include wood grains and patterns, and **not** be limited to stock colors.
Comply with AWI Section 400 and its Division 400C.
Grommets: Provide one (1) 2½" grommet by Doug Mockett & Co. Inc. (800-523-1269) for each 48" length of workstation countertop or as shown on drawings. Locations to be determined in the field by Owner.

Note: 1. Solid surface countertops to be 1/2" solid surfacing over 3/4" particle board with 1 1/4" built-up front edge.
2. Plastic laminate countertops to be 3/4" – 45# density particleboard with a 1-1/4" built-up front edge.
3. Countertops with sinks shall be 3/4" plywood.
4. All counter tops to receive a backer sheet.

C. CABINET HARDWARE AND ACCESSORY MATERIALS

Concealed Hinges: Grass 3000 Series, self-closing, 110E swing, 2 per door and 4 per door on units over 60" high.

Metal Drawer Slides: BHMA A156.9, Zargen Drawer Slide System.

Box Drawer Slides (Grade 1HD-100): For drawers not more than 6 inches high and 24 inches wide.

File Drawer Slides (Grade 1HD-200): For drawers more than 6 inches high or 24 inches wide with 6110 Pendaflex Railing by Grass American Inc.

Pencil Drawer Slides (Grade 1): For drawers not more than 3 inches high and 24 inches wide.

Metal Drawer Sides: Height shall be within 1" of depth of face of drawer.

Pulls: Hardware Resources, Knox, 645-128SN pulls; 5-9/16” overall length; satin nickel finish.. One per door or drawer.

Shelf Pins: 5mm pin holes with dual pin, anti tip shelf supports suitable for 3/4" or 1" shelving. 32mm line bore holes with double pin reinforced supports tested for over 250 lbs. with anti-lift supports to provide a non-tip feature suitable for 3/4" or 1" thick shelving.

Locks: All top drawers shall receive 5-disc tumbler, cam type with bright nickel finish. Provide additional locks where noted on drawings.

Standard bracket: Standard Steel bracket, 21” x 21”, by A & M Hardware, Inc.

D. FASTENERS AND ANCHORS:

1. Screws: Select material, type, size and finish required for each use. Comply with FS FF-S-111 for applicable requirements.
2. Nails: Select material, type, size and finish required for each use. Comply with FS FF-N-105 for applicable requirements.
3. Anchors: Select material, type, size and finish required by each substrate for secure anchorage. Provide non-ferrous metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion-resistance. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts and anchors, as required, to be set into concrete or masonry work for subsequent millwork anchorage.

2.03 FABRICATION, GENERAL

A. Wood Moisture Content: Comply with requirements of referenced quality standard for moisture content of lumber at time of fabrication and for relative humidity conditions in the installation areas.

B. Fabricate millwork to dimensions, profiles, and details indicated with openings and mortises precut, where possible, to receive hardware and other items and work.

C. Complete fabrication, assembly, finishing, hardware application, and other work before shipment to project site to maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

D. Pre-Cut Openings: Fabricate architectural millwork with pre-cut openings, where possible, to receive hardware, appliances, plumbing fixtures, electrical work and similar items. Locate openings accurately and use templates or roughing-in diagrams for proper size and shape. Smooth edges of cutoffs and, where located in countertops and similar exposures seal edges of cutouts with a water-resistant coating. Exposed openings to receive plastic grommets.

E. Measurements: Before proceeding with fabrication of millwork required to be fitted to other construction, obtain field measurements and verify dimensions and shop drawing details as required for accurate fit.

PART 3 - EXECUTION

3.01 PREPARATION

A. Condition millwork to average prevailing humidity conditions in installation areas prior to installing.

B. Prior to installation of architectural millwork, examine shop fabricated work for completion, and complete work as required, including back priming and removal of packing.

3.02 INSTALLATION

A. Install millwork plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level (including tops); and with no variations in flushness of adjoining surfaces.

B. Scribe and cut millwork to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.

C. Anchor millwork to anchors or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fasteners heads are required, use fine finishing nails for exposed nailing, countersunk and filled flush with millwork, and matching final finish where transparent finish is indicated.

E. Cabinets: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.

E. Tops: Anchor securely to base units and other support systems as indicated.

3.03 ADJUSTMENT, CLEANING, FINISHING, AND PROTECTION

A. Repair damaged and defective millwork where possible to eliminate defects functionally and visually; where not possible to repair replace millwork. Adjust joinery for uniform appearance.

B. Clean, lubricate and adjust hardware.

C. Clean millwork on exposed and semi-exposed surfaces. Touch-up shop-applied finishes to restore damaged or soiled areas.

D. Complete the finishing work specified as work of this section, to whatever extent not completed at shop or prior to installation of millwork.

E. Provide final protection and maintain conditions, in a manner acceptable to Fabricator and Installer, which ensures architectural millwork being without damage or deterioration at time of substantial completion.

END OF SECTION 064123

SECTION 066510 - SOLID SURFACE FABRICATIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the following horizontal and trim solid surface product types:
   1. Windowsills
   2. Countertops – where detailed
   3. Vanity tops and integral lavatories

B. Related Sections include the following:
   1. Division 6 Section “Rough Carpentry” for Blocking.
   2. Division 15 Section “Plumbing Fixtures.”

1.03 DEFINITION

A. Solid surface is defined as nonporous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment.

1.04 SUBMITTALS

A. Shop drawings:
   1. Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices and other components.
      a. Show full-size details, edge details, thermoforming requirements, attachments, etc.
      b. Show locations and sizes of furring, blocking, including concealed blocking and reinforcement specified in other Sections.
      c. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, waste receptacle and other items installed in solid surface.

B. Samples:
   1. For each type of product indicated.
      a. Submit minimum 6-inch by 6-inch sample in specified gloss.
      b. Cut sample and seam together for representation of inconspicuous seam.
      c. Indicate full range of color and pattern variation.
   2. Approved samples will be retained as a standard for work.

C. Product Data:
   1. Indicate product description, fabrication information and compliance with specified performance requirements.

D. Product Certificates:
   1. For each type of product, signed by product manufacturer.

E. Fabricator/Installer Qualifications:
   1. Provide copy of certification number.

F. Manufacturer Certificates:
   1. Signed by manufacturers certifying that they comply with requirements.

G. Maintenance Data:
1. Submit manufacturer's care and maintenance data, including repair and cleaning instructions.
   a. Maintenance kit for finishes shall be submitted.

2. Include in project closeout documents.

1.05 QUALITY ASSURANCE

A. Qualifications:
1. Shop that employs skilled workers who custom fabricate products similar to those required for this project and whose products have a record of successful in-service performance.

B. Fabricator/Installer Qualifications:
1. Work of this section shall be by a certified fabricator/installer, certified in writing by the manufacturer.

C. Applicable Standards:
1. Standards of the following, as referenced herein:
   a. American National Standards Institute (ANSI)
   b. American Society for Testing and Materials (ASTM)
   c. National Electrical Manufacturers Association (NEMA)
   d. NSF International
2. Fire test response characteristics:
   a. Provide with the following Class A (Class I) surface burning characteristics as determined by testing identical products per UL 723 (ASTM E84) or another testing and inspecting agency acceptable to authorities having jurisdiction:
      1) Flame Spread Index: 25 or less.
      2) Smoke Developed Index: 450 or less.

D. Coordination Drawings:
1. Shall be prepared indicating:
   a. Plumbing work.
   b. Electrical work.
   c. Miscellaneous steel for the general work.
   d. Indicate location of all walls (rated and non-rated), blocking locations and recessed wall items, etc.
2. Content:
   a. Project-specific information, drawn accurately to scale.
   b. Do not base coordination drawings on reproductions of the contract documents or standard printed data.
   c. Indicate dimensions shown on the contract drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements.
   d. Provide alternate sketches to designer for resolution of such conflicts.
      1) Minor dimension changes and difficult installations will not be considered changes to the contract.

E. Drawings shall:
1. Be produced in 1/2-inch scale for all fabricated items.

F. Drawings must be complete and submitted to the architect within 60 days after award of contract for record only.
1. No review or approval will be forthcoming.

2. Coordination drawings are required for the benefit of contractor's fabricators/installers as an aid to coordination of their work so as to eliminate or reduce conflicts that may arise during the installation of their work.

G. Pre-installation Conference:
1. Conduct conference at project site to comply with requirements in Division 1.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver no components to project site until areas are ready for installation.

B. Store components indoors prior to installation.

C. Handle materials to prevent damage to finished surfaces.
1. Provide protective coverings to prevent physical damage or staining following installation for duration of project.

1.07 WARRANTY

A. Provide manufacturer's warranty against defects in materials.
1. Warranty shall provide material and labor to repair or replace defective materials.
2. Damage caused by physical or chemical abuse or damage from excessive heat will not be warranted.

B. Optional Installed Warranty:
1. To qualify for the optional Installed Warranty, fabrication and installation must be performed by a DuPont Certified Fabrication/Installation source who will provide a brand plate for the application.
2. This warranty covers all fabrication and installation performed by the certified/approved source subject to the specific wording contained in the Installed Warranty Card.

C. Manufacturer's warranty period:
1. Ten years from date of substantial completion.

1.08 MAINTENANCE

A. Provide maintenance requirements as specified by the manufacturer.

PART 2 — PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers:
1. Subject to compliance with requirements, provide products by one of the following:
a. Corian® surfaces from the DuPont company OR Approved Equal.

2.02 MATERIALS

A. Solid polymer components:
1. Cast, nonporous, filled polymer, not coated, laminated or of composite construction with through body colors meeting ANSI Z124.3 or ANSI Z124.6, having minimum physical and performance properties specified.
2. Superficial damage to a depth of 0.010 inch (.25 mm) shall be repairable by sanding and/or polishing.

B. Thickness:
1. 1/2 inch with 1 1/4" built-up front edge

C. Edge treatment:
1. 1/8" eased edges

D. Integral Sink:
1. 816P (mid size oval)

E. Performance characteristics:

Property	Typical Result	Test
Tensile Strength	6,000 psi	ASTM D 638
Tensile Modulus	1.5 x 10^{-6} psi	ASTM D 638
Tensile Elongation	0.4% min.	ASTM D 638
Flexural Strength	10,000 psi	ASTM D 790
Flexural Modulus	1.2 x 10^{-6} psi	ASTM D 790
Hardness	>85	Rockwell "M" Scale ASTM D 785
	56	Barcol Impressor ASTM D 2583
Thermal Expansion	3.02 x 10^{-5} in./in./°C (1.80 x 10^{-5} in./in./°F)	ASTM D 696
Gloss (60° Gardner)	5–75 (matte—highly polished)	ANSI Z124
Light Resistance	(Xenon Arc) No effect	NEMA LD 3-2000 Method 3.3
Wear and Cleanability	Passes	ANSI Z124.3 & Z124.6
Stain Resistance: Sheets	Passes	ANSI Z124.3 & Z124.6
Fungus and Bacteria Resistance	Does not support microbial growth	ASTM G21&G22
Boiling Water Resistance	No visible change	NEMA LD 3-2000 Method 3.5
High Temperature Resistance	No change	NEMA LD 3-2000 Method 3.6
Izod Impact (Notched Specimen)	0.28 ft.-lbs./in. of notch	ASTM D 256 (Method A)
Ball Impact Resistance: Sheets	No fracture—1⁄2 lb. ball: 1⁄4" slab—36" drop 1⁄2" slab—144" drop	NEMA LD 3-2000 Method 3.8
Weatherability	ΔE^*_{94}<5 in 1,000 hrs.	ASTM G 155
Specific Gravity †	1.7	
Water Absorption	Long-term 0.4% (3⁄4") 0.6% (1⁄2") 0.8% (1⁄4")	ASTM D 570
Toxicity	99 (solid colors) 66 (patterned colors)	Pittsburgh Protocol Test ("LC50"Test)
Flammability	All colors (Class I and Class A)	ASTM E 84, NFPA 255 & UL 723
Flame Spread Index	<25	
Smoke Developed Index	<25	

† Approximate weight per square foot: 1⁄4" (6 mm) 2.2 lbs., 1⁄2" (12.3 mm) 4.4 lbs.
Shapes meet or exceed the ANSI Z124.3 and ANSI Z124.6 standards for plastic sinks and lavatories.
NEMA results based on the NEMA LD 3-2000

2.03 ACCESSORIES

A. Joint Adhesive:
1. Manufacturer's standard one- or two-part adhesive kit to create inconspicuous, nonporous joints.

B. Sealant:
1. Manufacturer's standard mildew-resistant, FDA-compliant, NSF 51-compliant (food zone — any type), UL-listed silicone sealant in colors matching components.

2.04 FACTORY FABRICATION

A. Shop assembly
1. Fabricate components to greatest extent practical to sizes and shapes indicated, in accordance with approved shop drawings and manufacturer's printed instructions and technical bulletins.
2. Form joints between components using manufacturer's standard joint adhesive without conspicuous joints.
a. Reinforce with strip of solid polymer material, 2" wide.
3. Provide factory cutouts for plumbing fittings and bath accessories as indicated on the drawings.
4. Rout and finish component edges with clean, sharp returns.
a. Rout cutouts, radii and contours to template.
b. Smooth edges.
c. Repair or reject defective and inaccurate work.

B. Thermoforming:
1. Comply with manufacturer's data.
2. Heat entire component.
a. Material shall be uniform, between 275 and 325 degrees Fahrenheit during forming.
3. Form pieces to shape prior to seaming and joining.
4. Cut pieces to finished dimensions.
5. Sand edges and remove nicks and scratches.

2.05 FINISHES

A. Select from the manufacturer's standard color chart.
1. Colors – to be selected by Architect from price group D or 4 (depending on the manufacturer).

B. Finish:
1. Provide surfaces with a uniform finish.
a. Matte; gloss range of 5–20.

PART 3 — EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with fabricator present for compliance with requirements for installation tolerances and other conditions affecting performance of work.

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

3.02 INSTALLATION

A. Install components plumb, level and rigid, scribed to adjacent finishes, in accordance with approved shop drawings and product data.

1. Provide product in the largest pieces available.
2. Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work.
   a. Exposed joints/seams shall not be allowed.
3. Reinforce field joints with solid surface strips extending a minimum of 1 inch on either side of the seam with the strip being the same thickness as the top.
4. Cut and finish component edges with clean, sharp returns.
5. Rout radii and contours to template.
6. Anchor securely to base cabinets or other supports.
7. Align adjacent countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop.
8. Carefully dress joints smooth, remove surface scratches and clean entire surface.
9. Install countertops with no more than 1/8-inch (3 mm) sag, bow or other variation from a straight line.

3.03 REPAIR

A. Repair or replace damaged work which cannot be repaired to architect's satisfaction.

3.04 CLEANING AND PROTECTION

A. Keep components clean during installation.

B. Remove adhesives, sealants and other stains.

END OF SECTION 066510

SECTION 071900 - WATER REPELLENTS

PART 1 - GENERAL

1.01 Extent of surfaces to receive water repellent include all architectural precast, brick veneer, existing brick and concrete surfaces. This to be applied on Memorial wall.

1.02 Product Data: Submit manufacturer's specifications, installation instructions, general recommendations for water repellents, and test results of repellent penetrations on brick from site.

1.03 Weather and Substrate Conditions: Proceed with application of water repellent when weather conditions and substrate conditions are in accordance with manufacturer's printed instructions.

PART 2 - PRODUCTS

2.01 Isobutyltrialkoxy Silane: Provide “Chemtrete BSM-40" by Degussa Corp. OR by one of the following approved equals.

Pecora International Corp.
W.R. Meadows.

Note: If product other than basis for design is submitted, submit test data and comparison between basis for design and submitted product demonstrating the submitted product is equal or better.

2.02 Warranty: Provide ten (10) year warranty against water infiltration due to repellant failure.

PART 3 - EXECUTION

3.01 Test Application: Prior to performance of water repellent work, including bulk purchase/delivery of products, prepare a small application in an unobtrusive location and in a manner acceptable to Architect, for purpose of demonstrating final effect (visual and physical/chemical) of planned installation. Proceed with work only after Architect's acceptance of test application, or as otherwise directed. Provide fugitive dye.

3.02 Clean substrate of substances which might interfere with penetration/adhesion of water repellents. Test for moisture content, in accordance with repellent manufacturer's instructions, to ensure that surface is sufficiently dry.

3.03 Coordination with Sealants: Where feasible, delay application of water repellents until installation of sealants has been completed in joints adjoining surfaces to be coated with repellent.

3.04 Protect adjoining work, including sealant bond surfaces, from spillage or blow-over of water repellent. Comply with manufacturer's recommendations.

3.05 Installation: Apply a heavy saturation spray coating of water repellent on surfaces indicated for treatment using low pressure spray equipment. Comply with manufacturer's instructions.

3.06 Apply a second saturation spray coating, repeating first application. Comply with manufacturer's instructions for limitations on drying time between coats.

END OF SECTION 071900

SECTION 072100 - BUILDING INSULATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes thermal insulation, acoustical insulation, and exterior wall insulation as indicated and/or specified complete.

1.02 Fire Performance Characteristics: Provide insulation materials identical to those whose indicated fire performance characteristics have been determined per ASTM E 119, ASTM E 84, and ASTM E 136, as applicable, by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing and inspecting organization.

1.03 SUBMITTALS:

A. Submit product data for each form and type of insulation indicated.

PART 2 - PRODUCTS

2.01 Roof Deck Insulation: R25 Ci of material (+/-4.25") , Polyisocyanurate foam insulation board. "RMax Thermaroof Plus OR approved equal. Provide flute insulation in metal deck to create continuous thermal separation.
As per manufacturer's recommendations, FL Product Approval/NOA.

2.02 Polyicynene Spray Insulation: Manufactured by Icynene, Inc. OR approved equal. Spray insluation shall be icynene, hydrophobic, low-density, closed-cell (when applied to roof deck at joist seats)modified polyicynene; conforming with the following: (This Project Application is an alternate solution to exterior roof closure)

A. Thermal Resistance: ASTM C518; 3.6 hr/sq ft/degree F/BTU In.

B. Air Permeance (for 5.25 inches of material): ASTM E283; 0.0049 l/m2/second.

C. Water Vapor Transmission (for 5 inches of mateial): ASTM E96; 10 perms.

D. Sound Transmission Class (STC): ASTM E90; STC 37 in stud wall.

E. Noise Reduction Coefficient (NRC): ASTM E90; NRC-0.7 in stud wall.

F. Flame Spread and Smoke Developed rating: ASTM E84; Flame Spread D20; Smoke Development D400.

G. Locations: Gables, fascias, soffits , joist seats and other areas within building envelope, where contractor option to use in lieu of rigid insulation for flute closure.0

H. Installation shall be in accordance with manufacturers written application instructions.

2.03 Thermal Barrier for Polyicynene Spray Insulation: JM Spider Insulation manufactured by Johns Manville OR approved equal. Spray foam insulation to be sprayed ***over*** spray poly foam (SPF) insulation providing a thermal barrier and shall conform with the following:

A. Complying with ASTM E-84 and ASTM E-136.

B. At 1.8 pcf density and ≥ 2" thickness meets International Building Code and ICC ES criteria for use as an ignition barrier over foamed plastic.

2.04 Acoustical Insulation:

A. Mineral fiber sound batts, R-11, unfaced (non-combustible). Flame spread - 25 maximum as tested by ASTM # 84-75.

B. Acoustical insulation is required above ceilings at toilets, unless “full height” sound insulated walls are specified. Vinyl backed insulation shall be used in open air plenum spaces. STC rating shall be 45 to 51 in walls and ceilings.

2.05 Perimeter Fire-Containment Systems (Fire Safing): Where indicated for gaps between the perimeter edge of fire-resistance-rated floor assemblies and non-fire-resistance-rated exterior curtains walls and gaps in structure framing, provide a perimeter fire-containment system with the fire-test-response characteristics indicated, as determined by testing identical systems per UL 2079 by UL and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate makings of applicable testing and inspecting agency.

PART 3 - EXECUTION

3.01 GENERAL: Comply with insulation manufacturer's instructions for installation of insulation.

A. Support insulation units by adhesive or mechanical anchorage or both as applicable to location and conditions indicated.

3.02 INSTALLATION

A. Batt Insulation: Provide Batt insulation as indicated. Install insulation with edges butted snugly, leaving no open areas. Support securely with staples, clips, tape or fasteners, as required. Install in accordance with the manufacturer's directions and recommendations.

1. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage, to provide permanent placement and support of units.
2. Set vapor barrier faced units with vapor barrier to outside of construction, except as otherwise shown.
3. At interior ceilings, where indicated, install on top of drywall or acoustical tile, as shown, fastening securely. Do not install insulation over light fixtures. Maintain 3” clearance from all light fixtures.
4. At exterior soffits and ceilings, install on cross runners. Wire tie and fasten to prevent sag.

B. Wall Insulation:

1. Install as per manufacturer's specifications, using licensed and approved installers.

END OF SECTION 072100

SECTION 072726 - LIQUID VAPOR AND AIR BARRIER

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Application of liquid-applied asphalt emulsion vapor-retarding air barrier.

C. Application of materials to provide bridge and seal air leakage pathways in:
1. Wall and roof connections and penetrations.
2. Connections to foundation walls.
3. Walls, windows, curtain walls, storefronts, louvers or doors.
4. Expansion and control joints.
5. Masonry ties.
6. All other penetrations through the wall assembly.

1.02 RELATED SECTIONS

A. Section 04 20 00 - Unit Masonry.

B. Section 07 21 00 - Thermal Insulation.

C. Section 07 50 00 - Membrane Roofing.

D. Section 07 60 00 - Flashing and Sheet Metal.

E. Section 07 70 00 - Roof and Wall Specialties and Accessories.

F. Section 07 80 00 - Fire and Smoke Protection.

G. Section 07 92 00 - Joint Sealants.

H. Section 08 10 00 - Doors and Frames.

I. Section 08 50 00 - Windows.

J. Section 09 20 00 - Plaster and Gypsum Board.

1.03 REFERENCES

A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

C. ASTM E96 (Method B) - Standard Test Methods for Water Vapor Transmission of Materials.

D. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

E. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.

F. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference.

G. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials.

H. ASTM C1280 - Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing.

I. GA-253-2018 – Application of Gypsum Sheathing.

1.04 SUBMITTALS

A. Comply with Section 01 33 00 - Submittal Procedures.

B. Submit manufacturer's product data and application instructions.

1.05 QUALITY ASSURANCE

A. Installer Qualifications:

1. Use an experienced installer and adequate number of skilled personnel who are thoroughly trained and experienced in the application of the air barrier.
   a. Air Barrier Installer performing Work shall be approved by air barrier membrane manufacturer.

B. Obtain air barrier materials from a single manufacturer regularly engaged in manufacturing the product.

C. Provide products which comply with all state and local regulations controlling use of volatile organic compounds (VOCs).

1.06 PRECONSTRUCTION MEETING

A. Preconstruction Meeting: Convene [one] [__1____] week prior to commencing Work of this section to review conditions of work with General Contractor.

1.07 MOCK-UPS

A. Mock up wall not required. However, once a wall section of approximately 100sf is completed the Contractor shall review for completeness and application to ensure work progressing satisfactorily and meets expectations of product being installed.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Store materials in a clean, dry area in accordance with manufacturer's instructions.

C. Store at temperatures at or above 40 degrees F (4 degrees C), free from contact with cold or frozen surfaces.

D. Protect materials during handling and application to prevent damage or contamination.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Cover air barrier no later than 4 weeks after application. Contact W. R. MEADOWS when air barrier is exposed for longer periods.

B. Do not proceed with product application if rainfall is forecast or imminent within 12 hours.

C. Do not apply when air, material and surface temperatures are expected to fall below 20 degrees F (-6.7 degrees C) within 24 hours of completed application.

1.10 WARRANTY

A. Provide manufacturer's standard material warranty.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. W. R. MEADOWS®, INC., 300 Industrial Drive / PO Box 338, Hampshire, Illinois 60140-0338. (800) 342-5976, Website: www.wrmeadows.com.
B. DUPONT INDUSTRIES
C. CARLISLE SYSTEMS

2.02 MATERIALS

A. Liquid-Applied, Vapor-Retarding Air Barrier System: Single-component, fluid-applied and polymer-modified vapor-retarding air barrier membrane.
   1. Performance Based Specification: Vapor-retarding air barrier membrane shall be an elastomeric asphalt emulsion having the following characteristics:
      a. Color Black.
      b. Air Permeability ASTM E2178: 0.004 cfm /ft.^{2} @ 75 Pa (1.57 lb./ft.^{2}).
      c. Water Vapor Permeance ASTM E96 (Method B): ≤0.1 perms.
      d. Elongation ASTM D412: 1500 %.
      e. Tensile Strength ASTM D412: 15 psi.
      f. Service Temperature: -20 degrees F (-29 degrees C).

   2. Proprietary Based Specification: AIR-SHIELD LM by W. R. MEADOWS.

2.03 ACCESSORIES

A. Transition Membrane and Flashing: 40-mil self-adhesive polymeric membrane for reinforcement of joints, inside and outside corners and dissimilar material connections.
   1. AIR-SHIELD by W. R. MEADOWS.

B. Through-Wall Flashing: 40-mil self-adhesive polymeric sheet membrane.
   1. AIR-SHIELD THRU-WALL FLASHING by W. R. MEADOWS.

C. Liquid Flashing: Fluid-applied, single-component, flashing membrane reinforcement of joints, inside and outside corners and dissimilar material connections.
   1. AIR-SHIELD LIQUID FLASHING by W. R. MEADOWS.

D. Alternate Flashing: 40-mil self-adhesive polymeric sheet flashing membrane with aluminum facer for use at door and window openings.
   1. AIR-SHIELD ALUMINUM FLASHING.

E. Joint Reinforcing Fabric: Spun-bonded polyester fabric for reinforcement of flat joints and corner conditions with primary fluid-applied membrane.
   1. REINFORCING FABRIC HCR by W. R. MEADOWS.

F. Membrane Adhesive/Primer:
   1. Temperatures above 40 F degrees F (4 degrees C): Water-Based Adhesive
      a. MEL-PRIME™ W/B Water-Based Adhesive by W. R. MEADOWS.
   2. Temperatures below 30 degrees F (-1 degrees C): Solvent-Based Primer.

a. MEL-PRIME VOC-Compliant Solvent-Base Adhesive or Standard Solvent-Base Adhesive by W. R. MEADOWS.

G. Termination Sealant: Non-slump waterproofing material for joint detailing.
1. BEM or POINTING MASTIC by W. R. MEADOWS.

H. Concrete Repair Materials: General purpose patching materials.
1. MEADOW-PATCH™ 5 and MEADOW-PATCH 20 Concrete Repair Mortars by W. R. MEADOWS.

I. Termination Bar: Optional termination for through-wall flashing membrane.
1. TERMINATION BAR by W. R. MEADOWS.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine surfaces to receive membrane are deemed appropriate in accordance with air barrier manufacturer's current technical literature.

B. Notify [Architect] [Contractor] if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.

C. Start of the Work shall construe installer acceptance of substrates and conditions.

3.02 SURFACE PREPARATION

A. Protect adjacent surfaces not designated to receive air barrier.

B. Clean and prepare surfaces to receive air barrier membrane in accordance with manufacturer's instructions.

C. Ensure all areas to receive joint treatment, reinforcement and membrane application are clean, dry, smooth, and free from all bond-breaking contaminants. Remove and replace any damaged structural substrate components.

D. Do not apply membrane system to surfaces unacceptable to manufacturer.

E. All surfaces to receive fluid-applied membrane air barrier system must be clean, free of standing water, ice, snow, frost, dust, dirt, oil, curing compounds, or any other foreign material detrimental to proper adhesion of the membrane.

F. Prefill all bug holes on concrete and masonry with appropriate cementitious patching mortar. Strike masonry joints flush.

G. Patch all cracks, small voids, offsets, irregularities, and small deformities on concrete and masonry surfaces with appropriate cementitious patching mortar at least two hours before application. Eliminate all sharp protrusions and fins in cast-in-place concrete.

3.03 INSTALLATION

A. Prime surfaces to receive self-adhering membranes within one working day with applicable primer. Areas not covered within one day shall be re-primed. Ensure primer extends a minimum of 1-inch (25.4 mm) beyond area to receive self-adhering membranes.

B. Crack and Joint Treatment of CMU or Cast-in-Place Concrete:

1. Prefill nonmoving 1/16 inch to ¼-inch (1.6 mm – 3.2 mm) cracks and joints with termination sealant, mastic or liquid flashing and tool smooth, ensuring 1-inch coverage to both sides.
2. Prefill nonmoving 1/4 inch to 1-inch (6.4 mm – 25.4 mm) cracks and joints with termination sealant, mastic or liquid flashing and allow to cure. Apply and tool smooth liquid flashing 3-inches (76.2 mm) band beyond both sides of the joint area. Alternatively, apply a 4-inch-wide (101.6 mm) section of self-adhered transition membrane, centered over joint.

C. Inside and Outside Corners:
1. Apply a 6-inch-wide (152.4 mm) section of self-adhering transition membrane flashing or liquid flashing onto properly prepared substrates at the center of inside and outside corners. Ensure a 2-inch (50.8 mm) overlap of successive sections.
2. Roll all areas of membrane with roller ensuring full adhesion. Eliminate all wrinkles and fish-mouths.
3. Alternatively, apply liquid flashing at the center of inside and outside corners, ensuring a minimum 3-inch (76.2 mm) lap onto each adjacent plane.

D. Primary Fluid-Applied Membrane Air Barrier Installation:
1. Apply air barrier membrane in accordance with manufacturer's instructions.
2. Thoroughly mix membrane prior to application while avoiding air entrapment.
3. Apply membrane by spray or roller to provide a uniform thickness of 75 wet mils.
4. Overlap fluid-applied air barrier 2 inches (50.8 mm) onto the leading edges of transition membranes and flashings.
5. Regularly inspect surface area with a wet mil gauge to ensure consistent thickness.
6. Cured thickness of membrane should be 40 mils dry.
7. Allow 48 hours for full cure of the membrane.

3.04 PROTECTION

1. Cover air barrier as soon as possible after application, as air barrier is not intended for permanent exposure.

END OF SECTION 072726

SECTION 074213 - METAL WALL PANELS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Composite metal panels.

1. Applications of composite include:

a. Exterior installation of composite metal panels.

b. Interior installation of composite metal panels.

B. Alternates: Products and installation included in this section are specified by alternates. Refer to Division 01 Alternates Section for alternates description and alternate requirements.

C. Related Sections: Section(s) related to this section include:

1. Cold-Formed Metal Framing: Division 05 Metal Framing Sections.

2. Sheet Metal Flashing and Trim: Division 07 Flashing and Trim Section.

3. Joint Sealers: Division 07 Joint Treatment Section.

4. Aluminum Windows: Division 08 Aluminum Windows Section.

5. Glazing: Division 08 Glass and Glazing Section.

6. Metal Framed Curtain Wall: Division 08 Curtain Wall Sections.

1.02 REFERENCES

A. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to the extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation.

B. ASTM International:

1. ASTM D1781 Standard Test Method for Climbing Drum Peel for Adhesives.

2. ASTM D1929 Standard Test Method for Determining Ignition Temperature of Plastics.

3. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.

4. ASTM E108 (Modified) Standard Test Methods for Fire Tests of Roof Coverings.

5. ASTM E119 Standard Test Methods for Fire Tests of Building Construction and Materials.

6. ASTM E283 Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

7. ASTM E330 Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference.

8. ASTM E331 Standard Test Method for Water Penetration of Exterior Windows, Curtain Wall, and Doors By Uniform Static Air Pressure Difference.

C. American Architectural Manufacturers Association (AAMA):

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

D. International Organization for Standardization (ISO):

1. ISO 9001-2015 Quality Management Systems - Requirements.

1.03 SYSTEM DESCRIPTION

A. Performance Requirements: Provide composite metal panels that have been manufactured, fabricated and

installed to withstand loads from deflection and thermal movement and to maintain performance criteria stated by manufacturer without defects, damage or failure.

B. Deflection and Thermal Movement: Provide systems that have been tested and certified to conform to the following criteria under wind loading of [specify loading psf (kPa)] inward and [specify loading psf (kPa)] outward:

1. Normal Deflection: Deflection of perimeter framing member not to exceed L/175 normal to plane of the wall; deflection of individual panels not to exceed L/60.
2. Anchor Deflection: At connection points of framing members to anchors, anchor deflection in any direction not to exceed 1/16 inch (1.6 mm).
3. Thermal Movements: Allow for free horizontal and vertical thermal movement due to expansion and contraction of components over a temperature range from [specify temperature range in degrees F (degrees C)].
    a. Buckling, opening of joints, undue stress on fasteners, failure of sealants, or any other detrimental effects of thermal movement will not be permitted.
    b. Fabrication, assembly and erection procedures shall take into account the ambient temperature range at the time of the respective operation.

C. Water and Air Leakage: Provide systems that have been tested and certified to conform to the following criteria:

1. Air Leakage, ASTM E283: Not more than 0.06 cfm per ft^2 of wall area (0.003 (L/s m^2) when tested at 1.57 psf (0.075 kPa).
2. Water Penetration: No water infiltration under static pressure when tested in accordance with ASTM E331 at a differential of 10% of inward acting design load, 6.24 psf (0.299 kPa) minimum, after 15 minutes.
    a. Water penetration is defined as the appearance of uncontrolled water in the wall.
    b. Wall design shall feature provisions to drain to the exterior face of the wall any leakage of water at joints and any condensation that may occur within the construction.

D. Structural: Provide systems that have been tested in accordance with ASTM E330 at a design pressure of [specify design pressure in psf (kPa)] and have been certified to be without permanent deformation or failures of structural members.

E. Fire Performance: Provide composite fire rated panels that have been evaluated and are in compliance with regulatory code agency requirements specified herein.

1.04 SUBMITTALS

A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 01 Submittal Procedures Section.

B. Product Data: Submit product data, including manufacturer's SPEC-DATA sheet, for specified products.

C. Shop Drawings: Submit shop drawings showing layout, profiles and product components, including anchorage, accessories, finish colors and textures.

1. Include details showing thickness and dimensions of the various system parts, fastening and anchoring methods, locations of joints and gaskets, and location and configuration of joints necessary to accommodate thermal movement.

D. Samples: Submit selection and verification samples for finishes, colors and textures.

1. Selected Samples: Manufacturer's color charts or chips illustrating full range of colors, finishes and patterns available for composite metal panels with factory applied finishes.
2. Verification Samples:
    a. Structural: 12 inch × 12 inch (305 × 305 mm) sample composite panels in thickness

specified from an available stock color, including clips, anchors, supports, fasteners, closures and other panel accessories, for assembly approval. Include panel assembly samples not less than 24 inches × 24 inches (610 × 610 mm) showing 4-way joint.

b. Include separate sets of drawdown samples on aluminum substrate, not less than 3 inches × 5 inches (76 × 127 mm), of each color and finish selected for color approval. Larger samples of standard colors are available with production-applied coatings.

E. Quality Assurance Submittals: Submit the following:

1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties, or a third party listing documenting compliance to a comparable code section.
2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and physical requirements.
3. Manufacturer's Instructions: Manufacturer’s installation instructions.
4. Manufacturer’s Field Reports: Manufacturer’s field reports.

F. Closeout Submittals: Submit the following:

1. Warranty: Warranty documents specified.

1.05 QUALITY ASSURANCE

A. Qualifications:

1. Installer Qualifications: Installer experienced in performing work of this section who has specialized in the installation of work similar to that required for this project.
   a. Certificate: When requested, submit certificate indicating qualification.
2. Manufacturer Qualifications: Company with a minimum of 5 years of continuous experience manufacturing panel material of the type specified:
   a. Able to provide specified warranty on finish.
   b. Able to provide a list of 5 other projects of similar size, including approximate date of installation and name of Architect for each.
   c. Able to produce the composite material without outsourcing of the coating or laminating process.
   d. Able to provide a certificate of registration to ISO 9001-2015.
3. Fabricator Qualifications: Company with at least 3 years of experience on similar sized metal panel projects and qualified by panel material manufacturer. Capable of providing field service representation during construction.

B. Mock-Ups: Install at project site a job mock-up using acceptable products and manufacturer approved installation methods. Obtain Owner’s and Architect’s acceptance of finish color (drawdown samples to be used for color approval of nonstandard coil coated colors), texture and pattern and workmanship standard. Comply with Division 01 Quality Control, Mock-Up Requirements Section.

1. Mock-Up Size: provide mock up on section of actual wall.
2. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.
3. Incorporation: Mock-up may be incorporated into final constructional.

C. Preinstallation Meetings: Conduct preinstallation meeting to verify project requirements, substrate conditions, manufacturer’s installation instructions and manufacturer’s warranty requirements. Comply with Division 01 Project Management and Coordination, Project Meetings Section.

1.06 DELIVERY, STORAGE & HANDLING

A. General: Comply with Division 01 Product Requirements Sections.

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

C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

1. Protection: Protect finish of panels by applying heavy-duty removable plastic film during production.

2. Delivery: Package composite wall panels for protection against transportation damage. Provide markings to identify components consistently with drawings.

3. Handling: Exercise care in unloading, storing and installing panels to prevent bending, warping, twisting and surface damage.

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

1. Storage: Store panels in well-ventilated space out of direct sunlight.

a. Protect panels from moisture and condensation with tarpaulins or other suitable weather tight covering installed to provide ventilation.

b. Slope panels to ensure positive drainage of any accumulated water.

c. Do not store panels in any enclosed space where ambient temperature can exceed 120 degrees F (49 degrees C).

2. Damage: Avoid contact with any other materials that might cause staining, denting or other surface damage.

1.07 PROJECT CONDITIONS

A. Substrate Tolerances: The General Contractor is responsible for providing a substrate with a tolerance of 1/4 inch in 20.0 feet (6mm in 6m), on level, plumb, and location control lines as indicated and within 1/8 inch (3mm) offset of adjoining faces of alignment of matching profiles tolerances are noncumulative.

B. Field Measurements: Verify locations of wall framing members and wall opening dimensions by field measurements prior to fabrication of MCM System. Indicate measurements on the "As Built Shop Drawings". Field measurements to be taken once all substrate materials and adjacent materials are installed.

C. Project Schedule: Provisions in the project schedule must accommodate the time interval between field measurements and fabrication/installation.

1.08 WARRANTY

A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.

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

1. Warranty Period:

a. Panel Integrity: 10 years commencing on Date of Substantial Completion.

b. Finish: 10 years commencing on Date of Substantial Completion.

SECTION 074213 - METAL WALL PANELS

PART 2 PRODUCTS

2.01 COMPOSITE METAL PANELS

A. Manufacturer: Mitsubishi Chemical America, Inc. ALPOLIC Division

1. Contact: 401 Volvo Parkway, Chesapeake, VA 23320; Telephone (800) 422-7270; Fax: (757) 436-1896; E-mail: info@alpolic.com; website: www.alpolic-americas.com.

B. Proprietary Product: ALPOLIC Composite Metal Panels.

1. Standard ALPOLIC composite metal panels.In size as shown on documents. Uninsulated core.

2.02 PRODUCT SUBSTITUTIONS

A. Substitutions: Substitutions permitted they meet conditions of basis of dsign.

2.03 COMPOSITE METAL PANEL MATERIALS

A. Composite Metal Panels:

1. Core: Thermoplastic material that meets performance characteristics specified when fabricated into composite assembly.
2. Face Sheets: Aluminum alloy 3105 H14, 0.020 inch (0.51 mm) thick and as follows:
   a. Coil coated with a fluoropolymer paint finish that meets or exceeds values expressed in AAMA 2605 where relevant to coil coatings.
   b. Coil coated with specified finish [Less than 1000 ft^2 (93 m^2) quantities].
   c. Thermally bonded in a continuous process, under tension, to the core material.
3. Bond Integrity: Tested for resistance to delamination as follows:
   a. Peel Strength (ASTM D1781): 22.5 in-lb/in (100 N-m/m) minimum.
4. Fire Performance:
   a. Flamespread (ASTM E84): Class A (4 and 6 mm).
   b. Smoke Developed (ASTM E84): Class A (4 and 6 mm).
   c. Surface Flammability (Modified ASTM E108): Pass (4 and 6 mm).
   d. V-O Rating (4 mm): Comply with UL 94.
5. Product Transparency:
   a. Provide a Product Transparency Declaration (PTD) for the Composite metal panels

B. Production Tolerances:

1. Width: +/- 2 mm.
2. Length: +/- .012” per ft (1 mm/meter).
3. Thickness (4 mm Panel): +/- 0.008 inch (0.2 mm).
4. Thickness (6 mm Panel): +/- 0.012 inch (0.3 mm).
5. Bow: Maximum 0.5% length or width.
6. Squareness: Maximum 0.2 inch (5 mm).
7. Edges of sheets shall be square and trimmed with no displacement of aluminum sheets or protrusion of core material.

C. Panel Thickness: 4 mm.

2.04 ACCESSORIES

A. General: Provide fabricator's standard accessories, including fasteners, clips, anchorage devices and attachments for specific applications indicated on contract documents.

2.05 RELATED MATERIALS

A. General: Refer to other related sections in Related Sections paragraph specified herein for related materials, including cold-form metal framing, flashing and trim, joint sealers, aluminum windows, glass and glazing and curtain walls.

2.06 FABRICATION

A. General: Shop fabricate to sizes and joint configurations indicated on drawings.

1. Where final dimensions cannot be established by field measurements, provide allowance for field adjustment as recommended by the fabricator.
2. Form panel lines, breaks and angles to be sharp and true, with surfaces that are free from warp or buckle.
3. Fabricate with sharply cut edges and no displacement of aluminum sheet or protrusion of core.

2.07 FINISHES

A. Factory Finish: Lumiflon-based fluoropolymer resin coating that meets or exceeds values expressed in AAMA 2605 where relevant to coil coatings.

1. Color: to be selected by Architect.

2.08 SOURCE QUALITY

A. Source Quality: Obtain composite panel products from a single manufacturer.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions.

3.02 EXAMINATION

A. Substrate Tolerances: The General Contractor is responsible for providing a substrate with a tolerance of 1/4 inch in 20.0 feet (6mm in 6m), on level, plumb, and location control lines as indicated and within 1/8 inch (3mm) offset of adjoining faces of alignment of matching profiles tolerances are noncumulative.

B. Field Measurements: Verify locations of wall framing members and wall opening dimensions by field measurements prior to fabrication of MCM System. Indicate measurements on the "As Built Shop Drawings". Field measurements to be taken once all substrate materials and adjacent materials are installed.

C. Project Schedule: Provisions in the project schedule must accommodate the time interval between field measurements and fabrication/installation.

3.03 PREPARATION

A. Surface Preparation: [Specify applicable product preparation requirements for installation of composite metal panels].

3.04 INSTALLATION

A. General:

1. Install panels plumb, level and true in compliance with fabricator's recommendations.
2. Anchor panels securely in place in accordance with fabricator's approved shop drawings.
3. Comply with fabricator's instructions for installation of concealed fasteners and with provisions of Section 07 90 00 for installation of joint sealers.
4. Installation Tolerances: Maximum deviation from horizontal and vertical alignment of installed panels: 0.25 inch in 20 feet (6.4 mm in 6.1 m), noncumulative.

B. Related Products Installation Requirements: Refer to other sections in Related Sections paragraph herein for installation of related products.

3.05 FIELD QUALITY REQUIREMENTS

A. Field Quality Control: Comply with panel system fabricator's recommendations and guidelines for field forming of panels.

B. Fabricator's Field Services: Upon Owner's request, provide fabricator's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with fabricator's instructions.

1. Site Visits: [Specify number and duration of periodic site visits].

3.06 ADJUSTING

A. Adjusting:

1. Repair panels with minor damage such that repairs are not discernible at a distance of 10 feet (3 m).
2. Remove and replace panels damaged beyond repair.
3. Remove protective film immediately after installation of joint sealers and immediately prior to completion of composite metal panel work.
4. Remove from project site damaged panels, protective film and other debris attributable to work of this section.

3.07 CLEANING

A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

3.08 PROTECTION

A. Protection: Protect installed product's finish surfaces from damage during construction.

1. Institute protective measures as required to ensure that installed panels will not be damaged.

END OF SECTION 074213

SECTION 075423 - THERMOPLASTIC MEMBRANE ROOFING FLEECEBACK PVC MEMBRANE ADHERED OVER STEEL DECK

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Fleece backed adhered membrane over steel.

1.2 RELATED SECTIONS

A. Section 061000 - Rough Carpentry.

B. Section 076200 - Sheet Metal Flashing and Trim.

1.3 REFERENCES

A. American Society of Civil Engineers (ASCE) 7 Minimum Design of Loads for Buildings and Other Structures.

B. American Society for Testing and Materials (ASTM) C 208 - Standard Specification for Cellulosic Fiber Insulating Board.

C. American Society for Testing and Materials (ASTM) C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.

D. American Society for Testing and Materials (ASTM) D 41 - Standard Specification for Asphalt Used in Roofing.

E. American Society for Testing and Materials (ASTM) D 312 - Standard Specification for Asphalt Used in Roofing.

F. American Society for Testing and Materials (ASTM) D 1079 - Standard Terminology Relating to Roofing, Waterproofing, and Bituminous Material.

G. American Society for Testing and Materials (ASTM) D 4434 - Standard Specification for Poly (vinyl chloride) Sheet Roofing.

H. American Society for Testing and Materials (ASTM) E 408 - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.

I. American Society for Testing and Materials (ASTM) E 903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.

J. American Society for Testing and Materials (ASTM) E 1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

K. Factory Mutual (FM Global) - Approval Guide.

L. Factory Mutual Standard 4470 - Approval Standard for Class 1 Roof Covers.

M. National Roofing Contractors Association (NRCA).

N. Sheet Metal and Air Conditioning Contactors National Association, Inc. (SMACNA) Architectural Sheet.

O. Underwriters Laboratories (UL) - Roofing Systems and Materials Guide (TGFU R1306).

1.4 SUBMITTALS

A. Submit under provisions of Section 01 30 00.

B. Product Data: Suppliers 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:
1. Show outline and size of the roof, location and type of penetrations, perimeter and penetration flashing detail references to manufacture's standard. Details which do not conform to roofing manufacturer's standards shall be identified with separate approval from roofing manufacturer. Details to be employed on the project shall be approved by roofing manufacturer.

D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications:
1. Membrane manufacturer shall have a minimum of fifteen (15) years experience in the production of ASTM 4434 thermoplastic scrim-reinforced membrane and related accessories.
2. Membrane manufacturer shall be listed in UL and have FM Approvals for membrane roofing systems for a minimum of 20 years.

B. Installer Qualifications:
1. Installer shall have a minimum of five (5) years experience in the application of thermoplastic membrane and shall be certified by the manufacturer of the membrane system.
2. Be able to self perform all of the specified work
3. Must not have filed bankruptcy of any type within the last seven (7) years

C. Product Requirements:
1. LEED (USGBC) Certification: The roof system shall comply with LEED requirements for the use of a high albedo roofing material with a Solar Reflectance Index (SRI) of no less than 78 when calculated in accordance with ASTM E 1980. Compliance based on a reflectance rating of at least 0.80 when tested according to ASTM E 903 and an emissivity rating of at least 0.9 when tested in accordance with ASTM E 408 for a minimum of at least 75 percent of the roof surface.
2. Membrane Qualifications: Membrane shall be factory certified, first run material, seconds will not be permitted. Approvals:

a. UL Evaluation Report.
b. HUD.
c. Energy Star Partner.
d. Material and packaging to bear the FM label.
3. The roofing systems shall meet the Factory Mutual 1-60 requirements.
4. The roofing systems shall meet the Factory Mutual 1-90 requirements.
5. The roofing systems shall meet the Factory Mutual 1-105 requirements.
6. The roofing systems shall meet the Underwriters Laboratories Class A requirements.

D. Pre-Installation Conference:
1. Prior to scheduled commencement of the roofing installation and associated work conduct a meeting at the project site with the Installer, Architect, Building Owner, Membrane Supplier and any other entities directly involved with the performance of the work.
2. The installer shall record conference discussions to include decisions, agreements, and open issues and furnish copies of recorded discussions to each attending party. The primary purpose of the meeting is to review foreseeable methods and procedures related to roofing work schedule and quality.

E. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
1. Finish areas designated by Architect.

2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
3. Refinish mock-up area as required to produce acceptable work.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Protect stored materials from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer. Leave product wrapped and protected in original packaging with identification labels, until ready for use on the job.

C. Store in a clean, dry, well ventilated area protected from weather and other trades. All rolls of membrane shall be stored, lying down, elevated above the roof deck and completely protected from moisture with tarpaulins.

D. Insulation shall be stored on pallets, fully protected from moisture with tarpaulins. Adhesives shall be safely stored, at temperatures above 45 degrees F (7 degrees C). Flammable materials shall be stored in a cool dry area away from sparks and open flames.

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

1.7 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.

B. Weather:
1. Proceed with the roof installation only when existing and forecasted weather conditions permit.
2. Ambient Temperatures shall be above 45 degrees F (7 degrees C) when applying hot steep asphalt, water based adhesives or urethane adhesives.

1.8 WARRANTY

A. Membrane Supplier warrants to the Building Owner, subject to the terms, limitations, and conditions for a period specified, in which the Materials and Workmanship Warranty is effective, the materials installed shall be free from defects in materials supplied and/or defective workmanship provided by the authorized applicator.

1. The Roofing System shall receive the manufacturer's standard twenty (20) year

B. Sheet Metal Warranty: Materials supplied by the roofing manufacturer.
1. Materials shall be free of defects in material and workmanship for five years after shipment. Defective materials will be repaired or replaced at manufacturer's option. Manufacturer shall not be liable for direct or consequential damages arising from the installation of materials. No other express or implied warranties apply to the products.
2. Edge metal will be 24 gauge G-90 PVC coated clad metal.
3. Decorative Finish Warranty: Pre-finished 25 mil PVC coated with Kynar 500 finish shall receive a limited 20 year warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Garland Company, Inc. (The); 3800 E. 91st St., Cleveland, OH 44105. ASD. Toll Free: 800-321-9336. Phone: 216-641-7500. Fax: 216-641-0633. Web Site: www.garlandco.com.

B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.

2.2 SYSTEM

A. Weldtite FB PVC as supplied by The Garland Company
1. Color: White.
2. Roof System: Provide and install an Adhered, Fleece-Back, Thermoplastic, CRRC approved roofing membrane to a protected insulation system attached to a structural metal deck.

2.3 MEMBRANE

A. Weldtite FB PVC Membrane: The roofing membrane shall be certified to conform to the requirements of ASTM D4434 standard for polyvinyl chloride thermoplastic sheet roofing and IBC 1504.7.

B. Fleece Back PVC Membrane

1. Weldtite PVC 80 Mil Membrane

2.4 INSULATION

A. Polyisocyanurate and Polyurethane Faced Roof Boards: Federal spec. HH-I-1972/ 1&2 Class 1-3, minimum thickness 1 inch (25 mm) nominal.

1. Minimum thermal value to equal R-35

2.5 ACCESSORY MATERIALS
1. HPR All-Temp Asphalt
a. Softening Point 225-235 degrees
b. Staging and application temperatures range 375-475 degrees
c. Never exceed 500 degrees

B. Fasteners
1. Metal Decks: screw type fasteners treated for corrosion resistance with ultimate pull out value of minimum 420 lb (189 kg) in 22 (0.759 mm) gauge steel deck to be applied in conjunction with Factory Mutual approved pattern:
a. OMG Inc., Fasteners, screws long and short, Endurion coated only.
1) #12- 3” fasteners placed 1 per 1 square foot

C. Sealants:
1. Caulking: Tuff-Stuff

D. Flashing:
1. Reinforced Membrane: same material, color and thickness as roof membrane for all curbs, walls and penetrations.

E. Wood Nailers:
1. Number 2 grade lumber minimum salt treated for rot and fire resistance.
a. Pressure treated.

ii. Separation Layers:

1. Georgia Pacific Corporation: Dens Deck, Dens Deck Prime distributed by Flex Roofing System.
2. USG Securock Roof Cover Board distributed by Flex Roofing System.

iii. Edge Termination:
1. Size and profile as indicated on drawings.
2. Profiles and designs engineered for roof perimeter attachment. Components from the membrane manufacturer shall be approved for FM 1-90 rating and ANSI/SPRI ES-1-2003 Wind Design Standard for Edge Systems.
3. PVC Clad Metal: for custom fabrication of a hot air weldable edge metal.

iv. Detailing Components:
1. Weldtite Preformed Inside and Outside corners.
2. Weldtite Preformed Pipe Boots.
3. Weldtite Split Pipe Boots.
4. Weldtite Snowguard PVC Coated.

v. Fluid Applied Walk Pads
1. Liquitech
a. No Primer required
b. LiquiTec Base
i. Base pass at 1.0 gallon per 100 square foot
ii. Broadcast roof granules in material within 5 minutes of application
iii. Top Coat pass at 1.0 gallon per 100 square foot

F. EXECUTION

A. EXAMINATION

i. Do not begin installation until substrates have been properly prepared.

ii. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

B. PREPARATION

i. Clean surfaces thoroughly prior to installation.

ii. Prepare deck surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
1. Decking shall be G-90 galvanized coated 22 gauge (0.759 mm) or heavier steel panel.
2. Decking shall be installed to provide positive slope and positive drainage.
3. Deck panels shall be securely anchored to the supporting members in accordance with the Steel Deck Institutes Design Manual and Factory Mutual Recommendations.
4. Deck panels shall be installed in a straight line and properly aligned.
5. Deck shall be clean and free of moisture or debris.

C. INSTALLATION

i. Install roof system in accordance with manufacturer's instructions.

ii. Wood Nailers:
1. Locate and install along gravel stops and drip edges and other areas as required by membrane manufacturer.
2. Anchor nailer to structural deck with manufacturers approved fasteners, spaced appropriately for the specified installation; minimum withdrawal resistance 100 pounds (45 kg) per fastener.

iii. Insulation:
1. The first layer of insulation board shall be mechanically attached to the deck with Flex Fasteners and 3 inches (76 mm) insulation plates. Installation of the fastener pattern to be in accordance with the manufacturer's instructions and Factory Mutual Guidelines to meet the wind uplift pressure resistance specified.
2. Subsequent layers of insulation shall be set in a flood coat of hot steep asphalt applied at an approximate rate of 25 lb per 100 sf (1.2 kg/sm)

3. Insulation board size as recommended by manufacturer for adhered application.

4. Do not install wet, damaged or warped insulation boards.
5. Install insulation boards with staggered board joints in one direction.
6. Insulation boards to be installed so that no gaps larger than 1/4 inch (6 mm) are found at the end joints and that the adjoining top surfaces are flat and smooth. All gaps in excess of 1/4 inch (6 mm) shall be filled with like insulation material.
7. If more than one layer of insulation board is to be installed the joints of the subsequent layers must be staggered. Stagger the joints in the additional layers a minimum of 6 inches (152 mm) from the underlying insulation boards to eliminate vertical gaps.
8. Do not install any more insulation than will be completely waterproofed each day.
9. Provide separation layer as required by manufacturer.

iv. Recover Board:

1. Recover boards shall be set in a flood coat of Hot Steep Asphalt applied at an approximate rate of 25 lb per 100 sf (1.2 kg/sm) over the insulation board. If applying recover boards with cold adhesives follow the adhesive manufactures installation instructions.
2. Recover boards to be installed so that no gaps larger than 1/4 inch (6 mm) are found at the end joints and that the adjoining top surfaces are flat and smooth.
3. Stagger the joints in the recover board a minimum of 6 inches (152 mm) from the underlying insulation boards to eliminate vertical gaps.
4. Do not install any more recover board than will be completely waterproofed each day.

v. Membrane Installation:

1. Fully adhere membrane to acceptable substrate with HPR All Temp Asphalt at a rate of 25 lbs/100 square foot
2. Position sheets as indicated on approved shop drawings. Measure and chalk lines on the substrate to establish proper alignment of the sheet.
3. Place the roll on the line and unroll the Weldtite FB its entire length and allow the membrane to relax. The relaxation time required is dependent on the ambient air temperature.
4. Fold one end of the Weldtite FB sheet on top of itself until both ends meet. Apply the HPR All Temp Asphalt to the prepared roof surface. The sheet can then be pulled and laid into the bonding material using care not to create any wrinkles.

5. Carefully push and broom into place from fold line to overlap, avoiding wrinkles and air pockets. Roll with a heavy roller (minimum 200 lb (90 kg)) to insure proper adhesion.
6. Repeat procedure for other half of sheet.
7. Lap seams shall be done by lapping the 3 inches (76 mm) selvedge edge over the non selvedge edge of the previous roll. Do not allow adhesives or other contaminants into the lapped seam. The selvedge edge seam will be completed by the hot air welding method. Seams are to be completed each day during construction.
8. Roll ends are butted together and capped with a 6 inches (152 mm) wide Weldtite Trim Strip. The trim strip is centered over the end joint and hot air welded into place.
9. All seams shall be checked with a needle probe and any voids repaired with the heat gun the same day they are made.

10. Seams greater than 10 feet (3 m) in length shall be welded with the automatic type welding unit. Hand held welders shall be used only for the remaining seams and detail welding.

vi. Flashing:

1. Flash penetrations, walls, curbs, expansion joints, drains as shown on details and approved shop drawings with Weldtite flashing membrane.
2. Use prefabricated sealant pockets and pre-molded vent / pipe flashing.
3. Mechanically fasten flashing at terminations according to approved details. Fastening flashing membrane through counter-flashing metal is not acceptable.
4. Flashing membranes shall be adhered to the approved substrate with HPR All Temp Asphalt. Flashing Membrane is to be installed flat and wrinkle free. Flashings shall be rubbed or rolled onto the substrate for proper adhesion.

D. INSPECTION

i. Seam Inspection:

1. All seams are to be completed by the hot air welding method each day as the installation progresses.
2. Hand welding of selvage edge will not be accepted. Automatic welder with temperature and speed control are required for this detail.
3. The roofing contractor is to designate a responsible person experienced in hot air welding techniques to inspect the completed installation each day as the installation progresses. The inspection is to include hand probing of all welded seams.
4. Any defects found during these inspections should be immediately corrected.

ii. Membrane Supplier Field Services:

1. Membrane supplier to provide field observations at start-up and at intervals of 3 days of 5 working days.
2. Provide a final inspection upon completion of the Work. Warranty shall be issued upon membrane supplier's acceptance of the installation.
3. Field observations shall be performed by a Sales Representative employed full-time by the manufacturer, a minimum of seven (7) years with the supplier and whose primary job description is to assist, inspect and approve membrane installations for the installer.
4. Provide weekly observation reports from the Sales Representative indicating procedures followed, weather conditions and any discrepancies found during inspection.
5. Provide a final report from the Sales Representative, certifying that the roofing system has been satisfactorily installed according to the project specifications, approved details and good general roofing practice.
6. Observations, inspections, and reporting must be completed at no additional cost to the owner/project.
7. Document refusal of any corrective action required in the weekly progress report provided to the owner/construction manager/architect.

E. PROTECTION

i. Protect installed products until completion of project.

ii. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 075423

SECTION 076200 - FLASHING AND SHEET METAL

PART 1 - GENERAL

1.01 Conform to profiles and sizes shown on drawings and comply with "Architectural Sheet Metal Manual" by SMACNA, for each general category of work required.

Metal flashing and counter flashing.
Conductor Head and Downspouts.

1.02 Guarantee: Five-year maintenance guarantee stating that all work in this section not guaranteed under the roof warranty, will remain watertight for a period of 5-years from the date of project acceptance, co-signed by the General Contractor.

PART 2 - PRODUCTS

2.01 Conductor Head and Downspouts: Provide 0.040 continuous pre-finished aluminum gutters and downspouts with baked enamel finish. Color shall be selected by Architect.

2.02 Solder: For use with steel or copper, provide 50-50 tin/lead solder (ASTM B 32), with rosin flux.

2.03 Fasteners: Same metal as flashing/sheet metal or other non-corrosive metal as recommended by sheet manufacturer. Match finish of exposed heads with material being fastened.

2.04 Bituminous Coating: SSPC-Paint 12, solvent-type bituminous mastic, nominally free of sulfur, compounded for 15-mil dry film thickness per coat.

2.05 Elastomeric Sealant: Generic type recommended by manufacturer of metal and fabricator of components being sealed and complying with requirements for joint sealants as specified in Section 07900 - Joint Sealers.

2.06 Epoxy Seam Sealer: 2-part noncorrosive metal seam cementing compound, recommended by metal manufacturer for exterior/interior nonmoving joints including riveted joints.

2.07 Reglets: Metal or plastic units of type and profile indicated, compatible with flashing indicated, noncorrosive.

2.08 Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of work, matching or compatible with material being installed, noncorrosive, size and gage required for performance.

2.09 Mill Finish Aluminum: ASTM B 209, 3003-H14, with a minimum thickness of 0.040 inch, unless otherwise indicated.

2.10 Fabricated Units

A. Fabricate sheet metal with flat-lock seams; solder with type solder and flux recommended by manufacturer, except seal aluminum seams with epoxy metal seam cement and, where required for strength, rivet seams and joints.

B. Provide for thermal expansion of running sheet metal work by overlaps of expansion joints in fabricated work. Where required for water-tight construction, provide hooked flanges filled with polyisobutylene mastic for 1-inch embedment of flanges. Space joints at intervals of not more than 50 feet for steel, 24 feet for copper or stainless steel, or 30 feet for zinc alloy or aluminum. Conceal expansion provisions where possible.

PART 3 - EXECUTION

3.01 Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by fabricator or manufacturers of dissimilar metals.

A. Coat side of uncoated aluminum and stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.

B. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet or install a course of polyethylene underlayment.

C. Bed flanges in thick coat of asphalt roofing cement where required for waterproof performance.

3.02 Anchor work in place with noncorrosive fasteners, adhesives, setting compounds, tapes and other materials and devices as recommended by manufacturer of each material or system. Provide for thermal expansion and building movements. Comply with recommendations of "Architectural Sheet Metal Manual" by SMACNA.

3.03 Seal moving joints in metal work with elastomeric joint sealants, complying with requirements specified in Division 7 Section "Joint Sealants."

3.04 Clean metal surfaces of soldering flux and other substances which could cause corrosion.

3.05 Nail flanges of expansion joint units to substrates at spacing of 6 inches o.c.

3.06 Composition Stripping: Cover flanges (edges) of work set on bituminous substrate with 2 courses of glass fiber fabric (ASTM D-1668) set in and covered with asphaltic roofing cement.

3.07 Performance: Water-tight and weatherproof performance of flashing and sheet metal work is required.

END OF SECTION 076200

SECTION 076310 – GUTTERS AND DOWNSPOUTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

1. Includes but not limited to:
   a. Gutters and downspouts at the perimeter of the building.

PART 2 - PRODUCTS

2.01 DOWNSPOUTS

A. As shown on drawings, and if not shown on drawings, a minimum of 6" square and smooth finish 0.040 inch thick baked-on enamel aluminum including necessary elbows to match.

2.02 GUTTERS

A. 0.051 inch thick baked-on enamel aluminum, color to match metal roofing.

B. Hanger system shall be as detailed in Figure A, Page 41 of SMACNA Manual, 3rd Edition.

C. Cross-sectional configuration of gutter shall be Style G, Page 9 of SMACNA Manual, 3rd Edition.

2.03 Downspouts, gutters, hangers, fasteners, and accessories shall be compatible material. Color to match metal roofing.

PART 3 - EXECUTION

3.01 Before starting work, verify governing dimensions at building. Inspect for conditions which would prevent installation of first class system. Do not install over improper conditions.

3.02 Furnish and install outlet tubes and gutter ends where required. Furnish and install expansion joints in runs exceeding 50'-0" and in runs which are restrained at both ends.

3.03 Join gutter sections according to Manufacturer's recommendations.

3.04 Lap joints in downspouts at least 1-1/2 inches in direction of water flow.

3.05 Fabricate and install in accordance with SMACNA Manual, 3rd Edition.

3.06 Properly secure gutters and downspouts to withstand wind load of 130 mph.

3.07 At completion of this work, block downspouts and flood gutters in presence of Architect. Repair leaks and adjust gradients for proper drainage.

3.08 Coordinate installation requirements with Section 076200 – Flashing and Sheet Metal and Section 076100– Sheet Metal Roofing.

END OF SECTION 076310

SECTION 079200 - JOINT SEALERS

PART 1 - GENERAL

1.01 PRECONSTRUCTION FIELD TESTS: Prior to installation of joint sealers, field-test their adhesion to joint substrates per field adhesion test in AAMA Aluminum Curtain Wall Series No. 13.

1.02 SUBMITTALS: Submit product data, samples of each type and color of joint sealer required and certified test reports for joint sealers evidencing compliance with requirements.

1.03 COMPATIBILITY: Provide joint sealers, joint fillers and other related materials that are compatible with one another and with joint substrates under service and application conditions, as demonstrated by testing and field experience.

1.04 COLORS: Provide color of exposed joint sealers to match color of adjacent surface.

PART 2 - PRODUCTS

2.01 ELASTOMERIC SEALANT STANDARD: Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated, complying with ASTM C 920 requirements.

A. One-Part Nonacid-Curing Silicone Sealant: Type S, Grade NS, Class 25, Uses NT, M, G, A, and O. Additional capability, when tested per ASTM C 719, to withstand 35 percent movement in both extension and compression for a total of 70 percent movement as measured at time of application and still comply with other requirements of ASTM C 920.

B. One-Part Nonsag Urethane Sealant for Use NT: Type S; Grade NS; Class 25; and Uses NT, M, A, and O.

2.02 ACRYLIC SEALANT: Manufacturer's standard one-part nonsag, solvent-release-curing, acrylic terpolymer sealant complying with ASTM C 920 for Type S; Grade NS; Uses NT, M, G, A and O; except for selected test properties which are revised as follows:

Heat-aged hardness: 40-50
Weight loss: 15 percent
Max. cyclic movement capability: plus or minus 7.5 percent

2.03 SILICONE-EMULSION SEALANT: Manufacturer's standard one part, nonsag, mildew-resistant, paintable, silicone-emulsion sealant complying with ASTM C 834.

2.04 ACOUSTICAL SEALANT FOR CONCEALED JOINTS: Manufacturer's standard, nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.

2.05 FIRESTOP CAULKING AND PUTTY: Provide Firestop Putty or Adhesive Firestop Caulking/Sealant for fire sealing rated partitions at penetrations, junctions with roofing panels, and intersections at dissimilar materials. Firestop putty shall be Nelson FSP Firestop Putty as manufactured by Hevi-Duty/Nelson, OR Approved Equal. Adhesive Firestop caulking/sealant shall be Nelson CLK Adhesive Firestop Sealant as manufactured by Hevi-Duty/Nelson, OR Approved Equal. Materials furnished for firestopping shall comply with ASTM E-84 and ASTM E-814. Comply with manufacturer's instructions for installation and suitability for application.

2.06 FOAMED-IN-PLACE FIRE-STOPPING SEALANT: Two-part, foamed-in-place, silicone sealant for use as part of a through-penetration fire-stop system for filling openings around cables, conduit, pipes and similar penetrations through walls and floors, with fire-resistance rating indicated, per ASTM E 814; listed by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.

2.07 ONE-PART FIRE-STOPPING SEALANT: One part elastomeric sealant formulated for use as part of a through-penetration fire-stop system for sealing openings around cables, conduit, pipes and similar penetrations through walls and floors, listed by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.

2.08 SECURITY SEALANT:

A. Type 1 – Polyurethane Sealant (Pick Resistance): Comply with the following:

1. Vulkem 116 by Tremco OR approved. One-part, moisture curing, gun grade polyurethane sealant.
2. Sonolastic Ultra by Sonneborn OR approved equal. One-part, moisture-curing, aliphatic, nonsag, polyurethane sealant.

B. Type 2 – Epoxy Sealant (Pick Proof): Provide the following in all inmate areas. Comply with the following:

1. Dynapoxy EP-1100 by Pecora Corporation OR approved equal. Two-part, non-sag chemically curing epoxy adhesive/sealant.
2. Sikadur 31, Hi-Mod Gel by Sika Corporation OR approved equal. Two-part, 100% solids, solvent-free, moisture-tolerant, high-modulas, high strength, structural epoxy paste adhesive.

2.09 SEALANT BACKINGS, GENERAL: Nonstaining; compatible with joint substrates, sealants, primers and other joint fillers; approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

A. Elastomeric Tubing Joint-Fillers: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, capable of remaining resilient at temperatures down to -26 deg F (-15 deg C). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth and otherwise contribute to optimum sealant performance.

B. Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing bond between sealant and joint filler or other materials at back of joint.

2.10 PRIMER: As recommended by joint sealer manufacturer where required for adhesion of sealant to joint substrates indicated.

2.11 ACCESSORY MATERIALS FOR FIRE-STOPPING SEALANTS: Forming, joint-fillers, packing and other accessory materials as required for installation of fire-stopping sealants.

PART 3 - EXECUTION

3.01 GENERAL: Comply with joint sealer manufacturers' instructions applicable to products and applications indicated.

3.02 INSTALLATION:

A. Elastomeric Sealant Installation Std: Comply with ASTM C 962.

B. Latex Sealant Installation Standard: Comply with ASTM C 790.

C. Acoustical Sealant Application Standard: Comply with ASTM C 919 for use of joint sealants in acoustical applications.

D. Installation of Fire-Stopping Sealant: Install sealant, including forming, packing and other accessory materials to fill openings around mechanical and electrical services penetrating floors and walls to provide fire-stops with fire resistance ratings indicated.

END OF SECTION 079200

SECTION 080500 - DOOR SCHEDULE

Door Number	Room Name	Room #	Door Size			Door Type/ Frame Type	Glazing	Thres.	Label	Hardware No.	Notes/ Remarks	
			Width	Height	Thickness							
100	LOBBY	100	36"	84"		D6/F4						
101	TOILET	101	36"	84"	1 3/4"	D1/F1						
102	LOBBY	100	72"	84"	1 3/4"	D7/F3						
103	RECEPTIONIST	103	36"	84"	1 3/4"	D2/F1						
104	SECURE VEST.	102	36"	84"	1 3/4"	D2/F1						
105	SECURE VEST.	102	36"	84"	1 3/4"	D2/F1						
106	COMMUNITY OUTREACH COOR.	106	36"	84"	1 3/4"	D2/F1						
107	SECURE VEST.	102	36"	84"	1 3/4"	D2/F1						
108	DINING	108	72"	84"	1 3/4"	D7/F3						
108A	DINING	108	36"	84"	1 3/4"	D3/F2						
109	NON COMMERCIAL KITCHEN	109	36"	84"	1 3/4"	D2/F1						
109A	NON COMMERCIAL KITCHEN	109	36"	84"	1 3/4"	D1/F1						
109B	NARCOTICS WORK	173	36"	84"		F1						
110	SECURE CORR.	110	36"	84"	1 3/4"	D2/F1						
110A	SECURE VEST.	110A	36"	84"	1 3/4"	D2/F1						
111	SECURE CORR.	110	36"	84"	1 3/4"	D2/F1						
112	VICTIM ADVOCATE	112	36"	84"	1 3/4"	D2/F1						
113	FUTURE OFFICE	113	36"	84"	1 3/4"	D2/F1						
114	NETWORK ADMINISTRATOR	114	36"	84"	1 3/4"	D2/F1						
114A	ELECTRICAL	S104	36"	84"	1 3/4"	D1/F1						
116	CIVIL WARRANTS	116	36"	84"	1 3/4"	D2/F1						
117	SECURE CORR.	119	36"	84"	1 3/4"	D2/F1						
118	RECORDS CLERK	117	36"	84"	1 3/4"	D1/F1						
119	SECURE CORR.	119	36"	84"	1 3/4"	D2/F1						
120	SHERIFF'S PI0	120	36"	84"	1 3/4"	D2/F1						
121	WORK / MEDIA / PRESS	121	36"	84"	1 3/4"	D2/F1						
121A	WORK / MEDIA / PRESS	121	36"	84"	1 3/4"	D2/F1						
122	OPERATIONS CAPTAIN	122	36"	84"	1 3/4"	D2/F1						
123	SECURE CORR.	119	36"	84"	1 3/4"	D2/F1						
124	TOILET	124	36"	84"	1 3/4"	D1/F1						
125	SHERIFF'S CONF.	125	36"	84"	1 3/4"	D2/F1						
125A	SHERIFF'S	127	36"	84"	1 3/4"	D1/F1						
126	SHERIFF'S	127	36"	84"	1 3/4"	D1/F1						
127	SHERIFF'S	127	36"	84"	1 3/4"	D2/F1						
127A	SHERIFF'S	127	36"	84"	1 3/4"	D1/F2						
128	FIANANCE OFFICE	128	36"	84"	1 3/4"	D2/F1						
129	SECURE CORR.	119	36"	84"	1 3/4"	D1/F1						
130	SECURE CORR.	119	36"	84"	1 3/4"	D1/F1						
131	FEMALE TOILET	131	36"	84"	1 3/4"	D1/F1						
133	SECURE CORR.	119	36"	84"	1 3/4"	D2/F1						
134	SECURE CORR.	119	36"	84"	1 3/4"	D2/F1						
135	HUMAN RESOURCE ASSI. FUTURE	135	36"	84"	1 3/4"	D2/F1						
136	SECURE CORR.	119	36"	84"	1 3/4"	D2/F1						
137	HUMAN RESOURCE STORAGE	137	36"	84"	1 3/4"	D2/F1						
138	SECURE VEST.	138	36"	84"	1 3/4"	D3/F2						
139	SECURE VEST.	138	36"	84"	1 3/4"	D2/F1						
139A	SITUATION ROOM	139A	36"	84"	1 3/4"	D2/F1						
140	TOILET	140	36"	84"	1 3/4"	D1/F1						
141	LOCKERS	141	36"	84"		F1						
142	COMM. / DISPATCH	139	36"	84"	1 3/4"	D4/F1						
144	COMM. / DISPATCH	139	36"	84"	1 3/4"	D2/F1						
145	ASSISTANT COMM. MANAGER	145	36"	84"	1 3/4"	D2/F1						
146	FUTURE OFFICE	146	36"	84"	1 3/4"	D2/F1						
147	COMM. / DISPATCH	139	36"	84"	1 3/4"	D1/F1						
148	SECURE VEST.	110A	36"	84"	1 3/4"	D2/F1						
148A	COMM. I.T. WORK	148	36"	84"	1 3/4"	D2/F1						
149	SECURE CORR.	149	36"	84"	1 3/4"	D2/F1						
150	TRAINING MANAGER	150	36"	84"	1 3/4"	D2/F1						
151	TRAINING	151	72"	84"	1 3/4"	D7/F3						
151A	TRAINING STORAGE	151A	36"	84"	1 3/4"	D1/F1						
152	TRAINING	151	36"	84"	1 3/4"	D1/F1						
153	SECURE CORR.	149	36"	84"	1 3/4"	D2/F1						
154	PATROL	154	36"	84"	1 3/4"	D2/F1						

155	PATROL	155	36"	84"	1 3/4"	D2/F1						
156	PATROL BRIEFING	153	36"	84"	1 3/4"	D2/F1						
157	PATROL BRIEFING	153	36"	84"	1 3/4"	D2/F1						
158	PATROL STORAGE	158	36"	84"	1 3/4"	D2/F1						
159	PATROL SG.	159	36"	84"	1 3/4"	D2/F1						
160	PATROL BRIEFING	153	36"	84"	1 3/4"	D2/F1						
161	PATROL BRIEFING	153	36"	84"	1 3/4"	D2/F1						
162	FEMALE TOILET	162	36"	84"	1 3/4"	D1/F1						
163	J.C.	163	36"	84"	1 3/4"	D1/F1						
164	MALE TOILET	164	36"	84"	1 3/4"	D1/F1						
166	CORR.	165	36"	84"	1 3/4"	D2/F1						
167	INTERROGATION	167	36"	84"	1 3/4"	D2/F1						
168	INTERROGATION	168	36"	84"	1 3/4"	D2/F1						
169	INTERROGATION	169	36"	84"	1 3/4"	D2/F1						
172	NARCOTICS	172	36"	84"	1 3/4"	D2/F1						
172A	NARCOTICS	172	36"	84"	1 3/4"	D1/F2						
174	NARCOTICS COMMANDER	174	36"	84"	1 3/4"	D2/F1						
175	NARCOTICS OFFICE	175	36"	84"	1 3/4"	D2/F1						
176	NARCOTICS OFFICE	176	36"	84"	1 3/4"	D2/F1						
177	NARCOTICS STORAGE	177	36"	84"	1 3/4"	D2/F1						
178	NARCOTICS OFFICE	178	36"	84"	1 3/4"	D2/F1						
179	EVIDENCE PREP. PACKING	179	36"	84"	1 3/4"	D2/F1						
180	SECURE CORR.	171	36"	84"	1 3/4"	D2/F1						
181	SECURE CORR.	171	36"	84"	1 3/4"	D2/F1						
182	ARMORY	182	36"	84"	1 3/4"	DA/F2						
183	EVIDENCE CLERK	180	36"	84"	1 3/4"	DA/F2						
184	EVIDENCE	183	36"	84"	1 3/4"	DA/F2						
185	EVIDENCE ARMORY	185	36"	84"	1 3/4"	DA/F2						
186	SECURE VEST.	186	36"	84"	1 3/4"	D2/F1						
186A	SECURE VEST.	186	36"	84"	1 3/4"	D3/F2						
187	SECURE CORR.	149	36"	84"	1 3/4"	D2/F1						
188	INVESTIGATOR ADMIN.	188	36"	84"	1 3/4"	D2/F1						
189	INVESTIGATION BRIEFING	187	36"	84"		F1						
190	INVESTIGATOR	190	36"	84"		F1						
191	INVESTIGATION BRIEFING	187	36"	84"	1 3/4"	D2/F1						
192	INVESTIGATION BRIEFING	187	36"	84"	1 3/4"	D2/F1						
193	INVESTIGATOR	193	36"	84"	1 3/4"	D2/F1						
194	INVESTIGATION BRIEFING	187	36"	84"	1 3/4"	D2/F1						
195	INVESTIGATION BRIEFING	187	36"	84"	1 3/4"	D2/F1						
196	CHIEF INVESTIGATOR	196	36"	84"	1 3/4"	D2/F1						
197	INVESTIGATOR	197	36"	84"	1 3/4"	D2/F1						
200	CORRIDOR	200	36"	84"		D6/F4						
200A	CORRIDOR	200	36"	84"	1 3/4"	D2/F2						
200B	LAUNDRY	200B	36"	84"	1 3/4"	DA/F2						
201	EVIDENCE OFFICE	201	36"	84"	1 3/4"	D2/F2						
201A	I.T.	201A	36"	84"	1 3/4"	D1/F1						
201B	MAINTENANCE	208	36"	84"		G1						
202	EVIDENCE OFFICE	201	36"	84"	1 3/4"	D1/F1						
204	FITNESS	204	36"	84"	1 3/4"	DA/F2						
204A	FITNESS	204	36"	84"	1 3/4"	D1/F2						
205	FEMALE TOILET	205	36"	84"	1 3/4"	DA/F2						
206	J.C.	206	36"	84"	1 3/4"	DA/F2						
207	MALE TOILET	207	36"	84"	1 3/4"	DA/F2						
208	MAINTENANCE	208	36"	84"	1 3/4"	D1/F2						
208A	MAINTENANCE		144"	168"	3"	D9/F6						
208B	MAINTENANCE		144"	168"	3"	D9/F6						
208C	MAINTENANCE		144"	168"	3"	D9/F6						
209	OFFICE	209	36"	84"	1 3/4"	D2/F2						
210	OFFICE	210	36"	84"	1 3/4"	D2/F2						
300	K-9	300	36"	84"	1 3/4"	D2/F2						
301	TOILET	301	36"	84"	1 3/4"	D1/F1						
303	STORAGE / SUPPLY	303	36"	84"	1 3/4"	D1/F1						
304	I.T. CL.	304	36"	84"	1 3/4"	D1/F1						
305	J.C.	305	36"	84"	1 3/4"	D1/F2						
306	K-9	306	36"	84"	1 3/4"	D2/F2						
306A	K-9	306A	36"	84"	1 3/4"	D2/F2						
S100	PUMP	S100	36"	84"	1 3/4"	D1/F2						
S101	STORAGE	S101	36"	84"	1 3/4"	D1/F1						
S102	I.T. DATA CENTER	S102	36"	84"	1 3/4"	D1/F1						
S103	MECHANICAL	S103	36"	84"	1 3/4"	D1/F2						

S104	ELECTRICAL	S104	36"	84"	1 3/4"	D1/F2						
S105	MECHANICAL YARD	S105	36"	84"		D5/F4						

SECTION 081416 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.01 QUALITY STANDARDS: Comply with NWWDA I.S.1 and AWI "Architectural Woodwork Quality Standards".

1.02 SUBMITTALS: In addition to product data, submit Samples 1'-0" square, of each type of core construction, face material and finish required.

1.03 WARRANTY: Provide manufacturer's lifetime of installation warranty for interior wood doors.

PART 2 - PRODUCTS

2.01 APPROVED MANUFACTURERS: Subject to compliance with requirements, provide wood doors by one of the following:

Masonite Aspiro Series OR Approved Equal.

2.02 GENERAL WOOD DOOR PRODUCT REQUIREMENTS: Provide doors with same exposed surface material on both faces of each door, unless otherwise indicated.

A. Louvers: Manufacturer's standard louvers of type, materials and size indicated:

1. Material: Color anodized aluminum. Color to be selected by Architect.

2.03 INTERIOR SOLID CORE DOORS FOR OPAQUE (FACTORY) FINISH: As follows:

A. Faces: Natural birch, rotary sliced.

B. AWI Grade: Custom.

C. Construction: PC-5 (Particleboard core, 5-ply).

D. Finish: To be selected by Architect.

E. Metal Frames for Light Openings: Manufacturer's standard 18-gage cold-rolled steel frame, factory-primed, **to be painted in field. Color to be selected by Architect.**

2.04 INTERIOR FIRE-RATED SOLID CORE DOORS: Labeled and listed for rating indicated, by testing and inspection agency acceptable to authorities having jurisdiction, complying with the following requirements:

A. Faces and AWI Grade: Match faces of non-rated doors in same area of building, unless otherwise indicated.

B. Edge Construction: Manufacturer's standard laminated edge construction for improved screw-holding capability and split resistance.

C. Pairs: Furnished formed steel edges and astragals for pairs of fire-rated doors, unless otherwise indicated.

D. Metal Frames for Light Openings in Fire Doors: Manufacturer's standard 18-gage cold-rolled steel frame, factory-primed, approved for use in door of fire-rating indicated.

E. All doors in stairwells shall be temperature rise doors.

F. Fire rated doors shall be labeled with a permanently affixed raised metal tag located on the hinge side of the door. Stenciled or paper labels shall not be used.

2.05 FABRICATION: Fabricate flush wood doors to produce doors complying with following requirements:

A. In sizes indicated for job-site fitting.

B. Metal Astragals: Pre-machine astragals and formed steel edges for hardware where required for pairs of fire-rated doors.

C. Openings: Cut and trim openings through doors to comply with applicable requirements of referenced standards for kind(s) of doors required.
1. Light Openings: Trim openings with moldings of material and profile indicated.

D. Louvers: Factory install louvers in prepared openings.

2.06 FACTORY FINISHING:

A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including, fitting doors for openings and machining for hardware that is not surface applied, before finishing.
1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on bottom edges, edges of cutouts, and mortises.

B. Factory finish doors where indicated in Door Schedule.

C. Opaque Finish:
1. Grade: Custom.
2. Finish: ASI's, AWMAC's and WI's "Architectural Woodwork Standards".
3. Color: To be selected by Architect.
4. Sheen: Satin.

PART 3 - EXECUTION

3.01 INSTALLATION:

D. Install wood doors to comply with manufacturer's instructions and of referenced AWI standard and as indicated.

E. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

B. Install fire-rated doors in corresponding fire-rated frames in accordance with requirements of NFPA No. 80.

3.02 ALIGN AND FIT doors in frames with uniform clearances and bevels. Machine doors for hardware. Seal cut surfaces after fitting and machining.

3.03 PRE-FIT DOORS: Fit to frames for uniform clearance at each edge.

END OF SECTION 081416

SECTION 084113 - ALUMINUM STOREFRONTS

PART 1 - GENERAL

1.01 SYSTEM PERFORMANCE REQUIREMENTS: Comply with structural performance, air infiltration, and water penetration requirements indicated, as demonstrated by testing stock assemblies according to test methods indicated.

A. Thermal Movement: Provide for expansion and contraction of the component materials. The system shall be capable of withstanding a metal surface temperature range of 180 deg F (100 deg C) without buckling, joint seal failure, undue stress on structural elements, damaging loads on fasteners, reduction of performance, or stress on glass. Doors shall function normally over specified range.

1. Wind Loads: Provide assemblies capable of withstanding inward and outward pressures, acting normal to plane of the wall, as indicated on the drawings.
2. Impact Resistance: Large Missile, shall comply with ASTM E 1886 and Southern Building Code Congress International (SBCCI) SSTD-12.

B. Structural Performance: Test in accordance with ASTM E 330. There shall be no glass breakage or permanent damage to fasteners, anchors, hardware or actuating mechanism or permanent deformation of framing members in excess of 0.2 percent of their clear span.

1. Deflection Normal to the Plane of the Wall: Test pressure shall be wind load specified. Deflection shall not exceed 1/175 of clear span, when subjected to uniform load deflection test.
2. Deflection Parallel to the Plane of the Wall: Test pressure shall be 1.5 times wind pressure. Deflection of members carrying full dead load shall not exceed amount that will reduce glass bite below 75 percent of design dimension or edge clearance between member and fixed glass or other fixed member above to less than 1/8 inch. Clearance between the member and operable door or window shall be at least 1/16 inch.

C. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283 or AAMA/NWWDA 101/l.s.2-97. Air infiltration rate shall not exceed 0.06 cfm/ft^2 at static air pressure differential of 6.24 P.S.F.

D. Water Penetration: The test specimen shall be tested in accordance with ASTM E 331. There shall be no leakage at a minimum static air pressure differential of 12 P.S.F. as defined in AAMA 501 and ASTM E 331.

E. Condensation Resistance: Where framing systems are "thermal-break" construction, provide units tested for thermal performance in accordance with AAMA 1503 showing condensation resistance factor (CRF) of not less than 68.

F. Thermal Transmittance: Provide framing systems that have an overall U-value of not more than 0.58 BTU/(hr. x sq. ft. x deg. F) at 15 mph exterior wind velocity when tested in accordance with AAMA 1503 /15003.1.

G. All external envelope enclosure products and assemblies shall meet the large missile impact criteria.

1.02 SUBMITTALS

A. Product Data: Include fabrication methods, data on finishing, hardware and accessories and surface maintenance recommendations.

B. Shop Drawings: Include layout, installation details, 1/4-inch scale elevations, detail sections of composite members, anchors and reinforcement, hardware mounting heights and glazing details.

C. Samples: Pairs of samples of each finish on 12-inch-long sections. Where normal color variations

are anticipated, include sets indicating full range of color variations.

D. Certified test reports from an AAMA accredited laboratory, showing that the systems have been tested and comply with the specified requirements.

1.03 QUALITY ASSURANCE

A. Installer Qualifications: Installer who has completed installations similar to those required and whose work has resulted in a record of successful in-service performance.

B. Manufacturer's Qualifications: A firm experienced in manufacturing systems similar to those indicated and has a record of successful in-service performance.

C. Design Criteria: Drawings indicate size, profile, and dimensional requirements and are based on specific types and models indicated. Aluminum entrance and storefront by other manufacturers may be considered provided deviations do not change the design concept.

1.04 WARRANTY: Submit a written warranty, executed by the manufacturer, agreeing to repair or replace units that fail in materials or workmanship within the specified warranty period. Failures include, but are not necessarily limited to:

Structural failures including excessive deflection, excessive leakage or air infiltration.

Faulty operation.

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

Warranty Period: 3 years after the date of Substantial Completion.

The warranty shall not deprive the Owner of other rights or remedies the Owner may have under other provisions of the Contract Documents, and is in addition to and runs concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.01 MANUFACTURERS: Subject to compliance with requirements, provide products by one of the following OR approved equal:

A. Kawneer

B. YKK AP – YHS 50 FI and 50H doors– Basis of Design. Flush Glazed

C. EFCO

Storefront windows, Storefront openinsg and storefront doors shall be provided.

2.02A MATERIALS – storefront framing and windows based on YHS 50FI Level E -Fl product # 14218.1

A. Aluminum Members: Shall be 6063-T6 alloy and temper; comply with ASTM B 221 for extrusions, ASTM B 209 for sheet or plate, and ASTM B 211 for bars, rods, and wire. Base depth of 5”, sightline of 2 ½”. Flush glazed.

B. Glazing Materials: Comply with "Glass and Glazing" section.

1. Impact Windows:
   a. Must pass flying missile test per SSTD 12-99. Submit proof of testing.
   b. Design wind speed per ASCE 7 & FBC 2022 8th edition,160 mph.
   c. Glazing Impact rate level E, tinted, low e coated, insulated and flush set dry.

C. Fasteners: Aluminum, nonmagnetic stainless steel, zinc plated steel, or material warranted to be noncorrosive and compatible with aluminum components, hardware, anchors, and other components.

Do not use exposed fasteners except for application of hardware. For hardware, use Phillips flat-head machine screws that match finish of member or hardware being fastened.

D. Thermal Barrier: The thermal barrier shall be poured in place two part polyurethane. A non-structural thermal barrier is unacceptable.

E. Perimeter Anchors: Aluminum or steel, providing the steel is properly isolated from the aluminum.

F. Concealed Flashing: 0.0179-inch (26 gage) minimum dead-soft stainless steel, or 0.026-inch-thick minimum extruded aluminum of alloy and type selected for compatibility with other components.

G. Brackets and Reinforcements: High-strength aluminum; where use of aluminum is not feasible provide nonmagnetic stainless steel or hot-dip galvanized steel complying with ASTM A 123.

H. Concrete/Masonry Inserts: Cast iron, malleable iron, or hot-dip galvanized steel complying with ASTM A 123.

I. Compression Weatherstripping: Replaceable molded neoprene gaskets complying with ASTM D 2000 on storefronts.

J. Sliding Weatherstripping: Replaceable wool, polypropylene, or nylon woven pile weatherstripping, with nylon fabric or aluminum strip backing, complying with AAMA 701.2.

2.02B MATERIALS for Storefront Doors based on YKK 50 H doors

A. Aluminum Doors 5” wide stile, center set glass, 1” IGU low E COG U factor .29. Level E compliant ASTM E 1886, E1996 and TAS 210 -203.
B. Provide organic Paints Kynar coating to match framing system.
C. Doors 3’-0” x 7’-0” or 6’-0” x 7’-0” see plans. Rixson pivots, continuous hinge, 3 point locks for single doors and 5 point lock for pairs.
D. RIM, concealed closures and exit devices by manufacture. Concealed closures. Standard hardware for push/pull, thresholds, continuous hinge, sweeps and concealed touch bar exit devices.

This spec is written as a basis for providing YKK system complete. Provide hardware from manufacturer with exception of removeable core for lock.

2.03 FABRICATION

A. Storefront Framing System: Provide storefront and entrance framing systems fabricated from extruded aluminum members of size and profile indicated. Include subframes and other reinforcing members of the type indicated. Shop-fabricate and preassemble frame components where possible. Door glazing stops shall be snap-in type with elastomeric gaskets. Door stiles and rails shall have hairline joints at corners. Heavy concealed reinforcement brackets shall be secured with screws and shall be deep penetration and fillet welded. All doors shall have an adjusting mechanism in the top rail to provide for minor clearance adjustments. Weatherstripping shall be installed in one stile of pairs of doors and in jamb stiles of center pivoted doors. Door stops shall include wool pile weatherstripping.

B. Mullion Configurations: Provide pockets at the inside glazing face to receive resilient elastomeric

glazing. Mullions and horizontals shall be one piece. Make provisions to drain moisture accumulation to the exterior.

2.04 FINISHES: Comply with NAAMM "Metal Finishes Manual" for recommendations relative to application and designations of finishes. Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes.

A. Color/Finish: AA-M12-C41-R1X, film thicker than 0.7 mil siliconized polyester baked enamel or Kynar 500 finish complying with AAMA 603.8 or AAMA 605.2. Color to be selected by Architect.

PART 3 - EXECUTION

3.01 Examine substrates for compliance with requirements, installation tolerances, and conditions that affect installation. Correct unsatisfactory conditions before proceeding.

3.02 Installation: Comply with manufacturer's instructions. Set units plumb, level, and true to line, without warp or rack of framing members, doors, or panels. Install in proper alignment and relation to established lines and grades. Provide support and anchor securely in place.

3.03 Drill and tap frames and doors and apply surface-mounted hardware.

3.04 Set sill members in bed of sealant, or with joint fillers or gaskets.

3.05 Refer to "Glass and Glazing" Section for installation of glass and other panels glazed into doors and framing.

3.06 Adjust hardware to function properly.

3.07 Clean completed system after installation. Avoid damage to coatings.

3.08 Clean glass after installation. Comply with "Glass and Glazing" Section for cleaning and maintenance.

END OF SECTION 084113

SECTION 087100 - FINISH HARDWARE

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The work in this section shall include furnishing of all items of finish hardware as hereinafter specified or obviously necessary to complete the building, except those items that are specifically excluded from this section of the specification.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Hollow Metal Doors and Frames

B. Aluminum Doors and Frames

C. Wood Doors and Frames

D. Sound Doors

1.03 DESCRIPTION OF WORK

A. Furnish labor and material to complete hardware work indicated, as specified herein, or as may be required by actual conditions at building.

B. Include all necessary screws, bolts, expansion shields, other devices, if necessary, as required for proper hardware application. The hardware supplier shall assume all responsibility for correct quantities.

C. Hardware shall meet the requirements of Federal, State and Local codes having jurisdiction over this project, notwithstanding any real or apparent conflict therewith in these specifications.

D. Fire-rated openings:

1. Provide hardware for fire-rated openings in compliance with A.I.A. (NBFU) Pamphlet No. 80, NFPA Standards NO. 101, UBC 702 (1997) and UL10C. This requirement takes precedence over other requirements for such hardware. Provide only hardware that has been tested and listed by UL for the types and sizes of doors required, and complies with the requirements of the door and door frame labels.
2. Where panic exit devices are required on fire-rated doors, provide supplementary marking on door UL label indicating Fire Door to be equipped with fire exit hardware and provide UL label on exit device indicating “Fire Exit Hardware”.

E. Fasteners:

1. Hardware as furnished shall conform to published templates generally prepared for machine screw installation.
2. Furnish each item complete with all screws required for installation. Typically, all exposed screws installation.
3. Insofar as practical, furnished concealed type fasteners for hardware units that have exposed screws shall be furnished with Phillips flat head screws, finished to match adjacent hardware.
4. Door closers and exit devices to be installed with closed head through bolts (sex bolts).

F. Exterior openings:

1. Provide hardware for hurricane openings in compliance with local jurisdiction.

This requirement takes precedence over other requirements for such hardware. Provide only hardware that has been tested and listed by local authority for the types and sizes of doors required, and complies with the requirements of the door and door frame. Coordinate Section (087100) Finish Hardware with the Hollow Metal Doors and Frames (081100) and Aluminum Entrances and Store Fronts (084113).

1.04 QUALITY ASSURANCE

A. The supplier to be a directly franchised distributor of the products to be furnished and have in their employ an AHC (Architectural Hardware Consultant). This person is to be available for consultation to the architect, owner and the general contractor at reasonable times during the course of work.

B. The finish hardware supplier shall prepare and submit to the architect six (6) copies of a complete schedule identifying each door and each set number, following the numbering system and not creating any separate system himself. He shall submit the schedule for review, make corrections as directed and resubmit the corrected schedule for final approval. Approval of schedule will not relieve Contractor of the responsibility for furnishing all necessary hardware, including the responsibility for furnishing correct quantities.

C. No manufacturing orders shall be placed until detailed schedule has been submitted to the architect and written approval received.

D. After hardware schedule has been approved, furnish templates required by manufacturing contractors for making proper provisions in their work for accurate fitting, finishing hardware setting. Furnish templates in ample time to facilitate progress of work.

E. Hardware supplier shall have an office and warehouse facilities to accommodate the materials used on this project. The supplier must be an authorized distributor of the products specified.

F. The hardware manufactures are to supply both a pre-installation class as well as a post-installation walk-thru. This is to insure proper installation and provide for any adjustments or replacements of hardware as required.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Wrap, protect finishing hardware items for shipment. Deliver to manufacturing contractors hardware items required by them for their application; deliver balance of hardware to job; store in designated location. Each item shall be clearly marked with its intended location.

1.06 WARRANTY

A. The material furnished shall be warranted for one year after installation or longer as the individual manufacturer’s warranty permits.

B. The manufacturer against failure due to defective materials and workmanship shall warrant overhead door closers in writing for a period of ten (10) years. Commencing on the Date of Final Completion and Acceptance, and in the event of failure, the manufacture is to promptly repair or replace the defective with no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. To the greatest extent possible, obtain each kind of hardware from only one manufacturer.

B. All numbers and symbols used herein have been taken from the current catalogues of the following manufacturers.

PRODUCT	ACCEPTABLE MANUFACTURER	ACCEPTABLE SUBSTITUTE
Hinges	Ives	Hager, Stanley, Bommer
Locks, Keying & Latches	Schlage Primus	Existing as approved .
Exit Devices	Von Duprin	No substitution.
Door Closers	LCN	No substitution.
Wall Stops/Floor Stops, Flushbolts	Ives	Burns, Rockwood,
Kick Plates	Ives	Burns,Trimco
Threshold/Weather-strip	Zero	No substitution
Silencers	Ives	Trimco, Rockwood
Key Cabinet	Lund	Key Control

C. If material manufactured by other than that specified or listed herewith as an equal, is to be bid upon, permission must be requested from the architect seven (7) days prior to bidding. If substitution is allowed, it will be so noted by addendum.

2.02 FINISH OF HARDWARE

A. Exterior Hinges to be Stainless steel (US32D), Interior Hinges to be Satin Chrome (26D). Door Closers to be Aluminum. Locks to be Satin Chrome (26D), Exit Devices to be Satin Chrome (26D). Overhead Holders to be Satin Stainless (32D), Flat Goods to be Satin Chrome (26D) or Stainless Steel (32D) and the Thresholds to be Mill Finish Aluminum.

2.03 HINGES AND PIVOTS

A. Exterior butts shall be Stainless Steel. Butts on all exterior out swinging doors shall be furnished with non-removable pins (NRP).

B. Interior butts shall be as listed.

C. Doors 5’ or less in height shall have two (2) butts. Furnish one (1) additional butt for each 2’6” in height or fraction thereof. Dutch door shall have two (2) butts per leaf.

2.04 KEYING

A. Equip locks and cylinders with Cylinders to match existing. Or Primus as per Owner,

B. All bittings shall be issued by lock manufacture per Owner’s instructions.

C. Provide Four (4) each change keys per lock and Six (6) each grand master, master keys and construction control keys. Provide 2 Control keys.

D. Hardware supplier to provide Construction keyed cylinders or cores. The contractor is to change the construction keyed cylinders for the permanent keys at owner’s direction.

E. Provide an Extra 20 cut Primus keys for Owner as directed for Staff.

F. Keys and permanent cores are to be shipped to owner direct.

2.05 LOCKSETS

A. Locksets shall be Mortise L Series, unless specified otherwise, with Lever designs as scheduled manufactured by Schlage Lock Company.

2.06 EXIT DEVICES

A. Exit devices shall be Von Duprin in types and functions specified. All devices must be listed under “Panic Hardware” in accident equipment list of Underwriters Laboratories. All labeled doors with “Fire Exit Hardware” must have labels attached and be in strict accordance with Underwriters Laboratories.

B. Exit devices shall be tested to ANSI/BHMA A156.3 test requirements by a BHMA certified testing laboratory.

C. Exit devices shall be windstorm as scheduled.

2.07 DOOR CLOSERS

A. Closers shall be LCN 4040XP Full Cover Series having non-ferrous covers, separate valves for adjusting backcheck, closing and latching cycles and adjustable spring to provide up to 50% increase in spring power. Closers shall be furnished with parallel arm mounted on all doors opening into corridors or other public spaces and shall be mounted to permit 180 degrees door swing wherever wall conditions permit. Furnish with non-hold open arms unless otherwise indicated.

B. All door closers shall be tested to ANSI/BHMA A156.4 test requirements by a BHMA certified testing laboratory.

C. Door closers shall utilize temperature stable fluid capable of withstanding temperature ranges of 120 degrees Fahrenheit to -30 degrees Fahrenheit, without requiring seasonal adjustment of closer speed to properly close the door. Closers for fire-rated doors shall be provided with temperature stabilizing fluid that complies with the standards UBC 7-2 (1997) and UL 10C.

D. Door closers shall incorporate tamper resistant non-critical screw valves. Closers shall have separate and independent screw valve adjustments for latch speed, general speed, and hydraulic backcheck. Backcheck shall be properly located so as to effectively slow the swing of the door at a minimum of 10 degrees in advance of the dead stop location to protect the door frame and hardware from damage. Pressure relief valves (PRV) are not acceptable.

2.08 TRIM AND PLATES

A. Kick plates, mop plates, and armor plates, shall be .050 gauge with 32D finish. Kick plates to be 10” high, mop plates to be 4” high. All plates shall be two (2) inches less full width of door.

B. Push plates, pull plates, door pulls, and miscellaneous door trim shall be shown in the hardware schedule.

2.09 DOOR STOPS

A. Doorstops shall be furnished for all doors to prevent damage to doors or hardware from striking adjacent walls or fixtures. Wall bumpers equal to Ives WS407 Series are preferred, but where not practical furnish floor stops equal to Ives FS436 or FS438 series. Where conditions prohibit the use of either wall or floor type stops, furnish surface mounted overhead stops equal to Glynn Johnson, 450 Series.

2.10 THRESHOLDS AND WEATHERSTRIP

A. Thresholds and weather-strip shall be as listed in the hardware schedule.

2.11 DOOR SILENCERS

A. Furnish rubber door silencers equal to Ives SR64 for all new interior hollow metal frames, (2) per pair and (3) per single door frame.

PART 3 - EXECUTION

3.01 INSTALLATION

A. All hardware shall be applied and installed in accordance with the Finish Hardware schedule. Care shall be exercised not to mar or damage adjacent work.
B. Contractor to provide a secure lock-up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items that are not immediately replaceable, so that the completion of the work will not be delayed by hardware losses both before and after installation.
C. No hardware is to be installed until the hardware manufactures have provided a pre-installation class to insure proper installation of the specified products. A post installation inspection by a manufacturer's representative will be provided to insure proper installation.

3.02 ADJUSTING AND CLEANING

A. Contractor shall adjust all hardware in strict compliance with manufacturer's instructions. Prior to turning project to owner, contractor shall clean and make any final adjustments to the finish hardware.

3.03 PROTECTION

A. Contractor shall protect the hardware, as it is stored on construction site in a covered and dry place.

B. Contractor shall protect exposed hardware installed on doors during the construction phase.

3.04 KEY CABINET

A. Set up and index one (1) Key Cabinet that allows room for expansion for 150% of the number of keys for the project.

3.05 HARDWARE SCHEDULE

A. The following schedule is furnished for whatever assistance it may afford the contractor; do not consider it as entirely inclusive. Should any particular door or item be omitted in any scheduled hardware group, provide door or item with hardware same as required for similar purposes. Quantities listed are for each pair of doors or for each single door.

B. This hardware schedule was prepared by.

Ingersoll Rand Security Technology
3451 Technological Ave, Suite 7
Orlando, FL 32817
Ph: 407-571-2000

Fax 407-571-2006

Manufacture Index:

IVE = IVES
GLY = Glynn-Johnson
LCN = LCN Closers
SCE = Schlage Electronics
SCH = Schlage Lock Co
STE= Steelcraft
VON = Von Duprin
ZER = Zero
LDW = Less Door Width
LAR = Length as Required

HARDWARE GROUP NO. 01

Doors: 100, 113, 117
Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	PANIC HARDWARE	WS-CI-9827-L-996-06	626	VON
1	EA	RIM CYLINDER	20-057-ICX	626	SCH
1	EA	MORTISE CYLINDER	20-061 XQ11-948	626	SCH
1	EA	PRIMUS CORE	20-740-XP	626	SCH
1	EA	SURFACE CLOSER	4040XP EDA	689	LCN
1	EA	KICK PLATE	8400 10"	630	IVE
1	EA	WALL STOP	WS443	626	IVE
1	SET	SEALS	328AA	AL	ZER
1	EA	DOOR SWEEP	8198AA	AL	ZER
1	EA	THRESHOLD	566A 36" MSLA-10	AL	ZER
1		PER:NOA 12-0305.12 +/- 150 PSF	SEALS BY DOOR SUPPLIER		

HARDWARE GROUP NO. 02

Doors: 121
Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	STOREROOM LOCK	L9080T 06A	626	SCH
1	EA	PRIMUS CORE	20-740-XP	626	SCH
2	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	SET	SEALS	328AA	AL	ZER
1	EA	THRESHOLD	566A 72" MSLA-10	AL	ZER

HARDWARE GROUP NO. 03

Doors: 103, 114, 115, 118,
Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	OFFICE/ENTRY LOCK	L9050T 06A	626	SCH
1	EA	PRIMUS CORE	20-740-XP	626	SCH
1	EA	SURFACE CLOSER	1461	689	LCN
1	EA	WALL STOP	WS407CVX	630	IVE
1	SET	SEALS	188S	BLK	ZER

HARDWARE GROUP NO. 04

Provide each PR door(s) with the following: 109

Qty		Description	Catalog Number	Finish	Mfr
6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	L9080T 06A	626	SCH
1	EA	PRIMUS CORE	20-740-XP	626	SCH
2	EA	SURFACE CLOSER	1461	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
2	EA	WALL STOP	WS407CVX	630	IVE
1	SET	SEALS	188S	BLK	ZER
6	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. 05

Doors: 104, 105, 106, 107
Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK	L9040 06A	626	SCH
1	EA	SURFACE CLOSER	1461	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CVX	630	IVE
1	SET	SEALS	188S	BLK	ZER

HARDWARE GROUP NO. 06

Doors: 101, 102, 110, 111, 112, 120, 121A
Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HINGE	5PB1 4.5 X 4.5 NRP	652	IVE
1	EA	STOREROOM LOCK	L9080T 06A	626	SCH
1	EA	PRIMUS CORE	20-740-XP	626	SCH
1	EA	SURFACE CLOSER	1461	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CVX	630	IVE
1	SET	SEALS	188S	BLK	ZER
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. 07

Provide each PR door(s) with the following: 119, 119A

Qty		Description	Catalog Number	Finish	Mfr
6	EA	HINGE	5BB1 4.5 X 4.5	630	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
2	EA	MANUAL FLUSH BOLT	FB458	626	IVE
1	EA	DUST PROOF STRIKE	DP1	626	IVE
1	EA	EU STOREROOM LOCK	RX-L9080TEU 06A	626	SCH
1	EA	PRIMUS CORE	20-740-XP	626	SCH
2	EA	SURFACE CLOSER	1461	689	LCN
2	EA	KICK PLATE	8400 10" X 1 1/2" LDW	630	IVE
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
2	EA	FLOOR STOP	FS436	626	IVE
1	SET	SEALS	188S	BLK	ZER
1	EA	ASTRAGAL	Z BY MFG.	600	STE
1	EA	THRESHOLD	65A 72" MSLA-10	AL	ZER
1	EA	POWER SUPPLY	PS902 900-BBK KL900	LGR	SCE
1			ACCESS CONTROL - WORK OF DIVISION 28		

END OF SECTION 087100

SECTION 088000 - GLASS AND GLAZING

PART 1 - GENERAL

1.01 RELATED SECTIONS

A. Section 084113 – Aluminum Entrances and Storefronts

1.02 GLAZING STANDARD: Comply with FGMA "Glazing Manual" and "Sealant Manual".

1.03 SAFETY GLAZING STANDARD: Comply with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for category II materials.

1.04 IMPACT RESISTANCE GLAZING: Provide exterior glazing that complies with chapter 16 of the Florida Building Code Wind Borne Debris Region.

1.05 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

1. Design Wind Pressures: Determine design wind pressures applicable to Project according to ASCE/SEI 7, based on heights above grade indicated on Drawings.
2. Basic Wind Speed: Enhanced Facility Design wind speed 160 mph **(**3 second gust)
3. Importance Factor: 1.00
4. Exposure Category: C.

B. Comply with Florida Product Approval /Miami Dade County Product Approval for Large Missile Impact.

C. Comply with National Storm Shelter Association's Standard for the Design and Construction of Storm Shelters, ICC 500-2008

D. Comply with Chapter 16 of Florida Building Code Wind Borne Debris Region.

E. All external envelope enclosure products and assemblies shall meet the large missile impact criteria.

1.06 SUBMITTALS

A. Product Data: For each glass product and glazing material indicated

PART 2 - PRODUCTS

2.01 GLASS MANUFACTURERS: Subject to compliance with requirements, provide products by one of the following:

Falconer Glass Industries.
Ford Glass Div.
Guardian Industries Corp.
Hordis Brothers, Inc.
LOF Glass, Inc.
Pilkington Sales
PPG Industries Inc.
Saint Gobain/Euroglass.
Spectrum Glass Prod.
Viracon, Inc.

2.02 SIZES: Fabricate glass of thicknesses indicated and to sizes required for glazing openings indicated, with edge clearances and tolerances complying with recommendations of glass manufacturer.

2.03 PRIMARY GLASS PRODUCTS: Comply with ASTM C 1036 for the following:

A. Clear Float Glass: Type I, Class 1, Quality q3.

B. Tinted Float Glass: Type I, Class 2, Quality q3.

2.04 FIRE-RATED GLAZING:

A. Provide fire rated glazing composed of multiple sheets of glass laminated with an intumescent interlayer. Provide Pyrobel as manufactured by AGC Flat Glass Europe and distributed by InterEdge Technologies LLC, Sausalito, CA (877) 376-3343 OR approved equal.

B. Properties:

1. Thickness: For Interior Use: 1", #60-25 V-60.
2. Weight: Interior glazing varies with thickness (approximate range 12 lbs/sq.ft.).
3. Approximate Visible Transmission: 81%.
4. Fire-rating at opening locations on drawings, when tested in accordance with ASTM E 119 and UL 263.

C. Glazing Compound (for fire rated glazing material):

1. Glazing Tape: Closed cell foam, coiled on release paper over adhesive on one side, maximum water absorption by volume of 1 percent, designed for compression of 30 percent to effect an air and vapor seal. At header apply additional layer of Pemko 3000S45 intumescent glazing tape.
2. Silicone Sealant at Butt Joints: Neutral Cure Silicone as specified by manufacturer:.
3. Perimeter Silicone Sealant: One-part neutral curing silicone, medium modulus sealant, Type S; Grade NS; Class 25 with additional movement capability of 50 percent in both extension and compression (total 100 percent); Use (Exposure) NT; uses (Substrates) G, A, and O as applicable. Available products:
   a. Dow Corning 795 – Dow Corning Corp.
   b. Silglaze-II 2800 – general Electric Co.
   c. Spectrem 2 – Tremco, Inc.
4. Setting Blocks: Calcium silicate; glass width by 3" x ¼" thick.
5. Cleaners, Primers, and Sealers: Type recommended by manufacturer of glass and gaskets.

2.05 UNCOATED HEAT-TREATED GLASS PRODUCTS: Comply with ASTM C 1048 and with manufacturing process indicated for the following:

A. Clear Tempered Float Glass: Kind FT, Condition A, Type I, Class 1, Quality q3.

B. Tinted Tempered Float Glass: Kind FT, Condition A, type I, Class 1, Quality q3.

2.06 LAMINATED and INSULATED GLASS, GENERAL:

A. Description: Two plies of float glass laminated with polyvinyl butyral (PVB) plastic interlayer, clear.

B. Compliance:

1. ASTM C 1172
2. Testing requirements in CPSC 16 CFR 1201 for Category II materials.
3. Windborne-Debris-Impact Resistance: ASTM E 1886 and ASTM E 1996.
   a. Test specimens shall be no smaller in width and length than glazing indicated for use on the project and shall be installed in same manner as glazing indicated for use on the project.

b. Testing Level: Impact level E exterior units.
c. Wind Zone: 160 mph, Risk Cat. IV.
d. Missile Testing: Large-Missile Test; for glazing located within 30 feet of grade.

4. Units are insulated as well as laminated, see below.

2.07 SEALED INSULATING GLASS UNITS:

A. Comply with requirements of ASTM E 774 for Class A units and the following:

B. Performance characteristics indicated are those of units and are based on manufacturer's published test data for units with 1/4" thick panes and 1/2" thick air space. U-values are indicated in Btu per hr. per sq. ft. per deg. F difference.

C. For properties of individual glass panes making up units refer to product requirements specified elsewhere in this section applicable to types, classes, kinds and conditions of glass products indicated.

D. Provide heat-treated panes of kind indicated and as recommended by the manufacturer for application indicated.

1. Thickness of Each Pane: ¼" as noted above in 2.06.
2. Air Space Thickness: ½".
3. Sealing System: Manufacturer's standard.
4. Spacer Material: Manufacturer's standard metal.

E. Low-E Coating: (Interior Lite) 19/32" Laminate – ¼" PPG Solarban 60, with "OPTIGRAY 23" with the following performances characteristics OR approved equal:

1. Shading Coefficient: 0.21
2. Solar Heat Gain Coefficient: 0.18
3. Light to Solar Gain (LSG): 1.02

2.07B INTERIOR GLASS:
A. Clear tempered uninsulated glass in interior locations.

2.08 GLAZING SEALANT: Comply with sealant and glass manufacturers for selection of glass sealants which suit project application and installation conditions and which are compatible with surfaces contacted. Provide color of exposed sealants indicated or as selected by Architect.

2.09 DENSE ELASTOMERIC COMPRESSION SEAL GASKETS: ASTM C 864, extruded or molded neoprene, EPDM, or thermoplastic polyolefin rubber.

2.10 CELLULAR ELASTOMERIC PREFORMED GASKETS: ASTM C 509, Type II, black; extruded or molded neoprene.

2.11 CLEANERS, PRIMERS AND SEALERS: Type recommended by manufacturer of sealants/gaskets.

2.12 BLOCKS AND SPACERS: Neoprene, EPDM or silicone as required for compatibility with glazing sealants; of 80 to 90 Shore A hardness for setting blocks and, for spacers and edge blocks, of hardness recommended by glass and sealant manufacturer for application indicated.

2.13 COMPRESSIBLE FILLER RODS: Closed-cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, 5-10 psi compression strength for 25 percent compression.

PART 3 - EXECUTION

3.01 GLASS INSTALLATION (GLAZING): Comply with referenced FGMA standards and instructions of

manufacturers of glass, glazing sealants, and gaskets, to achieve airtight and watertight performance, and to minimize breakage.

3.02 PROTECT GLASS FROM EDGE DAMAGE during handling and installation. Inspect glass during installation and discard pieces with edge damage that could affect glass performance.

3.03 SET UNITS OF GLASS IN EACH SERIES with uniformity of pattern, draw, bow and similar characteristics.

3.04 PROTECT GLASS from contact with contaminating substances resulting from construction operations; remove any such substances by method approved by glass manufacturer.

3.05 WASH GLASS ON BOTH FACES not more than 4 days prior to date scheduled for inspections intended to establish date of substantial completion. Wash glass by method recommended by glass manufacturer.

END OF SECTION 088000

SECTION 092900 - GYPSUM DRYWALL

PART 1 - GENERAL

1.01 Fire-Resistance Ratings: Provide gypsum drywall construction fire-resistance ratings indicated, conforming to assemblies tested per ASTM E 119 by inspecting and testing organization acceptable to authorities having jurisdiction.

A. **All fire and/or smoke barriers or walls shall be effectively and permanently identified with stenciling above any decorative ceiling and/or in concealed space with letters a minimum of two (2) inches high on a contrasting background spaced a maximum of twelve (12) feet on center with a minimum of one per wall or barrier. The hourly fire rating shall be included on all rated barriers or walls. Wording shall be as follows: "(__) Hour Fire and Smoke Barrier-Protect All Openings."**

B. **Storage rooms which are sprinklered shall have permanently stenciled, eighteen (18) inches below sprinkler heads, a designation line (red) with the following wording: "NO STORAGE ABOVE LINE." Requirements for stenciling shall be as noted above.**

1.02 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Provide light gauge framing shop drawings stamped by a Florida registered engineer.

PART 2 – PRODUCTS

2.01 Manufacturers: Subject to compliance with requirements, provide gypsum board and related products by one of the following:

Georgia-Pacific Corp.
Gold Bond Building Products Div.
National Gypsum Co.
United States Gypsum Co.

2.02 Steel Framing Components for Suspended Ceilings: As follows, sized per ASTM C 754, unless otherwise indicated:

A. Wire for Hangers and Ties: ASTM A 641, soft, Class 1 zinc coating.

B. Grid Suspension System: ASTM C 645, manufacturer's standard grid suspension system composed of main beams and cross furring members which interlock to form a modular supporting network. Framing spacing shall support weight of Impact gypsum, which is based on 24" spacing at L/240.

2.03 Steel Framing for Walls and Partitions: Comply with ASTM C 754 and the following:

A. Steel Studs and Runners: ASTM C 645, 0.0179 inch (25 gauge) base metal thickness unless otherwise indicated.

1. Height for which 0.0179 inch (25 gauge) is insufficient per manufacturer's "Limiting Height Tables", shall be accomplished in the gauge of material required by these tables. **If 3-5/8" metal studs shown on the floor plans will not meet the "Length Heights Table", brace each metal stud or use 6" metal stud instead.** Such materials to be provided at no additional cost to the Owner.
2. All door frame openings shall be reinforced with two (2) 0.0312 inch (20 gauge) studs on each side for a total of four (4) studs.

B. Base Track: ASTM C 645, 0.0312 inch (20 gauge) for interior; 0.0538 inch (16 gauge) for exterior.

C. Top Track: Slip Track, 0.0312 inch (20 gauge) for interior; 0.0538 inch (16 gauge) for exterior.

D. Steel Rigid Furring Channels: ASTM C 645, 0.0179 inch (25 gauge) base metal thickness, hat-shaped.

2.04 Gypsum Board: Provide gypsum board of types indicated in maximum lengths available to minimize end joints:

A. Exposed Gypsum Board: ASTM C 36, 5/8" thickness, Type 'X'. For fire-rated-assemblies refer to Drawings for UL Design Numbers. To be used everywhere except ceilings of dayrooms.

B. Moisture & Mold Resistant Gypsum Board: ASTM C 1396, 5/8" thickness, regular type except where Type X Fire-resistant type is indicated or required to meet UL assembly types. Edges shall be tapered. Provide Sheetrock brand Mold Tough Firecode Gypsum Panels by USG OR approved equal. **Note: All wet areas to receive Moisture & Mold Resistant Gypsum Board. Wet areas include walls and ceilings where gypsum board is specified. Areas include, but are not necessarily limited to, bathrooms, gang toilets, showers, janitor closets, kitchens and laundry areas.**

2.05 Trim Accessories: ASTM C 840; manufacturer's standard trim accessories, including cornerbead and edge trim of beaded type with face flanges for concealment in joint compound.

2.06 Gypsum Board Joint Treatment Materials: ASTM C 475 and ASTM C 840, and as follows:

A. Joint Tape: Paper reinforcing tape, unless open-weave glass fiber tape is recommended by gypsum board manufacturer.

B. Setting-Type Joint Compound: Factory-prepackaged, job-mixed chemical-hardening powder products formulated for uses indicated.

C. Drying-Type Joint Compounds: Factory-prepackaged -premixed vinyl-based products. Taping compound formulated for embedding tape and first coat over fasteners and flanges of corner beads and edge trim. Topping compound formulated for fill (2nd) and finish (3rd) coats.

2.07 Miscellaneous Materials: As recommended by gypsum board manufacturer:

A. Gypsum Board Screws: ASTM C 1002.

B. Concealed Acoustical Sealant: Comply with requirements specified in Division-7 Section "Joint Sealers."

2.08 Barrier Mesh: Provide barrier mesh BM15 16 ga. 1 ½" diamond similar to ClarkDietrich behind all drywall noted as Security Gypsum Ceilings and walls noted. Type II class 2 Galvanized. Fasten mesh with BM mesh clip.

PART 3 - EXECUTION:

3.01 Install steel framing to comply with ASTM C 754 and ASTM C 840.

A. Do not bridge building expansion joints with support systems, frame both sides of joints with furring and other supports as indicated.

B. Secure hangers to structural support by connecting directly to structure where possible, otherwise connect to inserts, clips other anchorage devices or fasteners as indicated.

C. Install direct-hung grid suspension system, including perimeter wall track or angle, with members spaced and installed to comply with manufacturer's instructions.

D. Install steel studs with bottom and top runner tracks anchored to substrates. Isolate system from building structure to prevent transfer of loading and deflections into metal support system, both vertically and horizontally.

E. Install supplementary framing, runners, furring, blocking and bracing at openings and terminations in gypsum drywall and where required for support of other work which cannot be adequately supported on gypsum board alone.

3.02 Install and finish gypsum board to comply with ASTM C 840 and as follows:

A. Isolate drywall construction from abutting structural and masonry work; provide edge trim and acoustical sealant as recommended by manufacturer.

B. Screw gypsum board to metal supports.

C. Do not bridge building expansion joints. Leave space of the width indicated between boards, and trim both edges for installation of sealant or gasket.

3.03 Install water-resistant backing board where indicated to receive thin-set tile.

3.04 Drywall Finishing:

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

A. Prefill open joints and damaged surface areas.

B. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C840:

1. Level 4: (For all surfaces unless otherwise noted)

a. All joints and interior angles shall have tape embedded in joint compound and two separate coats of joint compound applied over all flat joints and one separate coat of joint compound applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. All joint compound shall be smooth and free of tool marks and ridges. Note: It is recommended that the prepared surface be coated with a drywall primer prior to the application of final finishes. (See Section 099100 – Painting.)

3.05 Install compound in 3 coats (plus prefill of cracks where recommended by manufacturer); sand between coats and after last coat.

A. Embedding and First Coat: Ready-mix drying type all-purpose of taping compound.

B. Fill (Second) Coat: Ready-mix drying type all-purpose or topping compound.

C. Finish (Third) Coat: Ready-mix drying-type all-purpose or topping compound.

END OF SECTION 092900

SECTION 093000 – TILE

PART 1 – GENERAL

1.01 SUMMARY

A. Scope of work: Provide tile, tile installation materials and accessories as indicated on drawings, as specified herein, and as needed for complete and proper installation.

1.02 SECTION INCLUDES

A. Tile

B. Installation products: adhesives, mortars, grouts and sealants.

C. Crack isolation membranes.

D. Thresholds, trim and other accessories herein.

1.03 REFERENCE STANDARDS

A. ANSI A108A-A108.13 – American National Standards for Installation of Ceramic Tile.

B. ANSI A137.1 – American National Standard Specifications for Ceramic Tile.

C. ANSI A118.1-A118.12 – American National Standard Specifications for the Installation of Ceramic Tile.

D. ANSI A136.1 – American National Standard Specification for the Installation of Ceramic Tile.

E. ASTM C 33 – Standard Specification for Concrete Aggregate.

F. ASTM C144 – Standard Specification for Aggregate for Masonry Mortar.

G. ASTM C150 – Standard Specification for Portland Cement.

H. ASTM C 36 – Standard Specification for Gypsum Wallboard.

I. TCNA (HB) – Handbook for Ceramic Tile Installation; Tile Council of North America, Inc.

1.04 SUBMITTALS

A. Submit manufacturer's technical information for each product specified.

B. Submit proof of warranty.

1.05 QUALITY ASSURANCE

A. Obtain tile from a single source with resources to provide products of consistent quality in appearance and physical properties.

B. Installer qualifications: company specializing in installation of tile with five years documented experience with installations of similar scope, materials and design.

1.06 DELIVERY, STORAGE AND HANDLING

A. Acceptance at Site: Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use, in accordance with manufacturer's instructions.

B. Store tile and installation system materials in a dry location; handle in a manner to prevent chipping, breakage and contamination.

C. Protect adhesives from freezing or overheating in accordance with manufacturer's instruction; store at room temperature when possible.

D. Store mortars and grouts in a dry location.

1.07 PROJECT CONDITIONS

A. Provide ventilation and protection of environment as recommended by manufacturer.

B. Prevent carbon dioxide damage to tile and installation materials by venting temporary heaters to the exterior.

C. Maintain ambient temperatures at no less than 50 deg F or more than 100 deg F during during installation and for a minimum of 7 days after completion. It is the General Contractor's responsibility to maintain temperature control.

1.08 SEQUENCING AND SCHEDULING

A. Coordinate installation of the tile work with related work.

B. Proceed with tile work only after curbs, vents, drains, piping and other projections through substrate have been installed and when substrate construction and framing of openings have been completed.

1.09 WARRANTY

A. The Contractor warrants the work in this Section to be in accordance with the Contract Documents and free from faults and defects in materials and workmanship for a period of 10 years.

1.10 MAINTENANCE

A. Submit maintenance data including cleaning methods, cleaning solutions recommended, stain removal methods, as well as polishes and waxes recommended.

1.11 EXTRA MATERIALS STOCK

A. Provide additional stock to Owner equaling 2% of each type and color of tile and installation materials installed. Extra stock to be from the same production run or batch as the original tile and installation materials.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acceptable manufacturer for tile:
Trinity Surfaces
James Nichols
904-870-5658
OR Approved Equal.

B. Acceptable Manufacturer for grout, mortar and setting materials:
MAPEI Corp. U. S. A.,
1144 E. Newport Center Rd
Deerfield Beach, FL 33442; Toll Free Tel: 800-42-MAPEI; Tel: (954) 246 – 8888;
Fax: (954) 246 – 8801; Web: www.mapei.com
OR approved equal.

C. Provide tile grout, setting materials, additives, waterproofing and factory-prepared mortars from the same manufacturer.

2.02 MORTAR /MATERIALS

A. Floor and Wall Tile:
1. Thinset Bed Mortar: Premium Grade, Single-component, Ultra high performance, polymer-modified thin set mortar complying with ANSI A118.4, ANSI A118.11 and ANSI A118.15; MAPEI Ultraflex 3.
2. Grout: Solvent-free, 100%-solids epoxy grout. Non-sagging, chemical resistant grout, with high-compressive strength; MAPEI Kerapoxy CG (not 410) meeting or exceeding ANSI A118.3.
3. Sealant: Silicone Joint for heavy traffic and movement joints. MAPEI Mapesil T (Res / Comm 1-6)

2.03 MIXES

A. Proportion and mix materials in accordance with manufacturer's most current written instructions and applicable ANSI standards.

2.04 Porcelain Tile (PT):

Manufacturer: Trinity Surfaces
Style: Drift
Colors: To be selected by Architect.
Size: 12" x 24" and 2" x 2" (for shower floors) x 8mm thick
Type: Porcelain
Finish: matte
Dynamic coefficient of friction: >/= 0.42 - ASTM 137.1.
Metal trim: Schluter or Approved equal.
Transition between PT and LVT: Schluter-RENO-U in satin anodized aluminum. Note that transition strip should not be installed on top of LVT. LVT should butt into the transition strip.
Cove between wall tile and floor tile: Schluter-DILEX-AHK in satin anodized aluminum.
Top cap and outside corners for wall tile (where tile is not full height or does not span from wall to wall): Schluter-QUADEC in satin anodized aluminum. Include endcap at outside corners.

2.05 Setting Materials: Provide setting materials as follows:

A. Sealer: ASTM E 96 Tile/grout sealer shall be water based, sub-surface, water repellant equal to Silox 110 by Cerama Seal, where applicable.

B. Waterproofing and crack-isolation membrane: Trowel applied, flexible, fiber-mesh-reinforced waterproofing and crack-isolation membrane applied as per ANSI A118.10; Mapei, Mapelastic 315. Install membrane to comply with pertinent codes and manufacturer's directions.
1. Fiberglass Mesh: Use Mapei Fiberglass mesh with Mapelastic 315.

PART 3 - EXECUTION

3.01 EXAMINATION AND SURFACE PREPARATION

A. Before work commences, the tile contractor must examine areas to be covered and report any deficiency or adverse condition in writing to the general contractor and architect.

B. Do not proceed with the work until surfaces and conditions comply with the requirements indicated in the manufacturer's instructions, applicable industry standard, federal, state, provincial, local regulations and good work practices. By beginning work, the applicator/user acknowledges that the conditions are acceptable for installation.

C. Substrates should be sound, stable and free of all oils, grease, loose debris, paint, drywall debris, curing agents, sealers or any potential bond breaking contaminants must be removed mechanically. Do not use chemicals for surface prep. Consult the manufacture for their specific recommendations.

D. All substrates must be plumb and flat to a tolerance in plane of 1/4" in 10', and no more than 1/16" in 1' variation from substrate high points. Refer to manufactures specifications for their specific product.

E. Dry as per American Society for Testing and Materials (ASTM) D4263 – Standard Test for Determining Moisture in Concrete by the Plastic Sheet Method.

F. Concrete surfaces shall be cured a minimum of 28 days at 70 deg F, including an initial 7 day period of wet curing.

3.02 INSTALLATION

A. Comply with ANSI A108 – Standard for Installation of Ceramic Tile and TCA – Handbook for Ceramic Tile Installation, both to be the most current version.

B. Comply with manufacturer's instructions for application of proprietary materials.

3.03 CLEANING: Clean tile in accordance with applicable ANSI standard for type of tile and method of installation used and manufacturer's instructions.

END OF SECTION 093000

SECTION 095100 - ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.01 Acoustical Panel and Tile Standard: FS SS-S-118.

1.02 Acoustical Suspension System Standards: ASTM C 635 for materials, ASTM C 636 for installation.

1.03 Surface Burning Characteristics: 25 or less for flame spread, 50 or less for smoke developed, per ASTM E 84.

1.04 Submittals: Submit product data for each type of acoustical ceiling tile along with 6" square samples of each type of acoustical tile.

1.05 Coordination: Review Finish Plan on drawings and Mechanical and Electrical Drawings for layout and pattern of acoustical units, location of recessed light fixtures, ceiling diffusers and grilles, details of ceiling penetrations, details of fire rated acoustical treatment, access doors and necessary connections to work of other trades.

Provide coordination drawings for reflected ceiling plans drawn accurately to scale and coordinating penetrations and ceiling-mounted items. Show the following:

1. Ceiling suspension members.
2. Methods of attaching hangers to building structure.
3. Size and location of initial access modules.
4. Ceiling-mounted items including light fixtures; air outlets and inlets; speakers; sprinkler heads; and column penetrations and other junctures with adjoining construction.

1.06 Installer Qualifications: Engage an experienced Installer who has successfully completed acoustical ceilings similar in material, design, and extent to that indicated for Project.

1.07 Preinstallation Conference: Conduct a preinstallation conference at the Project site to coordinate work from all trades.

1.08 Delivery, Storage and Handling: Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination and other causes. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.

1.09 Deliver extra materials to Owner. Furnish extra materials of each size and type matching products installed and equaling 2.0% of acoustical units and exposed suspension members installed. Package materials in protective covering and identify with appropriate labels.

1.10 Warranty: Provide acoustical panels and grid from the same manufacturer with a thirty year warranty from the date of substantial completion.

PART 2 - PRODUCTS:

2.01 ACT – Wet formed mineral fiber with factor applied latex paint; Type III; Form 1; Class A and as follows:

Color: White.
Light Reflectance: 85%
NRC: 0.70
CAC: 40.
Edge Detail: Angled Tegular.
Size: 24" x 24" x 3/4".
Products: Subject to compliance with requirements, provide "Fire Fissured High Acoustics" #1717, by Armstrong OR approved equal.

Sag Resistance: HumiGuard+
Antimicrobial: BioBlock+

2.02 Dimensional Stability: Suspension systems shall meet or exceed the requirements of ASTM C635 for dimensional tolerances, coatings and finishes, and load carrying capabilities.

2.03 Humidity control: Ceilings shall have a 30-year system warranty against system sagging and warping when installed according to manufacturer's recommendations. Ceilings shall have and anti-microbial warranty against fungi, mold, mildew, bacteria, yeast or algae.

2.04 Suspension Systems:

A. Non-Fire-Resistance-Rated Exposed Double Web Steel Direct-Hung Suspension System with 15/16" Wide Exposed Faces: Roll-formed from prefinished cold-rolled steel sheet, with hanger wire, attachment devices and edge moldings and trim; intermediate-duty system structural classification; white painted finish. Note: All cold-rolled steel sheets shall be hot dipped galvanized (G-30).

Armstrong – 15/16" Prelude XL.

(Armstrong Ceiling Tile shall be installed with Armstrongs Suspension System in order to keep the 30 year warranty - No exceptions).

PART 3 - EXECUTION

3.01 Project Conditions: Do not install interior acoustical ceilings until space is enclosed and weatherproof, wet work in space is completed and nominally dry, work above ceilings is complete, and ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

3.02 Layout: Balance ceiling borders on opposite sides, using more-than-half-width acoustical units.

3.03 Tolerance: 1/8" in 12'-0" level tolerance.

3.04 Suspension System: Secure to building structure, with hangers spaced 4'-0" along supported members.

3.05 Edge Moldings: Secure to substrate with screw anchors spaced 16" o.c. Miter corner joints. Cope exposed edges of intersecting exposed suspension members to produce flush intersections.

3.06 Damaged ceiling panels: Prior to Substantial Completion, remove and replace skinned, damaged, or dirty ceiling panels with new material.

3.07 Cleaning: Clean exposed surfaces of acoustical ceilings, including trim, edge moldings and suspension members. Comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095100

SECTION 096500 - LUXURY VINYL TILE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 SUMMARY:

A. Section Includes:
1. Luxury vinyl floor tile.

1.03 SUBMITTALS:

A. Product Data: For each type of product indicated.

B. Samples for Verification: Full-size units of each color and pattern of floor tile required.

C. Qualification Data: For qualified Installer.

D. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.04 QUALITY ASSURANCE

A. Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for floor tile installation indicated.
1. Engage an installer who employs workers for this Project who are trained for installation techniques required.

B. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C). Store floor tiles on flat surfaces.

1.06 PROJECT CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 68 deg F (20 deg C) or more than 72 deg F (22.2 deg C), in spaces to receive floor tile during the following time periods:
1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 60 deg F (15.6 deg C or more than 80 deg F (26.7 deg C).

C. Close spaces to traffic during floor tile installation.

D. Close spaces to traffic for 48 hours after floor tile installation.

E. Install floor tile after other finishing operations, including painting, have been completed.

1.08 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Floor Tile: Furnish 1 box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

PART 2 - PRODUCTS

2.01 LUXURY VINYL TILE - LVT

A. Mfr: Tarkett OR approved equal
Series: "ID Latitude" – wood and stone
Contact: Ed Xanders with Tarkett flooring (904) 535-6791.

B. Tile Standard: ASTM F 1700.
   1. Class: Class III, printed film vinyl tile.
   2. Type: Type B, embossed surface.

C. Nominal Thickness: overall - 0.120 inch (3.0 mm); 20 mil wear layer with TECHTONIC

D. Test Performance:
ASTM E648: Critical Radiant Flux - Class 1, CRF > 0.45
ASTM E662: Smoke Density - > 450, Good
ASTM F925: Chemical Resistance - Excellent
ASTM C1028: Slip resistance - Very good
ASTM D2047: Passes
ADA Compliant: FTC slip resistant classified product

E. Size: To be selected

F. Edges: Square

G. Colors: To be selected.

H. Warranty: 20 year Commercial Use

2.03 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, Portland cement based or blended hydraulic-cement-based formulation.

B. Adhesives: As recommended by Tarkett to meet site conditions and concrete moisture testing
   1. Luxury Vinyl Floor Tile
      a. Tarkett RollSmart™ (up to 95% RH)

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.

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

3.02 PREPARATION

A. Prepare substrates according to Tarkett written instructions to ensure proper adhesion of Resilient Flooring.
   1. Prepare concrete substrates in accordance with ASTM F 710.
   a. Concrete floors must be free of dust, solvent, paint, wax, oil, grease, residual adhesive, adhesive removers, film-forming curing compounds, silicate penetrating curing compounds, sealing, hardening or parting compounds, alkaline salts, excessive carbonation, mold, mildew, and other foreign materials that may affect dissipation rate of moisture from the concrete, discoloration or adhesive bonding.
   b. Mechanically remove contamination on the substrate that may cause damage to the resilient flooring material. Permanent and non-permanent markers, pens, crayons, paint, etc., must not be used to write on the back of the flooring material or used to mark the substrate as they could bleed through and stain the flooring material.
   c. Perform moisture testing as recommended by manufacturer. Proceed with installation only after substrates have been tested and meet the minimum requirements from the manufacturer in accordance with ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
   d. A pH test for alkalinity must be conducted on the concrete floor prior to installation with results conforming to manufacturer requirements. If the test results are not within the acceptable range, then installation must not proceed until the problem has been corrected.
   e. All tests must be done. Results shall be documented and retained. A copy shall be submitted to the Architect, Contractor and Flooring Subcontractor within 72 hours.

B. Fill cracks, holes, depressions and irregularities in the substrate with good quality Portland cement based underlayment leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

C. Floor covering shall not be installed over expansion joints.

D. Do not install resilient products until they are same temperature as the space where they are to be installed.
   1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.
   1. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
   2. Do not install floor tiles until they are same temperature as space where they are to be installed.
      a. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
   3. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.03 FLOOR TILE INSTALLATION

A. Comply with manufacturer's written instructions for installing floor tile.

B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
   1. Lay tiles carefully, noting directional arrows on the back of tiles when present.

D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.

G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

H. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.04 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protection of floor tile.

B. Perform the following operations immediately after completing floor tile installation:
   1. Remove adhesive and other blemishes from exposed surfaces.
   2. Sweep and vacuum surfaces thoroughly.
   3. Damp-mop surfaces to remove marks and soil.

C. Protect floor tile products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Remove soil, visible adhesive, and surface blemishes from floor tile surfaces.
   1. Not less than 48 hours after installation, clean floor with a neutral liquid cleaner, as recommended by the flooring and cleaner manufacturers.

END OF SECTION 096500

SECTION 096513 - RESILIENT WALL BASE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: RESILIENT WALL BASE

1.02 REFERENCED DOCUMENTS

A. ASTM International
1. E84, Standard Test Method for Surface Burning Characteristics of Building Materials.
2. E648, Standard Test Method for Critical Radiant Flux of Flooring Systems Using a Radiant Energy Source.
3. E662, Test Method for Specific Density of Smoke Generated by Solid Materials.
4. F137, Standard Test Method for Flexibility of Resilient Flooring Materials with Cylindrical Mandrel Apparatus.
5. F925, Standard Test Method for Resistance to Chemicals of Resilient Flooring.
6. F1861, Standard Specification for Resilient Wall Base.

B. Other Referenced Documents
1. National Fire Protection Association (NFPA), NFPA 255; Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Source.
2. National Fire Protection Association (NFPA), NFPA 258; Test Method for Specific Density of Smoke Generated by Solid Materials.

1.03 SUBMITTALS

A. Product Data: Submit product data, including manufacturer's specification summary sheet for specified products.

B. Shop Drawings: Submit shop drawings showing layout, finish colors, patterns and textures.

C. Samples: Submit selection and verification samples for finishes, colors, and textures.

D. Quality Assurance Submittals: Submit the following
1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
2. Manufacturer's Instructions: Manufacturer's installation and maintenance instructions.

E. Maintenance Information: Maintenance information for installed products in accordance with Division 1 sections.
1. Methods for maintaining installed products.
2. Precautions against cleaning materials and methods detrimental to finishes and performance.

F. Warranty: Warranty documents specified herein.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Installer experienced in performing work of this section who has specialized in installing work similar to that required for this project.

B. Regulatory Requirements:

1. Fire Performance characteristics: Provide resilient wall base with the following Fire performance characteristics as determined by testing products in accordance with ASTM method (and NFPA method) indicated below by a certified testing laboratory or another testing and inspecting agency acceptable to authorities having jurisdiction.

a. ASTM E648 (NFPA 253), Critical Radiant Flux of Floor Covering Systems; Class 1, Greater than 0.45 W/cm^2.
b. ASTM E662 (NFPA 258), Specific Optical Density of Smoke Generated by Solid Materials; < 450.

C. Single-Source Responsibility: Obtain resilient wall base tile and manufacturer's recommended adhesive from a single supplier.

D. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, Manufacturer's conditions, recommended adhesive depending on product, substrate type and type of installation, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with requirements in Division 1.

1.05 DELIVERY, STORAGE AND HANDLING

A. General: Comply with requirements in Division 1.

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

C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with Identification labels intact.

D. Storage and Protection: Store materials protected from exposure to harmful weather conditions and acclimated to site conditions at temperature and humidity conditions recommended by manufacturer.

1.06 PROJECT CONDITIONS

A. Environmental Requirements/Conditions: In accordance with manufacturer's recommendations, areas to receive rubber flooring shall be clean, fully enclosed, weather tight with the permanent HVAC set at a uniform temperature of 65º - 85º F for 48 hours prior to, during and thereafter installation of rubber flooring. Rubber flooring and adhesive shall be conditioned in the same manner. Rubber flooring/tile must be un-boxed at least 48 hours prior to installation in the areas in which it will be installed.

1.07 SEQUENCING AND SCHEDULING

A. Finishing Operations: Install resilient wall base after finishing operations, including floor covering, painting and ceiling operations, have been completed.

1.08 MAINTENANCE

A. Extra Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 1, Closeout Submittals Section.

B. Quantity: Furnish quantity of resilient wall base equal to 5% of amount to be installed.

C. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra materials.

D. Maintenance of finished resilient wall base to be conducted per Manufacturer's Maintenance Guide.

1.09 WARRANTY

A. Manufacturer's Materials Warranty: Submit, for Owner's acceptance, manufacturer's standard

warranty document. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

1. Warranty: 1 year limited warranty commencing on Date of Substantial Completion. Notice of any defect must be made in writing to manufacturer within 30 days after buyer learns of the defect.

PART 2 - PRODUCTS

2.01 RESILIENT WALL BASE

A. Manufacturer: Tarkett, Flexco, Roppe, Mannington OR approved equal.

B. Test:
1. ASTM D570, Water Absorption of Plastics; < 0.15%.
2. ASTM E84 (NFPA 255), Surface Building Characteristics of Building Materials; Class C.
3. ASTM E648 (NFPA 253), Critical Radiant Flux; Class 1, > 1.0 W/cm^2.
4. ASTM E662 (NFPA 258), Specific Optical Density of Smoke Generated by Solid Materials; Passes.
5. ASTM F925, Resistance to Chemicals; Passes, List Available.
6. ASTM F1515, Light Stability; Excellent.
7. ASTM F1861, Standard Specification for Resilient Wall Base - Types TS, TP & TV, Group 1 & 2, Styles A&B; (Federal Specification SSW40a, Type II, Styles A&B).
8. NFPA 101 Life Safety Code, Wall Base; Interior floor trim material used at the junction of the wall and the floor to provide a functional or decorative border, and not exceeding 6 in. (150 mm) in height shall meet the requirements for the interior wall finish for its location or the requirements for Class II interior floor finish as described (CFR > .22 W/cm^2 / < .45 W/cm^2) using ASTM E 648. If Class I floor finish is required (CFR > .45 W/cm^2), the interior floor trim shall be Class I.

C. Products:
1. **Rubber Base - RB:** Traditional Wall Base; Colors: See Color Legend in drawings.
   a. Complies with ASTM F 1861 Type TP (Thermoplastic Rubber), Group 2.
      1) Profile: Standard Toe (Cove base)
      2) Height: 4” (101.6 mm)
      3) Length: 120’ (36.57 m) Coils (4 foot pieces are not acceptable)
   b. Thickness: 1/8” (3.175 mm)
      1) Corner Installation: Preformed inside and outside corners.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer’s requirements as published in manufacturer’s installation instructions.

B.

C. Adhesive: As recommended by manufacturer.

D. Caulking: As recommended by manufacturer.

3.02 EXAMINATION

A. Site Verification of Conditions: Confirm substrate conditions (which have been previously addressed under other sections) are acceptable for product installing in accordance with manufacturer's instructions.

B. Material Inspection: In accordance with manufacturer's installing requirements, visually inspect materials prior to installing. Material with visual defects shall not be installed.

3.03 PREPARATION

A. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage while installing.

B. Substrate Preparation: Prepare substrate to be smooth, rigid, flat, level, permanently dry, clean and free of foreign materials such as paint, dust, grease, oils, solvent, old adhesive residue, vinyl wall coverings, non-porous surfaces and all other contaminants that may interfere with adhesive bond.

C. Do not install over existing floor covering or over substrates not approved by manufacturer.

3.04 INSTALLING

A. Refer to Johnsonite installation instructions for specific resilient wall base detailed specifications on installing.
   1. Accessories: Architect shall specify manufacturers' color coordinated accessories as required, including (but not limited to) resilient wall base, stair nosing, reducers or other edgings, welding rods for heat welded seams.

3.05 FIELD QUALITY REQUIREMENTS

A. Manufacturer's Field Services: Upon Owner's request and with minimum 72 hours notice, provide manufacturer's field service consisting of product use recommendations and periodic site visits to confirm installing of product is in accordance with manufacturer's instructions.

3.06 PROTECTION

A. Protection: Protect installed product and finish surfaces from damage during construction. Remove and legally dispose of protective covering at time of substantial completion.

B. Restrict cleaning for first 72 hours.

3.07 INITIAL MAINTENANCE PROCEDURES

A. General: Include in contract sum cost for initial maintenance procedures and execution by professional maintenance personnel after resilient wall base has been installed for 72 hours as specified in the Johnsonite maintenance instructions.

3.08 CLEANING

A. Cleaning: See Johnsonite maintenance instructions. Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of.

END OF SECTION 096513

SECTION 096800 - CARPET

PART 1 - GENERAL

1.01 SUMMARY

A. Work under this section consists of furnishing all labor, material, tools, equipment, and carpet accessories needed for a complete proper installation of carpet as shown drawings and as specified herein.

1.02 SUBMITTALS

A. Shop Drawings showing columns, doorways, enclosing walls or partitions, built-in cabinets and locations where cutouts are required as well as direction of carpet pile and pattern, location of edge moldings shall be submitted to the architect for approval prior to installation.

B. Floor schedule using same room designations indicated on drawings.

C. Product Data: Provide data on specified products, describing physical and performance characteristics, sizes, patterns, colors available and method for installation.

D. Verification Samples: Submit samples illustrating color and pattern for each carpet material specified.

E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

F. Maintenance Data: Include maintenance procedures, recommendations for maintenance materials and equipment, and suggested schedule for cleaning.

G. Manufacturer's Product Warranty.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications:
   1. Company specializing in manufacturing specified carpet with minimum 2 years documented experience.
   2. Upon request, manufacturer to provide representative to assist in project start-up and to inspect installation while in process and upon completion. Representative will notify designated contact if any installation instructions are not followed.
   3. Single Source Responsibility: Obtain each type of product from one source and by single manufacturer.
   4. Installer Qualifications:
      1. Flooring contractor must be certified by the manufacturer prior to bid.
      2. Flooring contractor to be a specialty contractor normally engaged in this type of work and shall have prior experience in the installation of these types of materials.
      3. Flooring contractor possessing Contract for the product installation shall not sub-contract the labor without written approval of the Project Manager.
      4. Flooring contractor will be responsible for proper product installation, including floor testing and preparation as specified by the manufacturer and JOB CONDITIONS herein.
      5. Flooring contractor to provide Owner a written installation warranty that guarantees the completed installation to be free from defects in materials and workmanship for a period of one year after job completion.

1.04 DELIVERY, STORAGE AND HADLING

A. Deliver materials to the site in manufacturer's original packaging listing manufacturer's name, product name, identification number and related information.

B. Please see ethos Modular Installation & Floor Preparation Instructions for specific requirements for moisture vapor emission rate ambient conditions and other requirements.

C. All material used in sub-floor preparation and repair shall be recommended by the carpet manufacturer and shall be chemically and physically compatible with the carpet system being bid.

D. Maintain minimum 65 degrees F ambient temperature and 65% Relative Humidity for 72 hours prior to, during, and 48 hours after installation.

E. Do not install carpet until space is enclosed and weatherproof, wet-work in space is completed and nominally dray, work above ceilings is complete, and ambient temperature and humidity conditions are and will be continuously maintained at values near those indicated for final occupancy.

1.05 EXTRA MATERIALS

A. Provide one extra box of carpet tile to owner for future use.

PART 2 - PRODUCTS

2.01 PRODUCT SPECIFICATIONS

A. Electrostatic Discharge Carpet – ESDCPT: Provide "StaticSmart Plus Presidential Series" Level 3 ESD Carpet Tile OR approved equal.
   a. Face Yarn: Premium branded ECO Solution Q Nylon
   b. Weave/Surface Texture: Textured Loop
   c. Gauge: 1/10 inch.
   d. Backing Construction: ExoWorx
   e. Size: 24" x 24" Modular
   f. Color: To be selected
   g. Installation Pattern: Vertical Ashlar
   h. Adhesive: ESDvantage Conductive Adhesive
   i. Class 1

B. Carpet – CPT: Provide "Flame Edit" by Tarkett, OR approved equal
   a. Face Yarn: Dynex SD Nylon
   b. Weave/Surface Texture: Stratatec Patterned Loop
   c. Gauge: 5/64 inch.
   d. Backing Construction: Flex-Aire Modular Cushion
   e. Size: 24" x 24" Modular
   f. Color: See Color Legend in the drawings.
   g. Installation Pattern: Vertical Ashlar
   h. Adhesive: C12E (__%RH limit; pH limit)

C. ECPT: Provide "Assertive Rib" by Tarkett, OR approved equal
   a. Face Yarn: Dynex TDX Nylon
   b. Weave/Surface Texture: Stratatec Patterned Loop
   c. Gauge: 5/64 inch.
   d. Backing Construction: Flex-Aire Modular Cushion
      a. Minimum Recycled Content: 29.9%
      b. Secondary Backing: Fiberglass Reinforced Composite Closed Cell Cushion
      c. Intermediate Layer: Fiberglass Reinforced Sealant
      d. Product Construction: No Delamination ASTM D3936.
      e. Cushion Weight: 35.5 oz/sq yd
      f. Cushion Density (ASTM D-1667): 18.5 lbs/cu ft
      g. Cushion Thickness: 0.156 inch
      h. Compression Set: Max 10%
      i. Compression Deflection: 5 Min./25 Max. lbs/sq inch @25%
      j. Size: 24" x 24"
      k. Color: See Color Legend in the drawings.
      l. Installation Pattern: Vertical Ashlar
      m. Adhesive: C12E (__%RH limit; pH limit)

2.06 ACCESSORIES

A. Materials recommended by Manufacturer for patching, leveling, priming, etc.

B. Base, Carpet Edge, and Transition Strips: As noted on finish plans.

PART 3 – EXECUTION

3.01 EXAMINATION / PREPARATION

A. Prepared sub-floor to comply with criteria established in Manufacturer's installation instructions. Use only preparation materials that are acceptable to the Manufacturer.
   1. Remove all deleterious substances from substrates(s) that would interfere with or be harmful to the installation.
   2. Remove sub-floor ridges and bumps. Fill cracks, joints, holes, and other defects.
   3. Verify that sub-floor is smooth and flat within specified tolerances and ready to receive carpet.
   4. Verify that substrate surface is dust free and free of substances that would impair bonding of product to floor.
   5. Verify that concrete surfaces are ready for installation by conducting moisture and pH testing. Results must be within limits recommended by Manufacturer.
   6. There will be no exceptions to the provisions stated in the Manufacturer's installation instructions.

3.02 INSTALLATION - GENERAL

A. Install product in accordance with Manufacturer's installation instructions.

B. Product must meet the requirements of CRI's Green Label Plus (GLP) program for carpet. Provide documentation.

C. Adhesive must meet the requirements of CRI's Green Label Plus (GLP) program for adhesive. Provide documentation.

D. Adhesives must be below the VOC content limits specified by the South Coast Air Quality Management District Rule #1168. Provide Documentation.

E. No US EPA registered pesticides (antimicrobials) are to be added to the product. Antimicrobial treatments are registered with the EPA as preservatives of the products only, and no health benefit should be claimed or expected. If antimicrobials are added, then third party documentation with a seal is required stating that the pesticides used will cause NO HARM to the occupants. Installation adhesives are exempt from this section.

F. Product as installed to be securely attached to the floor in compliance with Americans with Disabilities Act (ADA), Section 4.5.3.

G. Where demountable partitions or other items are indicated for installation on top of finished carpet tile floor, install carpet tile before installation of these items.

H. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes outlets, edgings, thresholds, and nosing's.

I. Extend carpet tile into toe spaces, door reveals, closes, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

J. Roll with appropriate roller for complete contact of product with adhesive to sub-floor.

K. Trim carpet neatly at walls and around interruptions.

L. Completed product is to be smooth and free of bubbles, puckers and other defects.

3.03 PROTECTION & CLEANING

A. Remove excess adhesive and/or other from floor and wall surfaces without damage.

B. All rubbish, wrappings, debris, trimmings, etc. to be removed from site and disposed of properly.

C. Clean and vacuum surfaces using a beater/bar commercial vacuum.

D. After each area is installed, protect from soiling and damage by other trades.

END OF SECTION 096800

SECTION 098000 - ACOUSTICAL PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Results:
   1. Provide acoustic panel treatment.

B. Principal Products:
   1. Acoustic panel treatment - walls:
      a. Flat panel

1.2 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For manufacturer's product lines and accessories.
   1. Include construction details, mounting, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings:
   1. Include mounting devices and details; details at panel head, base, joints, and corners; and details at ceiling, floor base, and wall intersections. Indicate panel edge and core materials.
   2. Include plans and elevations showing panel sizes and direction of fabric weave and pattern matching.

C. Samples for Initial Selections: For each type of fabric facing from acoustic treatment unit manufacturer's full range.

D. Samples for Verification: For the following products:
   1. Fabric: Full-width by approximately **36-inch** long Sample, but not smaller than required to show complete pattern repeat, from dye lot to be used for the Work, and with specified treatments applied. Mark top and face of fabric.
   2. Panel Edge: **12-inch** long Sample(s) showing each edge profile, corner, and finish.
   3. Mounting Devices: Full-size Samples.
   4. Assembled Panels: Approximately **36 by 36 inches**, including joints and mounting methods.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Elevations, plans, and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
   1. Electrical outlets, switches, and thermostats.
   2. Suspended ceiling components above acoustic treatment units.
   3. Structural members to which suspension devices will be attached.
   4. Items penetrating or covered by acoustic treatment units including the following:
      a. Lighting fixtures.
      b. Air outlets and inlets.
      c. Speakers.
      d. Alarms.
      e. Sprinklers.
      f. Access panels.
   5. Show operation of hinged and sliding components covered by or adjacent to acoustic treatment units.

B. Product Certificates: For each type of acoustic treatment unit, from manufacturer.

C. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sound-absorbing wall units to include in maintenance manuals. Include fabric manufacturers' written cleaning and stain-removal recommendations.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials from same production run that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Fabric: For each fabric, color, and pattern installed, provide length equal to **10** percent of amount installed, but no fewer than **10 yards.**
   2. Mounting Devices: Full-size units equal to **5** percent of amount installed, but no fewer than **five** devices, including unopened adhesives.

1.7 QUALITY ASSURANCE

A. Flame spread/smoke developed index with Class A fire rated certification when tested in accordance with ASTM E84.

B. Installer's Qualifications: A firm experienced in producing acoustic treatment similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.
   1. Build mockups of typical wall and ceiling area **as directed by Architect**.
   2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
   3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturers' written instructions for minimum and maximum temperature and humidity requirements for shipment, storage, and handling.

B. Deliver materials in unopened bundles.

C. Store materials in cool, dry, well ventilated area out of direct sunlight and away from heat sources.

D. Do not allow water to come into direct contact with material during storage.

E. Do not store materials longer than 6 months.

1.9 FIELD CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

B. Field Measurements: Verify field measurements before fabrication.

1.10 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of acoustical units that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to the following:
   a. Acoustical performance.
   b. Fabric sagging, distorting, or releasing from panel edge.
   c. Warping of core.
2. Warranty Period: Two years from date of shipment

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide Zintra Acoustic Solutions by MDC Interior Solutions 400 High Grove Blvd. Glendale Heights, IL 60139

1. Stacy Perez (904) 927-6675

B. Source Limitations: Obtain acoustic treatment system from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General Requirements for Acoustic Treatment: Provide systems that comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. Fire-Test-Response Characteristics: Provide fabric systems meeting the following requirements as determined by testing identical products by UL 723, UBC, or another testing and inspecting agency acceptable to authorities having jurisdiction:

1. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
   a. Flame-Spread Index: [25] <Insert value> or less.
   b. Smoke-Developed Index: [450] <Insert value> or less.
2. Fire Growth Contribution: Comply with acceptance criteria of local code and authorities having jurisdiction when tested according to [NFPA 265] [NFPA 286].

2.3 ACOUSTIC PANEL TREATMENT - WALLS

A. Flat Panel

1. Configuration: As indicated on Drawings.
2. Maximum Size: 48” x 108” – See drawings for sizes.
3. Nominal Thickness: 1/2".
4. Color: As selected by Architect from manufacturer's full range.
5. Composition: Zintra Acoustic Panel - 100% Solution Dyed Polyester
6. Acoustical Performance: Direct mount NRC of 0.45
7. Installation Materials:
   a. Installation Products, General: Concealed on back of system, recommended by manufacturer, and as follows:
      1) Fasteners: Z clips

2.4 MATERIALS

A. Composition: 100 percent virgin polyethylene terephthalate (PET).

B. Core Material: Manufacturer's standard.

C. Extruded Aluminum: ASTM B 221 (ASTM B 221M), Alloy 6063.

2.5 GENERAL FINISH REQUIREMENTS

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

2.6 FABRICATION

A. General: Use manufacturer's standard construction except as otherwise indicated; with facing material applied to face, edges, and back border of dimensionally stable core; and with rigid edges to reinforce panel perimeter against warpage and damage.

B. Facing Material: Apply fabric facing fully covering visible surfaces of unit; with material stretched straight, on the grain, tight, square, and free from puckers, ripples, wrinkles, sags, blisters, seams, adhesive, or other visible distortions or foreign matter.
   1. Square Corners: Tailor corners.
   2. Fabrics with Directional or Repeating Patterns or Directional Weave: Mark fabric top and attach fabric in same direction so pattern or weave matches in adjacent units.

C. Dimensional Tolerances of Finished Units: Plus or minus 1/16 inch for the following:
   1. Thickness.
   2. Edge straightness.
   3. Overall length and width.
   4. Squareness from corner to corner.
   5. Chords, radii, and diameters.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fabric, fabricated units, substrates, areas, and conditions, for compliance with requirements, installation tolerances, and other conditions affecting performance of sound-absorbing wall units.

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

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for installation of acoustic treatment units using type of mounting devices indicated. Mount units securely to supporting substrate.

B. Unroll acoustic panels sheets and allow it to stabilize before cutting and fitting.

C. Align and level fabric pattern and grain among adjacent units.

D. Install wall units in locations indicated with vertical surfaces and edges plumb, top edges level and in alignment with other units, faces flush, and scribed to fit adjoining work accurately at borders and at penetrations.

E. Install ceiling units in locations indicated with edges in alignment with walls and other units, faces flush, and scribed to fit adjoining work accurately at borders and at penetrations.

3.3 INSTALLATION TOLERANCES

A. Variation from Alignment with Surfaces: Plus or minus 1/16 inch.

B. Variation from Level or Slope: Plus or minus 1/16 inch.

C. Variation of Panel Joints from Hairline: Not more than 1/16 inch.

3.4 CLEANING

A. Vacuum clean panels on completion of installation to remove dust and other foreign materials according to manufacturer's written instructions.

B. Remove spills immediately using clean damp cloth or with soap and water.

END OF SECTION 098000

SECTION 099100 - PAINTING

PART 1 - GENERAL

1.01 NOT USED

1.02 RELATED DOCUMENTS

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

1.03 DESCRIPTION OF WORK

A. Painting and finishing of interior and exterior items and surfaces, unless otherwise indicated.

B. Includes field painting of bare and covered pipes and ducts (including color coding), and hangers, exposed steel and iron work, and primed metal surfaces of equipment installed under mechanical and electrical work.

C. Paint exposed surfaces, except as otherwise indicated, whether or not colors are designated. If not designated, colors will be selected by Architect from designer colors available for the coatings required.

1.04 WORK NOT INCLUDED: Unless otherwise indicated, shop priming of ferrous metal items and fabricated components are included under their respective trades. Pre-finished items are not included.

A. Unless otherwise indicated, painting not required on surfaces of concealed areas except for piping, equipment and other such items within concealed spaces. Finished metals such as anodized aluminum, stainless steel, bronze, and similar metals will not be painted. Do not paint any moving parts of operating units, or over any equipment identification, performance rating, name or nomenclature plates or code-required labels.

1.05 RELATED SECTIONS

A. Division 3 - Cast in Place Concrete

B. Division 4 - Concrete Masonry Units

C. Division 8 - Steel Doors and Frames

D. Division 9 - Gypsum Drywall

1.06 FLAME SPREAD RATING

A. Class A (0-25) over non-combustible surfaces.

1.07 SUBMITTALS: In addition to manufacturer's data, application instructions, and label analysis for each coating material, submit samples for Architect's review of color and texture only. Resubmit samples if requested until required sheen, color and texture is achieved.

A. On 8" x 8" hardboard, provide samples of each color and material, with texture to simulate finish conditions.

B. On actual wall surfaces and other building components, duplicate painted finishes of acceptable samples, as directed by Architect. Final acceptance of paint color and texture shall be from wall sample.

1.08 PROJECT CONDITIONS

Do not apply paint in rain, fog or mist or when relative humidity exceeds 85%. Do not apply paint to damp or wet surfaces or before the building is weathered in.

1.09 EXTRA MATERIALS

A. Furnish extra paint materials from the same production run as the materials applied. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner. Furnish Owner with 1 gal. of each material and color applied.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Provide specified paint by Sherwin-Williams Company OR approved equal by one of the following paint manufacturers:
1. Pittsburgh Paints.
2. Benjamin Moore.

2.02 PAINT MATERIALS - GENERAL

A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates recommended by manufacturer.

B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

2.03 PAINT SCHEDULE

A. **Exterior Surfaces:**

1. **Concrete Masonry Units (Exterior):**
   - 1st Coat: S-W Loxon Block Surfacer, A24W200 (50-100 sq ft/gal; VOC 81 g/L, 0.68 lb/gal)
   - 2nd Coat: S-W PRO Industrial Acrylic Semi-Gloss Coating, B66-650 Series
   - 3rd Coat: S-W PRO Industrial Acrylic Semi-Gloss Coating, B66-650 Series (2.5-4 mils dry per coat; VOC 0 g/L)

2. **Galvanized Metal (Exterior): Semi-Gloss Finish**
   - 1st Coat: S-W PRO Industrial Acrylic Semi-Gloss Coating, B66-650 Series
   - 2nd Coat: S-W PRO Industrial Acrylic Semi-Gloss Coating, B66-650 Series (2.5-4 mils dry per coat; VOC 0 g/L)

3. **Ferrous Metal (Exterior) (Shop Primed Metal):**
   - 1st Coat: S-W PRO Industrial Acrylic Semi-Gloss Coating, B66-650 Series
   - 2nd Coat: S-W PRO Industrial Acrylic Semi-Gloss Coating, B66-650 Series (2.5-4 mils dry per coat; VOC 0 g/L)

4. **Concrete Tilt Walls (Exterior):**
   - 1st Coat: S-W Loxon Masonry Primer LX2W50 (2.1-3.2 mils dry)
   - 2nd Coat: S-W Loxon XP Masonry Coating, LX11 Series.
   - 3rd Coat: S-W Loxon XP Masonry Coating, LX11 Series (14-18 mils wet/ coat)
   - 4th Coat: S-W Loxon Self Cleaning Acrylic Coating with a satin finish LX14 series (2.0-2.8 mils dry)

5. **Metal: Hollow Metal Doors/Frames, Handrails: Semi-Gloss Finish**
   - 1st Coat: S-W PRO Industrial Pro-Cryl Universal Metal Primer, B66 Series
   - 2nd Coat: S-W PRO Industrial Waterbased Alkyd Urethane, B53-1150 Series
   - 3rd Coat: S-W PRO Industrial Waterbased Alkyd Urethane, B53-1150 Series (1.4-1.7 dry mils per coat)

B. **Interior Surfaces**:

1. **Gypsum Drywall (Interior):**
   - 1st Coat: S-W ProMar 200 Zero VOC Latex Primer, B28W2600 (4 mils wet, 1.5 mils dry; VOC 0.0 g/L, 0.0 lb/gal)
   - 2nd Coat: S-W ProMar 200 Zero VOC Latex Eg-Shel, B20-2600 Series
   - 3rd Coat: S-W ProMar 200 Zero VOC Latex Eg-Shel, B20-2600 Series (4 mils wet, l.6 mils dry per coat; VOC 0.0 g/L, 0.0 lb/gal)

2. **Gypsum Drywall (Wet Areas – where EP is scheduled)**:
   Semi-Gloss Finish
   - 1st Coat: S-W ProGreen 200 Interior Latex Primer, B28W600 (4 mils wet, 1.5 mils dry; VOC 49 g/L, 0.36 lb/gal)
   - 2nd Coat: S-W ProIndustrial Pre-Catalyzed Waterbased Epoxy, K46
   - 3rd Coat: S-W ProIndustrial Pre-Catalyzed Waterbased Epoxy, K46 (4.0 mils wet, 1.5 mils dry per coat; VOC 155 g/L, 1.29 lb/gal)

3. **Concrete Masonry Units and Concrete (Interior)**:
   Semi-Gloss Finish
   - 1st Coat: S-W Loxon Block Surfacer, LX1W200 (50-100 sq ft/gal; VOC <100 g/L)
   - 2nd Coat: S-W ProMar 200 Zero VOC Latex Semi-gloss, B31-2600 Series
   - 3rd Coat: S-W ProMar 200 Zero VOC Latex Semi-gloss, B31-2600 Series (4 mils wet, l.6 mils dry per coat; VOC 0.0 g/L, 0.0 lb/gal)

4. **Concrete Masonry Units (Wet Areas – where EP is scheduled)**:
   - 1st Coat : S-W Loxon Block Surfacer, A24W200 (50-100 sq ft/gal; VOC 81 g/L, 0.68 lb/gal)
   - 2nd Coat: S-W ProIndustrial Pre-Catalyzed Waterbased Epoxy, K46
   - 3rd Coat: S-W ProIndustrial Pre-Catalyzed Waterbased Epoxy, K46 (4.0 mils wet, 1.5 mils dry per coat; VOC 155 g/L, 1.29 lb/gal)

   Note: Paint all Dorm Areas Exposed to Detainees up to 8'-0" in height with Epoxy Paint unless noted otherwise on the Finish Schedule

5. **Concrete Floor (Interior – where SC is scheduled)**:
   - 1st Coat: S-W ArmorSeal Tread-Plex, B90 Series
   - 2nd Coat: S-W ArmorSeal Tread-Plex, B90 Series (1.5-2.0 mils dry, per coat; VOC <100 g/L, 0.83 lb/gal)

6. **Galvanized Metal (Interior)**:
   - Primer: S-W Pro-Cryl Universal Primer, B66-310 Series (5.0-10.0 mils wet, 2.0-4.0 mils dry; VOC <100 g/L, <0.93 lb/gal)
   - 1st Coat: S-W PRO Industrial Acrylic Semi-Gloss Coating, B66-650 Series
   - 2nd Coat: S-W PRO Industrial Acrylic Semi-Gloss Coating, B66-650 Series (2.5-4 mils dry per coat; VOC 0 g/L)

7. **Ferrous Metal (Interior)**:
   - Primer: S-W Pro-Cryl Universal Primer, B66-310 Series (5.0-10.0 mils wet, 2.0-4.0 mils dry; VOC <100 g/L, <0.93 lb/gal)
   - 1st Coat: S-W PRO Industrial Acrylic Semi-Gloss Coating, B66-650 Series
   - 2nd Coat: S-W PRO Industrial Acrylic Semi-Gloss Coating, B66-650 Series (2.5-4 mils dry per coat; VOC 0 g/L)

8. **Metal: Hollow Metal Doors/Frames, Handrails: Semi-Gloss Finish**
   - 1st Coat: S-W PRO Industrial Pro-Cryl Universal Metal Primer, B66 Series
   - 2nd Coat: S-W PRO Industrial Waterbased Alkyd Urethane, B53-1150 Series
   - 3rd Coat: S-W PRO Industrial Waterbased Alkyd Urethane, B53-1150 Series (1.4-1.7 dry mils per coat)

9. **Painted Woodwork - Trim, Doors, Windows (Interior)**:
   - 1st Coat: S-W PrepRite ProBlock Interior/Exterior Latex Primer Sealer, B51 Series (4 mils wet, 1.4 mils dry; 96 g/L, 0.80 lb/gal)
   - 2nd Coat: S-W PRO Industrial Acrylic Semi-Gloss Coating, B66-650 Series
   - 3rd Coat: S-W PRO Industrial Acrylic Semi-Gloss Coating, B66-650 Series (2.5-4 mils dry per coat; VOC 0 g/L)

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application.
   1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
   2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.
   3. Notify Architect about anticipated problems when using the materials specified over substrates primed by others.

3.02 PREPARATION

A. Remove hardware and accessories, machined surfaces, plates, lighting fixtures and similar items in place and not to be finish-painted or provide surface-applied protection. Reinstall removed items and remove protective coverings at completion of work.

B. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer=s written instructions for each particular substrate condition and as specified.
   1. Cementitious Surfaces: Prepare concrete, concrete masonry, cement plaster and surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation. Determine alkalinity and moisture content of surfaces to be painted. Do not paint surfaces where moisture content exceeds that permitted in manufacturer's printed directions.
   2. Wood: Clean surfaces of dirt, oil, or other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth, and dust off.
      a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After primer, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand
      b. Prime, stain, or seal wood to be painted immediately upon delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling.
      c. Seal tops, bottoms, and cut-outs of unprimed wood doors with a heavy coat of varnish or sealer immediately upon delivery.

C. Ferrous Metals: Clean non-galvanized ferrous metal surfaces that have not been shop-coated; remove oil, grease, dirt, loose mill scale and other foreign substances. Use solvent or mechanical cleaning methods that comply with recommendations of the Steel Structures Painting Council. Touch-up shop-applied prime coats that have been damaged, and bare areas. Wire-brush, clean with solvents and touch-up with the same primer as the shop coat.

D. Galvanized Surfaces: Clean galvanized surfaces with non-petroleum based solvents so that surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock, by mechanical methods.

E. Material Preparation: Mix and prepare paint materials according to manufacturer's written instructions.

3.03 APPLICATION:

A. Apply painting and finishing materials in accordance with manufacturer's directions. Use applicators, and techniques best suited for materials and surfaces to which applied.

B. Apply additional coats when undercoats, stains or other conditions show through final paint coat, until paint film is of uniform finish, color and appearance.

C. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only before equipment is installed.

D. Paint interior surfaces of ducts, where visible through registers or grilles, flat, non-specular black.

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

F. Sand lightly between exceeding enamel or varnish coats.

G. Omit first coat (primer) on metal surfaces which have been shop-primed and touch-up painted, unless otherwise specified.

H. Apply prime coat to material which is required to be painted or finished, and which has not been prime coated by others.

I. Apply each material at not less than manufacturer's recommended spreading rate, to provide a total dry film to thickness of not less than 4.0 mils for entire coating system of prime and finish coats for 3-coat work.

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

3.05 PROTECTION:

A. Protect work of other trades. Correct any painting related damages by cleaning, repairing or replacing, and refinishing, as directed by Architect.

3.06 COORDINATION:

A. Provide finish coats which are compatible with prime paints used. Provide barrier coats over incompatible primers where required. Notify Architect in writing of anticipated problems using specified coatings with substrates primed by others.

3.07 COMPLETED WORK

A. Match approved samples for color, texture and coverage. Remove, refinish or repaint work not in compliance with specified requirements.

END OF SECTION 099100

SECTION 101000 - MARKERBOARDS AND TACKBOARDS

PART 1 - GENERAL

1.01 Submittals: Submit product data showing elevations and sections of trim members. Submit samples of tackboard fabric for selection of colors.

1.02 Markerboard Warranty: Furnish written warranty, agreeing to replace chalkboards that do not retain their original writing and erasing qualities, become slick and shiny, or exhibit crazing, cracking, or flaking, provided manufacturer's instructions with regard to handling, installation, protection, and maintenance have been followed. Warranty Period - 50 years.

PART 2 - PRODUCTS

2.01 Porcelain Enamel Markerboard : Provide porcelain enamel steel markerboard of 3-ply construction consisting of face sheet, core material, and backing. Provide markerboard by Claridge Products and Equipment, Inc., Polyvision NACO Brand OR approved equal.

A. Face Sheet: 24-gage porcelain enamel steel

B. Cover Coat: Light-colored special writing surface with gloss finish for use with liquid felt-tipped markers. Color to be white.

C. Core: 3/8-inch-thick particleboard or fiberboard, as per manufacturer, ANSI A208.1, Grade 1-M-1.

D. Backing Sheet: 0.015-inch-thick aluminum sheet or 26-gage galvanized steel sheet.

E. Laminating Adhesive: Moisture-resistant thermoplastic adhesive.

2.02 Cork Tackboards: Provide mildew-resistant, washable, self-seaming, 1/4" thick cork sheet with 1/4" thick burlap on hardboard backing, “Claridge Cork” by Claridge Products and Equipment, Inc., Gold Seal Bulletin Board Cork by Forbo Industries, OR Newline Products, Inc. (NPI). Provide flame spread rating of 25 or less when tested in accordance with ASTM E 84. Color to be selected by the Architect from the manufacturer's full range of colors.

2.03 Metal Trim and Accessories: Fabricate frames and trim of not less than 0.062-inch-thick aluminum alloy, size and shape as indicated, to suit type of installation. Provide straight, single-length units wherever possible; keep joints to a minimum. Miter corners to a neat, hairline closure.

A. Where size of boards or other conditions exist that require support in addition to the normal trim, provide structural supports or modify trim as indicated.

B. Markertray: Furnish manufacturer's standard continuous box-type aluminum markertray with slated front and cast aluminum end closures for each markerboard.

C. Map Rail: Furnish map rail at the top of each unit, complete with the following accessories:

D. Display Rail: Continuous cork display rail approximately 1 or 2 inches wide, as indicated, integral with the map rail.

E. End Stops: One end stop at each end of the map rail.

F. Map Hooks: 2 map hooks for each 4 feet of map rail or fraction thereof.

G. Flagholder: One flagholder for each room.

2.05 Fabrication: Laminate porcelain enamel facing sheet and backing sheet to core material with flexible, waterproof adhesive.

2.06 Assembly: Provide factory-assembled units, except where field- assembled units are required. Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, balanced around center of the board. Provide "hairline" vertical joint system between abutting sections of markerboard. Provide mullion trim at joints between markerboard and tackboard.

2.07 Finishes: Comply with NAAMM "Metal Finishes Manual."
Class II Clear Anodized Finish: AA-M12C22A31

PART 3 - EXECUTION

3.01 Installation: Deliver factory-built units completely assembled in one piece. Where dimensions exceed panel size, provide 2 or more pieces of equal length. When overall dimensions require delivery in separate units, prefit components at the factory, disassemble for delivery, and make final joints at the site. Use splines at joints to maintain surface alignment.

3.02 Install units in locations and mounting heights indicated in accordance with manufacturer's instructions. Keep perimeter lines straight, plumb, and level. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for a complete installation. Units shall be mechanically attached, the use of adhesives is allowed only in conjunction with mechanical fastening.

3.03 Coordinate job-site-assembled units with grounds, trim, and accessories. Join parts with a neat, precision fit.

3.04 Clean in accordance with manufacturer's instructions.

END OF SECTION 101000

SECTION 101600 - TOILET COMPARTMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Solid plastic toilet compartments including the following: (Hiny Hiders)
   1. Floor mounted overhead-braced toilet compartments.
   2. Privacy screens – floor to ceiling.

1.02 RELATED SECTIONS

A. Division 5 – Metal Fabrications

B. Division 6 – Rough Carpentry

1.03 REFERENCES

A. ASTM A 666 – Standard Specification for Stainless Steel and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.

B. ASTM B 221 – Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profile and Tubes.

C. National Fire Protection Association (NFPA) 286 – Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

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

E. United States EPA (Environmental Protection Agency) Registration – Bactericidal Surfaces Registered with the U.S. EPA to Legally Make Claims that these Materials Kill Infectious Bacteria.

1.04 SUBMITTALS

A. Submit under provisions of Division 1.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements.
   3. Installation methods.

C. Shop Drawings: Provide layout drawings and installation details with location and type of hardware required.

D. Verification Samples: Fore each finish product specified, two samples representing actual product, color and patterns. IF requested by architect.

1.05 QUALITY ASSURANCE

A. Manufacturer's Qualifications: A company regularly engaged in manufacture of products specified in this section, and whose products have been in satisfactory use under similar service conditions for not less than 5 years.

B. Installer's Qualifications: A Company or Individual, regularly engaged in installation of products specified in this Section, with a minimum of 5 years experience.

C. Materials: Doors, panels and pilasters, construction from high density polyethylene (HDPE) resins. Partitions to be fabricated from polymer resins compounded under high pressure, forming

a single component which is waterproof, nonabsorbent and has a self-lubricating surface that

resists marks from pens, pencils, markers and other writing instruments. Cover all plastic components with protective plastic masking.

D. Performance Requirements:
   1. Fire Resistance: Partition materials shall comply with the following requirements, when tested in accordance with the ASTM E 84:
      a. Class B flame spread/smoke developed rating.
   2. Material Fire Ratings:
      a. National Fire Protection Association (NFPA) 286: Pass.
      b. International Code Council (ICC): Class B.
   3. Antimicrobial Touch Surfaces: Hardware touch surfaces shall be manufactured from substrates that are registered with the U.S. EPA to kill specific bacterial tested according to U.S. EPA protocols.

1.06 DELIVERY, STORAGE AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation

1.07 PROJECT CONDITIONS

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

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Provide toilet partitions as manufactured by Scranton Products OR Approved equal.
   1. Fabricators: Santana, Cometc or Capitol.

2.02 MATERIAL

A. Plastic Panels: High Density Polyethylene (HDPE) suitable for exposed applications, waterproof, nonabsorbent and graffiti-resistant textured surface.

B. Zinc Aluminum Magnesium and Copper Alloy (Zamac): ASTM B 86.

C. Stainless Steel Castings: ASTM A167, Type 304.

D. Aluminum: ASTM 6463-T5 alloy.

2.03 SOLID PLASTIC TOILET COMPARTMENTS

A. Hiny Hiders Toilet Compartments as manufactured by and supplied by Scranton Products.
   1. Style: Floor mounted overhead-braced toilet compartments.
   2. Style: Floor-to-ceiling privacy (urinal) screens.

B. Doors, Panels and Pilasters: 1 inch thick with all edges rounded to a radius. Mount doors and dividing panels based on height of specified system.
   1. Door and Panel Height (toilet compartments): 66 inches.
   2. Panel Height (privacy/urinal screen): 42 inches. (24 inches wide)
   3. Panel Edge: Standard.
   4. Pilasters (toilet compartments): 82 inches high and fastened to the floor.
   5. Pilasters (privacy/urinal screen): Height of ceiling.
   6. Aluminum heat sinc fastened to the bottom edges of panels.

C. Panel Color: see color legend on drawings

D. Pilaster Shoes: 3 inches high, 20 gauge stainless steel.

E. Headrail: Heavy-duty extruded 6463-T5 alloy aluminum with anti-grip design. Finish to be clear anodized. Fastened to headrail brackets with stainless steel tamper resistant Torx head sex bolt, and fastened at the top of the pilaster with stainless steel tamper resistant Torx head screws.
   1. Headrail Brackets: 20 gauge stainless steel with satin finish. Secured to the wall with stainless steel tamper resistant Torx head screws.

F. Wall Brackets:
   1. Aluminum Brackets: Heavy-duty aluminum 6463-T5 alloy.
   2. Brackets are fastened to pilasters with stainless steel tamper resistant Torx head screws and fastened to the panels with stainless steel tamper resistant Torx head sex bolts.
   3. Bracket Type: Continuous 54 inches aluminum.

G. Door Hardware:
   1. Wrap-Around Hinges: 8 inches and fabricated from heavy-duty extruded aluminum. Hinges are through-bolted to pilasters and doors with stainless steel tamper resistant Torx head sex bolts. Hinges operate with field adjustable nylon cams.
   2. Door Strike/Keeper: Heavy-duty extruded aluminum 6436-T5 alloy with bright dip anodized finish. Secured to pilasters with stainless steel tamper resistant Torx head sex bolts. Bumper shall be made of extruded black vinyl.
   3. Latch Mechanism: Healthy Hardware Slide Bolt, Pulls and Coat Hook: Made from U.S. EPA registered materials by manufacturer currently holding U.S. EPA Company Number, U.S. EPA Establishment Number and California Broker's License. Satin finish.
   4. Doors supplied with one coat hook/bumper and pull made of Healthy Hardware.
   5. Equip outswing handicapped doors with second door pull and door stop. Door pulls shall be ADA compliant.

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 the Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

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. Examine areas to receive toilet partitions and screens for correct height and spacing of anchorage/blocking and plumbing fixtures that affect installation of partitions. Report discrepancies to the architect.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install partitions rigid, straight, plumb and level in layout shown on shop drawings.

C. Clearance at vertical edges of doors shall be uniform top and bottom and shall not exceed 3/8 inch.

D. No evidence of cutting, drilling and/or patching shall be visible on the finished work.

E. Finished surfaces shall be cleaned after installation and be left free of imperfections.

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 101600

SECTION 102800 - TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and Division 1 Specification Sections, apply to this section.

1.02 SUBMITTALS

A. Product Data: For each type of product included. Include the following:

1. Construction details and dimensions.
2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
3. Material and finish descriptions.
4. Manufacturer's warranty.

B. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

1.03 STRUCTURAL REQUIREMENTS: All grab bars and their mounting devices shall withstand a downward load of at least 250 lbs. of force when tested according to method in ASTM F 446.

1.04 WARRANTY

A. Special Mirror Warranty: Manufacturer=s standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within a 5-year period from date of Substantial Completion.

PART 2 – PRODUCTS

2.01 MANUFACTURER: Provide toilet and bath accessories as manufactured by Bobrick OR approved equal.

2.02 GENERAL: Provide toilet and bath accessories as scheduled. Install units at locations and heights as indicated, plumb and level, firmly anchored, in accordance with manufacturer's instructions.

2.03 MATERIALS:

A. Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 22 gage minimum, unless otherwise indicated.

B. Mirror Glass: 1/4" thick, Type I, Class 1, Quality q2, conforming to FS DD-G-451, with silvering, copper coating, and protective organic coating complying with FS DD-M-411.

C. Galvanized Steel Sheet: ASTM A 527, G60.

D. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.

E. Fasteners: Screws, bolts, and other devices of same material as accessory unit or of galvanized steel where concealed.

2.04 GENERAL FABRICATION: Stamped names or labels on exposed faces of toilet and bath accessory units are not permitted, however unobtrusive labels indicating manufacturer and model number are required on surface not exposed to view. Wherever locks are required for particular type of accessory, provide same keying throughout project. Furnish two keys for each lock, properly identified.

A. Mirror Fabrication: Fabricate frames for glass mirrors to accommodate wood, felt, plastic, or other glass edge protection material. Provide mirror backing and support system which will permit rigid, tamperproof glass installation and prevent accumulation of moisture.

B. Surface-Mounted Accessories: Fabricate units with tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous piano hinge or minimum of two 1-1/2" pin hinges of same metal as unit cabinet. Provide concealed anchorage wherever possible.

C. Recessed Toilet Accessories, General: Except where otherwise indicated, fabricate units of all welded construction, without mitered corners. Hang doors or access panels with full-length stainless steel piano hinge. Provide anchorage that is fully concealed when unit is closed.

2.05 TOILET ACCESSORY ITEMS: Provide the following toilet accessories by Bobrick Washroom Equipment Inc. OR approved equal, unless otherwise noted.

A. Grab Bars: Grab bar and concealed mounting plates shall be constructed of type-304 stainless steel with satin finish (or satin finish with peened gripping surface; add .99 suffix to model number). Grab bar shall have wall thickness of 18-gauge (1.2mm) and outside diameter of 1-1/2" (38mm). Distance from inside of grab bar to finished wall shall be 1-1/2" (38mm). Concealed mounting flanges shall be 1/8" (3mm) thick stainless steel plate, 2" x 3-1/8" (50 x 80mm) and equipped with two screws holes for wall attachment. Flange covers shall be 22 gauge (0.8mm), 3-1/4" (85 mm) diameter x ½" (13mm) deep and shall snap over mounting flanges to conceal mounting screws. Grab bar shall have 90º return to flange. Ends of grab bar shall pass through flanges and be heliarc welded to form one structural unit. Grab bar shall comply with barrier-free accessibility guidelines (including ADAAG in the U.S.A.) for structural strength. ***(B-6806-36; B-6806-42; Two Wall Grab Bar B-68616 (24" x 36"; Three wall grab bar- see enlarged plans for size.)***

B. Stainless Steel Framed Mirrors: Mirror shall have a one-piece type-430 stainless steel channel frame, ½" x ½" x 3/8" (13 x 13 x 9.5mm), with 90◦ mitered corners; all exposed surfaces shall have bright polished finish. Select float glass mirror shall be guaranteed for 15 years against silver spoilage. Corners shall be protected by friction-absorbing filler strips and the back shall be protected by full-size, shock-absorbing, water resistant, nonabrasive, 3/16"(5mm) thick polyethylene padding. Galvanized steel back shall have integral horizontal hanging brackets located at top and bottom for mounting on concealed rectangular wall hanger to prevent the mirror from pulling away from the wall. Locking devices secure mirror to concealed wall hangar. Mirror shall be removable from the wall. ***(B-165 2436 24" x 36" in single restrooms.)***

C. Surface Mounted Multi-Roll Toilet Tissue Dispenser: Surface-mounted multi-roll toilet tissue dispenser shall be constructed of type-304 stainless steel with all-welded construction including dispensing mechanism, inner housing and cam; all exposed surfaces shall have satin finish. Front of toilet tissue dispenser shall be 22-gauge (0.8mm), drawn, one-piece, seamless construction; and shall be equipped with a tumbler lock. Unit shall dispense two 5-1/4" (135mm) diameter (1800 sheets) toilet tissue rolls. Roll held in reserve shall automatically drop into place after bottom roll is depleted. Unit shall be equipped with two theft-resistant, one-piece, molded ABS spindles. ***(B-2888)***

D. Surface Mounted Soap Dispenser: Surface-mounted soap dispenser shall be constructed of type-304 stainless steel with satin finish. Corrosion-resistant valve shall dispense commercially marketed all-purpose hand soaps. Valve shall be operable with one hand and with less than 5 pounds of force (22.2 N) to comply with barrier-free accessibility guidelines (including ADAAG in the U.S.A.). Container shall be equipped with a clear acrylic refill-indicator window; a locked, hinged stainless steel lid for top filling; and shall have a capacity of 40-fl oz (1.2-L). Unit shall have concealed, vandal-resistant mounting. ***(B-2111)***

E. Surface Mounted Paper Towel Dispenser: Surface-mounted paper towel dispenser shall be constructed of 22-gauge (0.8mm), type-304 stainless steel with all-welded construction; exposed surfaces shall have satin finish. Door shall be secured to cabinet with full-length stainless steel piano hinge and be equipped with a tumbler lock keyed. Paper towel tray shall have hemmed opening to dispense paper towels without tearing. Unit shall be capable of dispensing 400 C-fold or 525 multifold towels measuring 3-1/8" to 3-13/16" (79 to 97 mm) deep. ***(B-262-130)***

F. Mop and Broom Holder/Utility Shelf:
1. Mounting Base and Shelf: 18-8, Type-304, 18-gauge stainless steel with satin finish. All welded construction. Shelf is 8" deep with 3/4" return edge on all three sides. Front edge is hemmed for safety.
2. Shelf Support Brackets: 18-8, Type-304, 16-gauge stainless steel with satin finish. Welded to mounting base and shelf.
3. Mop/Broom Holders (3): Spring-loaded rubber cams with anti-slip coating. Plated steel retainers. Accommodate handles from 7/8" to 1-1/4" diameter.
4. Hooks (4): 18-8, Type-304, 12-gauge stainless steel with satin finish. Each hook attached to mounting strip with two rivets.
5. Size: 34" long x 8" deep x 13" high
6. Model: ***(B-239 x 34)***

G. Double Robe Hook:
1. Flange and Support Arm: 18-8, Type-304, 22-gauge stainless steel with a satin finish. Concealed, 18-gauge stainless steel mounting bracket. All-welded construction. Secured to wall plate with a stainless steel setscrew.
2. Concealed Wall Plate: 18-8, Type-304, 19-gauge stainless steel with a satin finish.
3. Cap: 18-8, Type-304, 14-gauge stainless steel with a satin finish. Welded to the Support arm.
4. Model: ***(B-76727)***

H. Diaper Changing Station:
1. Materials: Injection-molded polypropylene with Microban antimicrobial additive embedded into the bed surface. Reinforced steel-on-steel hinge mechanism and metal mounting chassis with mounting hardware included. Labelled usage instructions and safety messages in four languages. Braille label included. Contoured changing surface area is 450 sq. in. and comes complete with nylon safety strap and bag hooks. Dual cabinet liner dispenser holds approximately 50 KB150-99 bed liners.
2. Standards: Unit shall be compliant with the 2010 ADA Standards for Accessible Design and the 2009 ICC A117.1, Accessible and Usable Buildings and Facilities. Unit shall conform to ASTM F 2285-04 Standard Safety Performance Specification for Diaper Changing Tables for Commercial Use, NSI Z535.4. ASTM G22 Antibacterial standards or local code if more stringent.
3. Model: ***(KB-200)*** Color to be selected by Architect.

I. Shower Rod: Heavy-duty 20 gauge, Type 304 stainless steel, satin finish, 1" diameter rod. In lengths indicated on the drawings. ***(B-6107)***

J. Reversible folding shower seat: Seat shall have a frame constructed of Type-304, satin-finish stainless steel that consists of 16-gauge (1.6mm), 1-1/4" (30mm) square tubing and 18-gauge (1.2mm), 1" (25mm) diameter seamless tubing. Seat shall be one-piece, 1/2" (13mm) thick, solid phenolic with matte-finish, ivory-colored, melamine surfaces, and black phenolic-resin core; secured to frame with stainless steel carriage bolts and acorn nuts. Seat shall be reversible for left- or right-hand installation in the field. Shower seat shall be equipped with two 3" (75mm) diameter mounting flanges constructed of Type-304, 3/16" (5mm) thick, satin-finish stainless steel; a guide bracket constructed of Type-304, 16-gauge (1.6mm), satin-finish stainless steel; and a spring constructed of Type-301, 24-gauge (0.6mm) stainless steel that is spot-welded to a baseplate of Type-304, heavygauge stainless steel. Seat shall remain in upright position when not in use. Shower seat shall comply with accessible design guidelines (including ADAAG in the U.S.A.).

PART 3 – EXECUTION

3.01 INSTALLATION

A. Install toilet accessory units in accordance with manufacturer's instructions, using fasteners appropriate to substrate and recommended by manufacturer of unit. Install units plumb and level, firmly anchored in locations indicated and in accordance with the requirements of ADA.

3.02 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Remove temporary labels and protection coatings.

C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 102800

SECTION 104400 - SIGNAGE

PART 1 - GENERAL

1.01 REFERENCES

A. ICC/ANSI A117.1 - Accessible and Useable Buildings and Facilities.

B. USATBCB - Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG).

1.02 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Product Data: Manufacturer's descriptive literature.

C. Shop Drawings: List sign styles, lettering, locations and dimensions of each interior sign. Contractor shall submit a sign schedule with doors listed in numerical order for review and approval. Shop drawings shall include a scaled diagram of each type of sign specified.

E. Verification Samples: Two full size samples, representing type, style and color specified including method of attachment.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with requirements of ICC/ANSI A117.1 and ADAAG.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Inspect products upon receipt. Store products in manufacturer's packaging until ready for installation.

1.05 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results.

PART 2 - PRODUCT

2.01 MANUFACTURERS

A. Acceptable Manufacturer: Best Sign Systems, Inc.; 1202 N. Park Avenue, Montrose, CO 81401. ASD. TEL: (800) 235-BEST. FAX (970) 249-0223. Email: sales@bestsigns.com www.bestsigns.com.
OR Approved Equal

2.02 SIGNS

A. ADA-Compliant Interior Signage, Custom Design.

2.03 INTERIOR SIGNAGE DOORS

A. Manufacturer’s standard monolithic tactile plaque constructed utilizing a thermoforming process, which provides a fully homogeneous plaque sign. The sign body, face, raised text and Braille are compression molded to form a single dimensional component that results in a sign surface that exhibits a toughness that resists scratching, cracking, gouging and graffiti.

1. Style: Custom Lucent Sign by Best Sign Systems, Inc

2. Material: Extruded Clear Acrylic
3. Sign Thickness: 1/4 inch (6mm)
4. Tactile Characters/Symbols: Raised 1/32 inch (1 mm) from sign plate face
5. Construction: One-piece; added on or engraved characters not acceptable
6. Lettering Style: Typeface as selected from the manufacturer's standard sans serf or simple serf typefaces, upper case letters, minimum height 5/8", maximum height 2"
7. Braille: Grade 2 braille, placed directly below last line of letters or numbers
8. Contrast: Letters, numbers and symbols shall contrast with background.
9. Bevel Options: Bullnosed
10. Profiles: 1/4" radiused
11. Color of Background: Colors chosen from 73 Standard Paint colors, backpainted.
12. Color of Text and Raised Characters: As selected from 73 standard colors
13. Surface Texture: Stipple
14. Signage shall be approved for use at interior doors as well as exterior doors.
15. Mounting: Tamper resistant, countersunk screws.

2.04 ROOM SIGNAGE

A. All doors (interior and exterior) shall receive a Type "A" sign which is three number sign with Braille.. Provide a schedule with the room number and name as shown on the floor plans for the architect and owner to review and edit. Text will be reviewed and edited during the submittal phase.

B. All restrooms shall receive a Type "B" which is a toilet sign for Women's and Men's. They are to be an ADA compliant regulatory sign with text, braille and universal symbol.

C. Contractor shall provide signage as described above. All doors shall have a sign.

2.05 DIMENSIONAL LETTERS:

A. Provide 1/4" thick acrylic laminate numbers with brushed aluminum finish.
1. Letter Style: To be selected
2. Size: See Interior Elevations.
3. Color: Brushed Silver
4. Locations and text: (**Final text to be verified during the submittal phase**.)
a. See Interior Elevations in the drawings for text, locations and heights.

2.06 EXTERIOR LETTERING:

A. Building Identification:
1. Exterior sign as indicated on front elevation. Flush mounted; cast aluminum, stud mounted to wall Arial upper case letters:
a. Text: "Jakson County Sheriff's Office" high (all caps – 9 inches).
Color: To be selected by Architect.

2.07 CAST METAL PLAQUE: Fabricate cast metal plaque to comply with requirements specified for metal, border style, background texture and finish and to comply with requirements shown for thickness, size, shape and copy. Produce castings free from pits, scale, sand holes or other defects. Hand tool and buff borders and raised copy to produce the manufacturer's standard satin polished finish.

A. Metal: Bronze.

B. Border Style: Raised flat band.

C. Background Texture: Manufacturer's standard pebble texture.

D. Background Finish: To be selected by Architect.

C. Bronze Castings: Provide bronze castings, copper alloy UNS C83600, complying with the requirements of ASTM B 584.

F. Fasteners: Unless otherwise indicated, used concealed fasteners fabricated from metals that are non-corrosive to either the sign material or the mounting surface.

G. Anchors and Inserts: Use non-ferrous metal or hot-dipped galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

H. Graphic Style: Owner to provide sign layout for bronze plaque. Sign will have County Commissioner's, Architect, Contractor and Logo on plaque. Plaque to be surfaced mounted on front entrance wall.

I. Size: 18" x 24"

2.08 CAST METAL STAR: Fabricate cast metal Star to comply with requirements specified for metal, border style, background texture and finish and to comply with requirements shown for thickness, size, shape and copy. Produce castings free from pits, scale, sand holes or other defects. Hand tool and buff borders and raised copy to produce the manufacturer's standard satin polished finish.

A. Metal: 5/16" Bronze.

B. Border Style: Raised flat band.

C. Background Texture: Manufacturer's standard pebble texture.

D. Background Finish: Bronze. To be selected by Architect.

D. Bronze Castings: Provide bronze castings, copper alloy UNS C83600, complying with the requirements of ASTM B 584.

F. Fasteners: Unless otherwise indicated, used concealed fasteners fabricated from metals that are non-corrosive to either the sign material or the mounting surface.

G. Anchors and Inserts: Use non-ferrous metal or hot-dipped galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

H. Graphic Style: Owner to provide sign layout for bronze plaque. Sign will have County Commissioner's, Architect, Contractor and Logo on plaque. Plaque to be surfaced mounted on front memorial wall with anchors through holes in star on bracket to Concrete.

J. Size: 21 x 24

2.09 CAST METAL MEMORIAL PLAQUE'S: Fabricate cast metal plaque to comply with requirements specified for metal, border style, background texture and finish and to comply with requirements shown for thickness, size, shape and copy. Produce castings free from pits, scale, sand holes or other defects. Hand tool and buff borders and raised copy to produce the manufacturer's standard satin polished finish.

A. Metal: Bronze.

B. Border Style: Raised flat band.

C. Background Texture: Manufacturer's standard pebble texture.

D. Background Finish: To be selected by Architect.

E. Bronze Castings: Provide bronze castings, copper alloy UNS C83600, complying with the requirements of ASTM B 584.

F. Fasteners: Unless otherwise indicated, used concealed fasteners fabricated from metals that are non-corrosive to either the sign material or the mounting surface.

G. Anchors and Inserts: Use non-ferrous metal or hot-dipped galvanized anchors and inserts for exterior

installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

H. Graphic Style: Text to read, Deputy John Doe, Badge # xxxxxx, E.O.W , January 12, 20xx, Owner to provide sign layout for bronze plaque. Sign will have County Commissioner's, Architect, Contractor and Logo on plaque. Plaque to be surfaced mounted on front entrance wall.

K. Size: 5/16 ", 6" x 8" ; Qty 8.

2.10 EXTERIOR ENTRANCE SIGNAGE: Fabricate metal box 58" x 36" x 14" deep sign box illuminated, 3/16' acrylic lens with flat cut lettering of address, name of facility, sheriff name and star. Side panels to be removable with fastner for accesss. Tooled Badge on sign is 15" x 17" .375" think applied to sign face. Box to be mounted on sign frame.

2.11 EXTERIOR DIRECTIONAL SIGNS 01, 02: Fabricate metal posts plaque to comply with requirements specified for metal, border style, background texture and finish and to comply with requirements shown for thickness, size, shape and copy. Produce castings free from pits, scale, sand holes or other defects. Hand tool and buff borders and raised copy to produce the manufacturer's standard satin polished finish.

A. ACM Panels: White ACM panels with Black Vinyl Lettering

B. Border Style: None

C. Background Texture: Manufacturer's standard texture.

D. Background Finish: ACM white

E. Fasteners: Unless otherwise indicated, used concealed fasteners fabricated from metals that are non-corrosive to either the sign material or the mounting surface.

G. Anchors and Inserts: Use non-ferrous metal or hot-dipped galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

H. Graphic Style: Owner to provide sign layout for bronze plaque. Sign will have County Commissioner's, Architect, Contractor and Logo on plaque. Plaque to be surfaced mounted on front entrance wall.

L. Size: 37" x 20.5"

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine installation areas to ensure that conditions are suitable for installation.

B. Examine signage for defects prior to installation. Do not install damaged signage.

3.02 PREPARATION

A. Verify mounting heights and locations for interior signage will comply with referenced standards.

B. Clean mounting locations of dirt, dust, grease or similar conditions that would prevent proper installation.

3.03 INSTALLATION

A. Install signs level, plumb, without distortion, and in proper relationship with adjacent surfaces using manufacturer's recommended standard mounting system, unless noted otherwise in the specification.

B. Remove adhesive from exposed sign surfaces as recommended by manufacturer.
C. Clean signs after installation as recommended by manufacturer.

D. Replace damaged products before Substantial Completion.

3.04 ADA GUIDELINES FOR SIGNAGE

A. Room Identification Signs: Signs which designate permanent rooms or spaces shall comply with the following guidelines:
   1. Raised Copy - Letters and numerals shall be raised 1/32" upper case, sans serif or simple serif typestyle.
   2. Symbols - Symbols shall be accompanied by the equivalent verbal description placed directly below the symbol. The border dimension of the symbol shall be 6" minimum in height.
   3. Braille Tags - Grade 2 Braille shall be on all signs, as required.
   4. Colors - The characters and backgrounds of all signs shall be of matte or other non-glare finish. Characters and symbols shall contrast with light characters on a dark background or dark characters on a light background. Colors to be as selected by the Architect from the manufacturer's standard colors.

B. Directional and Information Signs: Signs which provide direction to, or information about, functional spaces of the building shall comply with the same guidelines as those set for Room Identification Signs with the following additions and exceptions.
   1. Character Proportion - Letters and numerals on sign shall have a width to height ratio between 3:5 and 1:1 and a stroke width to height ratio between 1:5 and 1:10.
   2. Character Height - Characters and numbers on signs shall be sized according to the viewing distance from which they are to be read. The minimum height is measured using an upper case X. Lower case characters are permitted. Any signs that are suspended or projected overhead shall have characters at least three inches high and shall maintain a minimum clearance of 80 inches from finished floor.
   3. Raised Copy - Directional and Informational signs are NOT required to use raised copy or braille tags.

C. Signage Mounting Location and Height: Where permanent identification is provided for rooms and spaces, signs shall be installed on the wall adjacent to the latch side of the door. Where there is no wall space to the latch side of the door, including at double leaf doors, signs shall be placed on the nearest adjacent wall. Mounting height shall be 60 inches (1525 mm) above the finish floor to the centerline of the sign. Mounting location for such signage shall be so that a person may approach within 3 inches (76 mm) of signage without encountering protruding objects or standing within the swing of a door.

END OF SECTION 101440

SECTION 104416 - FIRE EXTINGUISHERS, CABINETS, AND ACCESSORIES

PART 1 - GENERAL

1.01 UL-LISTED PRODUCTS: Provide new UL-listed fire extinguishers bearing UL "Listing Mark" for type, rating, and classification of extinguishers indicated.

1.02 SUBMITTALS: Submit product data and finish samples.

PART 2 - PRODUCTS

2.01 MANUFACTURERS: Subject to compliance with requirements, provide products by one of the following:

Allenco
Ansul Fire Protection, Wormald US Inc.
Badger-Powhatan
Bobrick Washroom Equipment, Inc.
J.L. Industries
Larsen's Manufacturing Co.
Modern Metal Products by Muckle
Potter-Roemer, Inc.
Samson Metal Products, Inc.
Walter Kidde, Division of Kidde, Inc.
Watrous Inc.

2.02 FIRE EXTINGUISHERS: Provide fire extinguishers for each extinguisher cabinet and other locations indicated on Life Safety Plans.

A. Contractor's Option: Contractor has option to provide rated fire extinguisher cabinets in rated walls OR provide 5-sided gypsum board box in rated walls.

2.03 MULTIPURPOSE DRY CHEMICAL TYPE:

A. Typical Areas: UL-rated 3A-20 B: C min., in enameled steel containers.

B. Labs, Shops, Boiler Rooms, Bulk Storage, Electrical and Equipment Rooms: UL-rated 3A-40 B: C min., in enameled steel containers.

C. Bulk Paper Storage: UL-rated 4A-60 B:C, in enameled steel containers.

D. Kitchens: UL-rated 3A-40 B:C min.

2.04 MOUNTING BRACKETS: Provide brackets for extinguishers not located in cabinets.

2.05 FIRE EXTINGUISHER CABINETS: Provide fire extinguisher cabinets where indicated, of suitable size for housing fire extinguishers of types and capacities indicated.

A. Semi-Recessed: Cabinet box (tub) recessed in walls of sufficient depth to suit style of trim indicated.

1. Exposed Trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).
   a. Rolled Edge Trim with 2-1/2 inch backbend depth.
   b. Trim Metal: Of same metal and finish as door.

B. Fully-Recessed: Cabinet box recessed in walls of sufficient depth to suit style of trim indicated.

1. Exposed Flat Trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend) of 1/4 to 5/16 inch.

C. Surface Mounted: Cabinet box fully exposed and mounted directly on wall; with no trim.

2.06 DOOR MATERIAL AND CONSTRUCTION: Manufacturer's standard door construction, of material indicated, coordinated with cabinet types and trim styles selected.

A. Enameled Steel: Manufacturer's standard finish, hollow steel door construction with tubular stiles and rails.

B. Identify fire extinguisher in cabinet with lettering spelling "FIRE EXTINGUISHER" applied by silkscreen method to door. Provide lettering to comply with requirements indicated for letter style, color, size, spacing, and location or as selected by Architect from manufacturer's standard arrangements. Lettering shall be vertical and red. Cabinet shall be white.

C. Door Style: Manufacturer's standard full flush solid panel of material indicated.

D. Door Hardware: Provide manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated. Provide either lever handle with cam action latch, or door pull, exposed or concealed, and friction latch. Provide concealed or continuous-type hinge permitting door to open 180 deg.

2.07 FACTORY FINISHING OF FIRE EXTINGUISHER CABINET: Comply with NAAMM "Metal Finishes Manual" to provide uniformly finished products. Protect mechanical finishes on exposed surfaces from damage by application of strippable, temporary protective covering prior to shipment. Cabinet shall be mounted 48” A.F.F. to center of cabinet handle.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install items included in this section in locations and at mounting heights indicated, or if not indicated, at heights to comply with applicable regulations of governing authorities.

B. Prepare recesses in walls for fire extinguisher cabinets as required by type and size of cabinet and style of trim and to comply with manufacturer's instructions.

C. Securely fasten mounting brackets and fire extinguisher cabinets to structure, square and plumb, to comply with manufacturer's instructions.

END OF SECTION 104416

SECTION 107516 - GROUND-SET FLAGPOLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes ground-set flagpoles made from aluminum.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, operating characteristics, fittings, accessories, and finishes for flagpoles.

B. Delegated-Design Submittal: For flagpoles. Submit with submittal that flagpole meets 120 mph wind speed.

1.3 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For flagpoles to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain flagpoles as complete units, including fittings, accessories, bases, and anchorage devices, from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design flagpole assemblies or data from manufacturer that it meets 110mph wind speed.

B. Structural Performance: Flagpole assemblies, including anchorages and supports, shall withstand design loads indicated within limits and under conditions indicated.

1. Wind Loads: Determine according to NAAMM FP 1001. Basic wind speed for Project location is 150mph.

2.3 ALUMINUM FLAGPOLES

A. Aluminum Flagpoles: Cone-tapered flagpoles fabricated from seamless extruded tubing complying with ASTM B241/B241M, Alloy 6063, with a minimum wall thickness of 3/16 inch (4.8 mm).

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

a. American Flagpole.
b. Concord Industries, Inc.
c. U.S. Flag & Flagpole Supply, LP.

B. Exposed Height: **25 feet at two and 35 feet at center flag pole. Total three flag poles.**

C. Metal Foundation Tube: Manufacturer's standard corrugated-steel foundation tube, 0.060-inch (1.52-mm) wall thickness with 3/16-inch (4.8-mm) steel bottom plate and support plate; 3/4-inch- (19-mm-) diameter, steel ground spike; and steel centering wedges welded together. Galvanize foundation tube after assembly. Furnish loose hardwood wedges at top of foundation tube for plumbing pole.

D. Sleeve for Aluminum Flagpole: Fiberglass or PVC pipe foundation sleeve, made to fit flagpole, for casting into concrete foundation.

2.4 FITTINGS

A. Finial Ball: Flush-seam ball, sized as indicated or, if not indicated, to match flagpole-butt diameter.

1. 0.063-inch (1.6-mm) spun aluminum, finished to match flagpole with gold anodic finish.

B. External Halyard: Ball-bearing, nonfouling, revolving truck assembly of cast metal with continuous **5/16-inch- (8-mm-) diameter, braided polypropylene halyard** and 9-inch (228-mm) cast-metal cleats with fasteners. Finish exposed metal surfaces to match flagpole.

1. Halyards and Cleats: **Two** at each flagpole.
2. Halyard Flag Snaps: **Stainless-steel** swivel snap hooks **with neoprene or vinyl covers**. Furnish two per halyard.

2.5 MISCELLANEOUS MATERIALS

A. Drainage Material: Crushed stone, or crushed or uncrushed gravel; coarse aggregate.

B. Sand: ASTM C33/C33M, fine aggregate.

C. Elastomeric Joint Sealant: **Single-component nonsag urethane** joint sealant complying with requirements in Section 079200 "Joint Sealants."

D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

2.6 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, **AA-M12C22A41**.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prepare uncoated metal flagpoles that are set in foundation tubes by painting below-grade portions with a heavy coat of bituminous paint.

B. Foundation Excavation: Excavate to neat clean lines in undisturbed soil. Remove loose soil and foreign matter from excavation and moisten earth before placing concrete. Place and compact drainage material at excavation bottom.

C. Foundation Tube: Place foundation tube, center, and brace to prevent displacement during concreting. Place concrete. Plumb and level foundation tube and allow concrete to cure.

D. Sleeves: Locate and secure sleeves in forms by bracing to reinforcement and forms.

E. Place concrete, as specified in Section 033000 "Cast-in-Place Concrete." Compact concrete in place by using vibrators. Moist-cure exposed concrete for no fewer than seven days or use nonstaining curing compound.

F. Trowel exposed concrete surfaces to a smooth, dense finish, free of trowel marks, and uniform in texture and appearance. Provide positive slope for water runoff to perimeter of concrete base.

3.2 FLAGPOLE INSTALLATION

A. General: Install flagpoles where indicated on documents and according to **Shop Drawings and** manufacturer's written instructions.

B. Foundation Tube: Place flagpole in tube, seated on bottom plate between steel centering wedges, and install hardwood wedges to secure flagpole in place. Place and compact sand in foundation tube and remove hardwood wedges. Seal top of foundation tube with a 2-inch (50-mm) layer of elastomeric joint sealant and cover with flashing collar.

END OF SECTION 107516

SECTION 313116 - TERMITE CONTROL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Terms and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section. The requirements of the Florida Building Code (FBC) as it relates to this specification section shall apply. If any item or part of this section is not in compliance with the FBC the architect is to be notified before proceeding with work required in this section.

1.02 SUMMARY

A. This Section includes the following:

1. Soil treatment with termiticide.

1.03 UNIT PRICES

A. Basis of Bids: Unit price for each termite bait station(s) provided.

1. See Division 1 Section "Unit Prices" for list of unit prices.

1.04 PERFORMANCE REQUIREMENTS

A. Service Life of Soil Treatment: Soil treatment by use of a termiticide that is effective for not less than five years against infestation of subterranean termites.

1.05 SUBMITTALS

A. Product Data: For termiticide system.

1. Include the EPA-Registered Label for termiticide products.

B. Product Certificates: For termite control products, signed by product manufacturer.

C. Qualification Data: For Installer of termite control products.

D. Soil Treatment Application Report: After application of termiticide is completed, submit report for Owner's record information, including the following:

1. Date and time of application.
2. Moisture content of soil before application.
3. Brand name and manufacturer of termiticide.
4. Quantity of undiluted termiticide used.
5. Dilutions, methods, volumes, and rates of application used.
6. Areas of application.
7. Water source for application.

E. Warranty: Special warranty specified in this Section.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: A specialist who is licensed according to regulations of

authorities having jurisdiction to apply termite control treatment and products in jurisdiction where Project is located.

B. Regulatory Requirements: Formulate and apply termiticides according to the EPA-Registered Label.

C. Source Limitations: Obtain termite control products through one source.

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination" to schedule application of termiticide products.

1.07 PROJECT CONDITIONS

A. Environmental Limitations: To ensure penetration, do not treat soil that is water saturated or frozen. Do not treat soil while precipitation is occurring. Comply with requirements of the EPA-Registered Label and requirements of authorities having jurisdiction.

1.08 COORDINATION

A. Coordinate soil treatment application with excavating, filling, grading, and concreting operations. Treat soil under footings, grade beams, and ground-supported slabs before construction.

B. Apply borate treatment after framing, sheathing, and exterior weather protection is completed but before electrical and mechanical systems are installed.

C. Install bait-station monitoring system during construction to determine areas of termite activity.

D. Install bait-station system after construction, including landscaping, is completed.

1.09 WARRANTY

A. Special Warranty: Manufacturer's standard form, signed by Applicator and Contractor certifying that termite control work, consisting of applied soil termiticide treatment, will prevent infestation of subterranean termites. If subterranean termite activity or damage is discovered during warranty period, re-treat soil and repair or replace damage caused by termite infestation.

1. Warranty Period: Five years from date of Substantial Completion.

1.10 MAINTENANCE SERVICE

A. Continuing Service: Beginning at Substantial Completion, provide 12 months' continuing service including monitoring, inspection, and re-treatment for occurrences of termite activity. Provide a standard continuing service agreement. State services, obligations, conditions, and terms for agreement period; and terms for future renewal options.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

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

1. Termiticides:
   a. Aventis Environmental Science USA LP; Termidor.
   b. Bayer Corporation; Premise 75.
   c. Dow AgroSciences LLC; Dursban TC Equity.
   d. FMC Corporation, Agricultural Products Group; Talstar.
   e. Syngenta; Demon TC.

2.02 SOIL TREATMENT

A. Termiticide: Provide an EPA-registered termiticide complying with requirements of authorities having jurisdiction, in an aqueous solution formulated to prevent termite infestation. Provide quantity required for application at the label volume and rate for the maximum termiticide concentration allowed for each specific use, according to product's EPA-Registered Label.

PART 3 - EXECUTION

3.0 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for moisture content of soil, interfaces with earthwork, slab and foundation work, landscaping, and other conditions affecting performance of termite control.

1. Proceed with application only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's written instructions for preparation before beginning application of termite control treatment. Remove all extraneous sources of wood cellulose and other edible materials such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil within and around foundations.

B. Soil Treatment Preparation: Remove foreign matter and impermeable soil materials that could decrease treatment effectiveness on areas to be treated. Loosen, rake, and level soil to be treated except previously compacted areas under slabs and footings. Termiticides may be applied before placing compacted fill under slabs if recommended in writing by termiticide manufacturer.

1. Fit filling hose connected to water source at the site with a backflow preventer, complying with requirements of authorities having jurisdiction.

3.03 APPLICATION, GENERAL

A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's EPA-Registered Label for products.

3.04 APPLYING SOIL TREATMENT

A. Application: Mix soil treatment termiticide solution to a uniform consistency. Provide quantity required for application at the label volume and rate for the maximum specified concentration of termiticide, according to manufacturer's EPA-Registered Label, to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction. Distribute treatment evenly.

1. Slabs-on-Grade and Basement Slabs: Under ground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.
2. Penetrations: At expansion joints, control joints, and areas where slabs will be penetrated.

B. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.

C. Protect termiticide solution, dispersed in treated soils and fills, from being diluted until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.

D. Post warning signs in areas of application.

E. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

END OF SECTION 313116