PROJECT MANUAL

DRAFT

21-15 | Oakfuskee Conservation Center

for TROUP COUNTY

Pyne Road Park | Troup County, Georgia

30 NOV 2021- DRAFT

Owner/Client:

Troup County Board of Commissioners
100 Ridley Avenue
LaGrange, GA 30240
P | 706.883.1610
Eric Mosley, County Manager
emosley@troupcountyga.gov

Architect of Record:

Gordon M. Smith, Jr.
Smith Design Group, Inc.
206 West Haralson Street
LaGrange, Georgia 30240
P | 706.882.5511
skip@sdgarch.net

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F-01 OWNER'S REPRESENTATIVE

A. The Owner's Representative shall be **Jay Anderson, Special Projects Manager**. All documentation required by the specifications to be submitted to the "Owner" shall be submitted to the Architect for transmittal to the Owner.

B. All instructions and requests for changes from the Owner to the contractor will be issued through the "Architect" PROVIDED: that the Engineer shall not have the authority to authorize changes in the work which shall mean changes to the contract sum. PROVIDED FURTHER: that the "Engineer" will request and review Construction Manager proposal for such changes and will submit recommendations to the owner for issuance for change orders.

C. Changes in the contract sum shall be authorized in writing solely by the Owner.

D. Except as provided herein above, the contractor shall disregard any instructions from persons other than "Architect".

E. Should a situation arise, in conflict with these requirements, the contractor shall notify the "Architect" immediately.

F. The Construction Manager shall bear all costs incurred by his failure to follow the instructions contained in paragraphs A, B, C, D, E above.

F-02 UTILITIES: SEE SECTION 01501 - Temporary Facilities and Controls

F-03 STORAGE AREAS

A. Location: Space for materials storage at the site is limited. Storage of all items shall be at the discretion of the Construction Manager as designated by the Owner. Provide storage trailers as required. At completion of the work, material and debris shall be removed.

B. Storage: All materials not used at the end of the day shall be returned to the designated storage areas.

F-04 EXISTING CONDITIONS: The Construction Manager, in undertaking the work under this contract, is assumed to have visited the premises and to have taken into consideration all conditions which might affect his work. No consideration will be given any claim based on lack of knowledge of existing

conditions except where the contract documents make definite provisions for adjustment of cost or extension of time due to existing conditions which cannot be readily ascertained.

Existing utilities shall not be interrupted or disturbed in any way without the written approval of the Owner of the utility in question. All liability shall be borne by the Construction Manager and he or she shall save the Owner and the Architect and their agents and employees harmless from all claims arising out of the unauthorized interruption or disturbance of any existing utility.
All workers shall be expected to exhibit acceptable behavior and dress.

F-05 ACTS AND EXECUTIVE ORDERS: The Construction Manager, by signing the contract, acknowledges that he or she is aware of and familiar with the contents and requirements of the following acts and executive orders:

A. High Voltage Act

B. Underground Gas Pipe Law - Georgia law 1969, PP.50-57.

C. Williams Steiger Occupational Safety and Health Act of 1970.

D. The non-discrimination clause contained in Section 202 Executive Order 11246 as amended by Executive order 11375 relative to Equal Opportunity for all persons without regard to race, color, religion, sex or national original and the implementing rules and regulations described by the Secretary of Labor are incorporated.

E. Public Employee Hazardous Chemical Protection and Right To Know Act: O.C.G.A. Sec. 45.22 (1988 H.B.No.503).3.

F. Drug Free Workplace Act - O.C.G.A. Sec.50-24 (2010 H.B.No.9).

G. State of Georgia "Call-Before-You-Dig-" Law. Requirements following:
   1. Notification must be made to the Utilities Protection Center 2010 Lakeside Parkway, Tucker, Georgia 30084. Telephone No. 800-282-7411 during UPC business days Monday through Friday (excluding holidays), during business hours of 7:00a.m. to 4:00 p.m.
   2. The call must be made 72 hours prior to excavation and must include location of excavation, name, address, and phone number of the company or person excavating, type of excavation and start date.
   3. If the excavation is not finished in 17 days, additional notice must be given no later than 14 days from the day of the first notification.
   4. If blasting is required after notice is given, Contractor must call back to update location request or "ticket".
   5. This law applies to all mechanized equipment, from drag lines to pile drives.
   6. All electric, gas, telephone, and cable TV utilities in the state are required to be members of the UPC. If underground facilities are cut that belong to a utility that is required to be UPC member, but is not, the Contractor is not liable.
   7. Violators can be fined from $1,000 to $3,000 plus the cost of replacing or repairing damaged facilities and any injury to persons or property.

8. ACCESS TO PREMISES: Ingress and egress shall be limited to the construction entrance as shown on the drawings to the subject work areas. Any debris dropped or tracked outside of areas in which work is being done, shall be immediately cleaned up.
9. SUBMITTALS: The Construction Manager agrees that submittals of equipment and material and submittals of shop drawings of equipment and materials layouts required from the Contractor under provisions of these specifications and processed by the Architect are not Change Orders and that the purpose of the said submittals by the Contractor is to demonstrate the Contractor understands the design concept of the project by indicating which equipment and materials he or she intends to furnish and install and by detailing the installation he or she intends to achieve.
10. SHOP DRAWINGS:

A. General: The Construction Manager shall check data to ensure compliance with specifications and check and verify field measurements, and shall review, approve and stamp each copy submitted with date and name of person making review before submitting them to the Architect. Six copies of all shop drawings shall be submitted to the Architect, four (4) of which will be returned to the Construction Manager and one (1) copy to the Owner's Representative. Where additional copies are required by the Construction Manager, the extra copies shall be furnished accordingly. Sufficient copies for maintenance manuals shall be submitted.

B. Identification: All submittal data shall be identified to show project name, specification section, drawing or detail number, room number, date, revision date, contractor and subcontractor's name, and the model, style and size of item being submitted. Manufacturer's standard drawings shall be modified by deletions or additions to show clearly only items applicable to this project.

C. Review.

1. The Construction Manager agrees that submittals of equipment and material and shop drawings of equipment and material layouts required under provisions of these specifications and processed by the Architect are not Change Orders. The purpose of submittals is to demonstrate that the Construction Manager understands the design concept of the project by indicating the equipment and materials he or she intends to furnish and install, and by detailing the installation he or she intends to achieve.

2. The Construction Manager shall conform to the requirements of the Contract Documents unless a change order or a specific letter of clarification is issued. The Construction Manager shall identify on each submittal and in letter form to the Architect any and all deviations from the contract documents.

3. Any submittal or shop drawings not conforming to the contract documents without this identification and notification shall be assumed to be marked "Revise and Resubmit", and the contractor shall promptly re-submit said submittal so as to be in full compliance with the contract documents.

4. Failure of the Construction Manager to provide this information during the shop drawings phase shall make the Construction Manager responsible for all changes to achieve compliance with the contract documents.

F-06 SCHEDULING AND PHASING OF WORK: After award of contract, a pre-construction meeting shall be held at the site between the Owner's representative, representative of the Construction Manager, and representatives of the Architect to review the project and set up the approximate work schedule. With ten (10) days of this meeting, the Construction Manager shall submit five (5) typed copies of the work sequence schedule, showing proposed dates of beginning completion milestones and completing work, to the Architect for approval. A CPM schedule will also be required, subject to Architect's approval.

Construction Manager to assist Owner in phasing of Phase 1 Construction. It is the Owner's intent to leave portions of the facility operational during construction of Phase 1.

F-07 VANDALISM: The Construction Manager shall take every precaution not to leave equipment and materials where they can be reached and used for defacing new or existing work at any time and in particular at night and on the weekends.

F-08 PROGRESS REPORTS

A. Prior to submitting the first periodical estimate, the contractor shall have furnished to the Owner and the Architect, a construction progress schedule that outlines each phase of work. The Construction Manager shall adhere to the schedule and update it prior to each subsequent request for payment. Failure to adhere to the schedule shall be admittance on the part of the Construction Manager that he or she is behind schedule and corrective steps, at no cost to the Owner, must be taken to bring the job back on schedule.

B. Cost Breakdown: Construction Manager shall furnish a complete cost breakdown for all materials installed and for each phase of the work. The cost of breakdown will be furnished prior to the first request for payment. This cost breakdown will reflect the Project Schedule and illustrate the estimated monthly Request for Payment.

F-09 COMMUNICATIONS

A. All notices, demands, requests, instructions, approvals, proposals and claims must be in writing. Requests for clarifications and instruction concerning the drawings or specifications shall be submitted to the Architect by mail or facsimile transmission on the Request For Information form in Sect. I. Only written and signed instructions will be considered binding and a part of the Construction Documents.

B. Any notice to demand, request instruction to, proposal to, or claim upon the Construction Manager shall be sufficiently given if delivered at the office of the Construction Manager stated in Owner-Construction Manager Agreement (or at such office as he may designate in writing to the Owner), or deposited in the United States mail in a sealed, postage paid envelope, or if delivered with charges prepaid to any telegraph company or transmission, in each case addressed to said office.

C. All papers required to be delivered to the Owner shall, unless otherwise specified in writing by the Construction Manager, be delivered to:

Jay Anderson, Special Projects Manager
Troup County Board of Commissioners

100 Ridley Avenue
LaGrange, Georgia 30240
janderson@troupcountyga.gov

and any notice to, demand, request, instruction, approval, proposal, or claim upon the Owner shall be sufficiently given if delivered, or deposited in the United States mail in a sealed, postage paid envelope, or delivered charges prepaid to any telegraph company for transmission to said individual at said address or such other representatives of the Owner may subsequently specify in writing to the Construction Manager for such purpose.

D. All papers required to be delivered to the Architect shall be delivered to:

SMITH DESIGN GROUP, INC.
206 WEST HARALSON STREET
LaGRANGE, GEORGIA 30240

and any notice to, demand, request, proposal, or claim upon the Architect shall be sufficiently given if delivered, or deposited in the United States mail in a sealed, postage paid envelope, or delivered charges prepaid to any telegraph company for transmission to said Architect at said address.

E. Any notice, demand, request, instruction, approval, proposal, or claim shall be deemed to have been given as of the time of actual delivery or (in case of mailing) when the same should have been received in due course of post, or in the case of telegrams, at the time of actual receipt, as the case may be.

F-10 LAYING OUT WORK: The Construction Manager shall verify all existing conditions and contiguous work and lay out his or her work therefrom, providing for himself all other necessary measurements, lines and levels, and shall assume the responsibility for the correctness of the laying out of the work.

F-11 EXISTING PLANTING: Construct protective tree fencing as described in the construction documents as indicated around tree save area. Storage or parking in the areas is not allowed.

F-12 SIGNS: The Construction Manager shall cause no signs to be displayed at the site unless specifi cally authorized in writing by the Owner, except however, the Construction Manager shall furnish, erect and maintain such signs required by safety regulation to safeguard life and property.

F-13 NOTIFICATION TO OWNER WHEN CONTRACTOR VISITS SITE AFTER FINAL INSPECTION

A. When the Construction Manager's representative visits the job site after the final inspection to perform specific work such as maintenance service, seasonal balance, or to correct a deficiency, the Construction Manager shall notify the Owner not less than 48 hours prior to the date on which they will visit the site, except under an emergency condition.

B. The Construction Manager shall visit the designated office of the Owner to notify the Owner that the Construction Manager is on the site prior to visiting the site, thereby enabling the Owner representative to accompany the Construction Manager, should they so desire while the Construction Manager is on the project site.

C. An exact copy of the notification shall be provided to the Architect with the intent of the site visit. After the Construction Manager has completed the site visit, the Construction Manager shall give a written report of the action taken and any incomplete work yet to be performed to the Architect within five (5) days.

F-14 FIRE MARSHAL DRAWINGS

A. The Architect will deliver to the Construction Manager the set of drawings approved by the Fire Marshal. The Construction Manager shall maintain custody of these documents in a clean, unmarked condition at the job site for ready reference by the Fire Marshal during job visits.

B. This set of documents shall be returned to the Architect with the Final Request for Payment and the Certificate of Occupancy by the Fire Marshal or receipt for same.

C. The Construction Manager is subject to a fine of $1500 by the State Fire Marshal if a Fire Marshal representative visits the job site and the Fire Marshal approved plans and specifications are not available.

F-15 ALL GLASS - FIBER PRODUCTS, INCLUDING INSULATION: All Glass-Fiber products, including insulation are to carry carcinogen warning labels as required by the Department of Labor.

F-16 HAZARDOUS MATERIALS

A. A/E's Responsibility: Plans and specification have been prepared by the A/E for the Owner without the A/E having conducted investigation as to the presence of asbestos or hazardous waste on the project. Not being a part of this contract, the A/E has not charged any fees and has not and will not advise the Owner with regard to the detection and/or removal of asbestos or hazardous waste. the Owner is aware that asbestos or hazardous waste could be present and will make all decisions with regard to its removal. The removal of all hazardous materials and encapsulation of remaining surfaces is the sole responsibility of the Owner.

B. Friable Materials: If the Construction Manager observes the existence of friable materials which must be disturbed during the course of his work, Construction Manager shall promptly notify Owner and Architect. Owner shall make all arrangements regarding testing and removal or encapsulation of asbestos materials if present. The Construction Manager shall not perform any work pertinent to the friable material prior to receipt of special instructions from the Owner through the Architect. "Friable Material" is any material which can be crumbled, pulverized or reduced to a powder by hand pressure when dry.

F-17 ASBESTOS (ACBM)

A. Specifications written for equipment and materials in the specifications are intended to eliminate any asbestos containing substance. The Construction Manager and his suppliers are hereby notified that NO ASBESTOS CONTAINING PRODUCT IS PERMITTED. If a product is listed in these specifications which contain asbestos, the Contractor and his or her supplier shall so inform the A/E immediately and shall not deliver such product to the project site until additional written instructions are received.

B. Upon completion of construction, and prior to final inspection, the Construction Manager for work performed under this division of the specifications shall be required to provide a certificate to the A/E in the following form:

CERTIFICATION FOR ASBESTOS CONTAINMENT

I / we _____

(Sub-contractor or Construction Manager)

certify that there is no asbestos contained in materials provided and/or installed by us in

_____

(Project / Building)

WITNESS:_____DATE:_____ Construction Manager:_____

(Notary Public)

BY:_____

TITLE:_____

F-18 NOTIFICATION OF JOB SITE OBSERVATIONS: Recommended observations by Mechanical / Electrical Engineers at the following stages of construction for a Mechanical / Electrical design project. Construction Manager to notify Architect 48 hours prior to each of the following:

A. Plumbing:
   1. First major portion of underfloor piping before being covered.
   2. Roughing of water, waste and vent piping for first major toilet battery.
   3. All overhead piping upon completion of pipe insulation and prior to insulation of ceiling.

B. Air Conditioning:
   1. First major portion of ductwork prior to being insulated.
   2. First major portion of piping prior to being insulated.
   3. All overhead ductwork and piping upon completion of insulation but prior to installation of ceiling.

C. Electrical:
   1. Substantially completed conduit system prior to wire pulling.
   2. Completion of major wire pulling and energizing of distribution panels.
   3. Substantially completed installation of lighting fixtures prior to installation of ceiling.

D. Fire Protection: All overhead piping prior to installation of ceiling.

E. All Systems:

   1. Upon written notification of the Construction Manager that the installation is 100% complete.
   2. A second inspection to insure that all items noted at final inspections have been corrected.

END OF SECTION F

SECTION G - STATEMENT OF WORK

G-01 WORK TO BE DONE

The work covered by this contract consists of furnishing all plant, labor, equipment, and materials and performing all operations required to accomplish all the work required by the Project Manual entitled, "**Oakfuskee Conservation Center**", and the Drawings similarly entitled, all dated **Project Date** in strict accordance therewith and subject to the terms and conditions of the Contract.

G-02 DESCRIPTION AND LOCATION OF SITE:

1. The site of this work is located at **Pyne Road Park, Troup County, Georgia**.

2. Verify with Owner exact location of storage trailer and equipment.

G-03 ACCESS TO PROPERTY:

Access to the property is to be from existing paved road near site; Construction Manager to provide construction entrance and 8" thick x 12'-0" wide gravel construction drive and subcontractor parking to construction area behind existing gymnasium; gravel drive to remain for use in future phases.

END OF SECTION G

SECTION H - PROJECT CLOSE-OUT

H-01 GENERAL:

In order to insure an orderly and efficient transfer of the project to the Owner, prepare, assembly and transmit to the Architect the closing documents hereinafter described.

H-02 TIME OF TRANSMITTAL:

After receiving the Certificate of Substantial Completion and in no case, not later than the date of the Construction Manager's request for Final Inspection, the Construction Manager shall transmit to the Architect the closing documents. Final inspection will not take place until all required closing documents have been received by the Architect.

H-03 NUMBER OF COPIES:

Unless specifically noted otherwise hereinafter, three copies of all closing documents shall be submitted.

H-04 IDENTIFICATION:

All bound documents shall be identified by the use of an embossed plastic tape on the front cover, showing the project name and number, the nature of the information contained in the document (i.e. A/C Maintenance Manual for Roof Mounted Units, A/C1, A/C2, etc.), name of General Contractor and name of Subcontractor who made the installation.

H-05 REQUIRED PRIOR TO FINAL PAYMENTS

1. "As-Built Plans" - **One Set**
2. Warranty by Construction Manager - **Three Copies**
3. Contractor's Affidavit of Payment of Debts and Claims - **Three Copies**
4. Contractor's Affidavit of Release of Liens - **Three Copies**
5. Statutory Affidavit - **Three Copies**
6. Non-Influence Affidavit - **Three Copies**
7. Sealants Five Year Warranty - **Three Copies**
8. Roof System Warranty - **Three Copies**

H-06 REQUIRED CLOSING DOCUMENTS:

5.1 Warranty by Roofing Contractor: Sample form is included in Section I of this project manual.

5.2 Statutory Affidavit by Roofing Contractor: Sample form is included in Section I of this project manual.

5.3 Non-influence Affidavit by Roofing Contractor: Sample form is included in Section I of this project manual.

5.4 Inspection Reports: The Construction Manager shall contact each of the agencies to set up inspections. The Construction Manager shall secure and submit to the Owner, a Certification from the local Governmental Agency or Agencies that the construction has been inspected as required by laws or ordinances and that the building (buildings) is (are) acceptable to the following authorities:

a. Local Building Inspector (where applicable)
b. Local Plumbing Inspector (where applicable)
c. Local Electrical Inspector (where applicable)
d. Local Fire Marshal w / occupancy permit
e. State Elevator Inspector (where applicable)
f. State Health Department (where applicable)

5.5 Project Record Documents: (one copy)

Contractor's attention is called to Section 01502 of this project manual for a complete description of the required documents.

5.6 Maintenance and Operation Manuals & Parts List:
Construction Manager's attention is called to the fact that various sections of this project manual require that maintenance manuals, operation manuals and parts list are to be furnished.

5.7 Warranties for Items Beyond One Year Limit:

The following items generally require a warranty in excess of the normal "one year" guarantee and are so described in various sections of this project manual; this list is not necessary all inclusive and should any warranties called for in a section of this project manual be omitted from the following list, the section requirement shall govern:

a. 5 year warranty on workmanship

H-07 CHECK - OFF LIST:

Construction Manager is to submit all close-out documents in bound and permanently labeled 3-ring notebooks and as-built drawings together at one time prior to Architect's approval of release of any retainage; also provide three (3) electrical copies of all close out and as-built documents. Please see Section H-05 "Required for Final Payment" for check off list. Additional items may be required due to job specific requirements.

END OF SECTION H

SECTION I - SAMPLE FORMS

I-01 GENERAL

The Bidding Documents make reference to various forms that are required to be executed as a part of work of the project.

I-02 FORMS

1. The specimen forms are included hereinafter for the bidders information only:

   A. Statutory Affidavit
   B. Warranty by Construction Manager
   C. Non-Influence Affidavit
   D. Certificate of Final Completion
   E. Change Order Form
   F. Modification to Standard Form of Agreement (NOT INCLUDED)
   G. Progress Schedule (example) (NOT INCLUDED)
   * H. Certificate of the Construction Manager of his duly authorized representative, DE Form 0263, revised Jan. 1990 (NOT INCLUDED)
   * I. Summary of Materials Stored, DE Form 0264 (NOT INCLUDED)
   * J. Schedule of Change Orders, DE Form 0265 (NOT INCLUDED)
   K. Request For Information
   l. Subcontractor / Vendor Directory

   * Indicates that these forms are to be used with Application and Certificate for Payment, AIA Document G702 (See also Article 1-02, .2, e and f of this section).

2. The following documents are not bound herein, however upon written request, the Architect will furnish any Bidder a copy of any of the documents listed:

   a. Bid Bond, AIA Document A310.
   b. Standard Form of Agreement between Owner and Construction Manager.
   c. Performance Bond and Payment, AIA Document A312.
   d. Certificate of Insurance, AIA Document G705
   e. Application and Certificate for Payment, AIA Document G702.
   f. Continuation Sheet, AIA Document G703.
   g. Certification of Substantial Completion, AIA Document G704.
   h. Contractor's Affidavit of Release of Lien's, AIA Document G706.

STATUTORY AFFIDAVIT

SPECIMEN A

COUNTY OF _____

STATE OF _____

FROM _____ (Contractor)

TO _____ (Owner)

Re: Construction Manager entered into the _____day of ____, 2022, between the above-mentioned parties for the construction of a _____

at _____

KNOW ALL MEN BY THESE PRESENTS:

1. The undersigned hereby certifies that all work required under the above contract has been performed in accordance with the terms thereof, that all materialmen, subcontractors, mechanics, and laborers have been paid and satisfied in full, and that there are no outstanding claims of any character (including disputed claims or any claims to which the Construction Manager has or will assert any defense) arising out of the performance of the contract which have not been paid and satisfied in full,

2. The undersigned further certifies that to the best of his knowledge and belief there are no unsatisfied claims for damages resulting from injury or death to any employees, subcontractors, or the public at large arising out of the performance of the contract, or any suits or claims for any other damage of any kind, nature, or description which might constitute a lien upon the property of the owner.

3. The undersigned makes this affidavit for the purpose of receiving final payment in full settlement of all claims against the owner arising under or by virtue of the contract, and acceptance of such payment is acknowledged as a release of the owner from any and all claims arising under or by virtue of the contract.

This _____day of _____, 2015. _____ (L.S.)

Signature

_____

Title

COUNTY OF _____ _____

STATE OF _____

Firm

Personally before me, the undersigned authority, appeared _____ who is known to me to be an official of the firm of _____, who, after being duly sworn, stated on his oath that he had read the above statement and that the same is true and correct.

_____

Notary Public

My commission expires_____

This _____day of _____, _____.

SPECIMEN B

WARRANTY BY

Construction Manager

PROJECT:
(name,address)

TO (Owner)

ARCHITECT:

ARCHITECT'S PROJECT NUMBER:

CONSTRUCTION MANAGER:
CONTRACT FOR:

DATE OF ISSUANCE:

CONTRACT DATE:

_____, as Construction Manager on the above job do hereby guarantee that all work executed under the Plans and Specifications will be free from defects of materials and/or workmanship for a period of, _____ beginning _____ and ending _____ and that all defects occuring within the warranty period shall be replaced or repaired at no cost to the Owner.

This guarantee covers all work as shown on the Plans and specified in the Specifications and Contract Documents.

Nothing in the above shall be deemed to imply that this guarantee shall apply to any work which has been abused or neglected by the Owner.

Legal Name of Construction Manager

_____

BY: _____

TITLE: _____

_____
Notary Public

This _____ day of _____, 20_____ .

NON-INFLUENCE AFFIDAVIT

SPECIMEN C

COUNTY OF _____

STATE OF _____

FROM _____

(Construction Manager)

TO _____

(Owner)

Re: Contract entered into the _____day of ____, 2022, between the above-mentioned parties for the construction of a _____

at _____

KNOW ALL MEN BY THESE PRESENTS:

I do solemnly swear on my oath that as to the contract dated _____, 20____, between _____and the _____ I have no knowlege of the exertion of any influence or the attempted exertion of any influence on the firm on behalf of which this affidavit is made in any way, manner, or form in the purchase of materials, equipment, or other items involved in construction, manufacture, or employment of labor under the aforesaid contract by the Owner or any employee of the Owner, or any person connected with the Owner in any way whatsoever.

In witness whereof, the undersigned has signed and sealed this instrument
This _____day of _____, 2022.

_____(L.S.)

Signature

_____

Title

_____

Firm

COUNTY OF _____

STATE OF _____

Personally before me, the undersigned authority, appeared _____ who is known to me to be an official of the firm of _____, who, after being duly sworn, stated on his oath that he had read the above statement and that the same is true and correct.

_____

Notary Public

My commission expires_____

This _____day of _____, _____.

SPECIMEN D

CERTIFICATE OF

FINAL

COMPLETION

Distribution to:

OWNER	☐
ARCHITECT	☐
CONTRACTOR	☐
FIELD	☐
OTHER	☐

PROJECT:
(name,address)

ARCHITECT:

ARCHITECT'S PROJECT NUMBER:

TO (Owner):

CONSTRUCTION MANAGER:

CONTRACT FOR:

DATE OF ISSUANCE:

CONTRACT DATE:

In accordance with the Contract documents and to the best of his or her knowledge, information and belief, and on the basis of his observations, on-site observation and final observation held on _____ _____,the Architect certifies to the Owner that the work has been completed in accordance with the terms and conditions of the Contract Documents; and that the Construction Manager is entitled to Final Payment as certified by him in Construction Manager's Application for Payment.

Acceptance of this Certificate of Final Completion by the Owner and the Construction Manager shall in no way waive or void any terms or conditions of the Contract Documents.

SMITH DESIGN GROUP, INC.

By:_____

Project Architect

APPROVED AND AGREED:

_____

CONSTRUCTION MANAGER

By: _____

_____

OWNER

By: _____

SPECIMEN E

* * CHANGE ORDER * *

SMITH DESIGN GROUP. INC.
206 West Haralson Street
LaGrange, GA 30240
(706) 882-5511
Fax# (706) 883-7777

DATE:
CHANGE ORDER:
JOB NO.:
CONTRACT FOR:

To: (Construction Manager)

CONTRACT DATE:

You are directed to make the following changes in this contract:

Description	Unit Price	Total

Original Contract sum: $ _____

Net(Addition)(Deduction)of all approved change orders: $ _____

Total Adjusted Contract Price prior to this change order: $ 0.00

This Change Order No._____ (Add)(Deduct): $ 0.00

Total Current Adjusted Contract Price: $ 0.00

Recommended For Owner's Acceptance:

SMITH DESIGN GROUP, INC.

By: _____

project architect/administrator

Approved And Agreed:

_____

Contractor

By: _____

_____

Owner

By: _____

Owner: _____

Architect: _____

Construction Manager: _____

Other: _____

REQUEST FOR INFORMATION

SPECIMEN K

TO: Smith Design Group, Inc.
206 West Haralson Street
LaGrange, GA 30240

ATTENTION:

PROJECT:

REQUEST FOR INFORMATION # _____

DATE: _____ JOB# _____

REFERENCE SHEET
NO.: _____ DETAIL: _____

VIA:
FAX: _____ MAIL: _____

QUESTION:

SIGNED: _____ DATE: _____

ANSWER REQUIRED BY (DATE): _____

ATTACHMENTS: YES ( ) NO ( ) COPIES TO: _____

ANSWER:

SIGNED: _____ DATE: _____

THIS REQUEST FOR INFORMATION RESULTED IN PROPOSED CHANGE NUMBER ____.

SUBCONTRACTOR / VENDOR DIRECTORY	PROJECT: SPECIMEN L	
	DATE:	JOB NO.:
	BY:	PAGE: OF

#	COMPANY NAME ADDRESS	CONTACT NAME PHONE / FAX	DIV. #	WORK DESCRIPTION

END OF SECTION I

END OF PART 1 - GENERAL REQUIREMENTS

SECTION 01021 - CASH ALLOWANCES

PART 1.00 - GENERAL

1.01 Quality Assurance: Quality assurance for items furnished under "Cash Allowances" is described in sections of this project manual as referenced in Article 2.01 of this section for each specific cash allowance established.

1.02 Definitions: See Article 3.8 of General Conditions of the Contract for Construction, AIA Document A201, 2007 Edition.

1.03 Submittals: Submittals pursuant to items furnished under "Cash Allowances" are described in sections of this project manual as referenced in Article 2.01 of this section for each specific cash allowance.

1.04 Product Handling: Product handling of items furnished under "Cash Allowances" are described in sections of this project manual as referenced in Article 2.01 of this section for each specific cash allowance.

1.05 Job Conditions: Job conditions affecting the installations of items furnished under "Cash Allowances" are described in sections of this project manual as referenced in Article 2.01 of this section for each specific cash allowance.

PART 2.00 - PRODUCTS

2.01 Materials: Items required will be furnished under "Cash Allowances" as follows:

A. Cash Allowances: The Construction Manager shall allow cash allowances for the purchase and installation of items as follows:

1. Cash allowance of $65,000.00 for purchase, delivery and installation of all door hardware.

B. Contract Adjustment: The contract sum will be adjusted by change order based on the actual cost of the items purchased.

2.02 Fabrication: Fabrication of items furnished under "Cash Allowances" is described in sections of this project manual as referenced in Article 2.01 of this section for each specific cash allowance.

PART 3.00 – EXECUTION

3.01 Inspection: Inspection pursuant to commencing installation of items furnished under “Cash Allowances" is described in other sections of this project manual as referenced in Article 2.01 of this section for each specific cash allowance.

3.02 Installation: Installation of items furnished under "Cash Allowances" is described in other sections of this project manual as referenced in Article 2.01 of this section for each specific cash allowance.

3.03 Field Quality Control: Field quality control of the installation of items furnished under "Cash Allowances" is described in other sections of this project manual as referenced in Article 2.01 of this section for each specific cash allowance.

END OF SECTION 01021 - CASH ALLOWANCES

SECTION 01027 - APPLICATIONS FOR PAYMENT

PART 1.00 – GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.

1. Coordinate the Schedule of Values and Applications for Payment with the Construction Manager 's Construction Schedule, Submittal Schedule, and List of SubConstruction Manager s.

B. Related Sections: The following Sections contain requirements that relate to this Section.

1. Schedules: The Construction Manager 's Construction Schedule and Submittal Schedule are specified in Division 1 Section "Submittals."

1.2 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of the Construction Manager 's Construction Schedule.

1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
    a. Construction Manager 's Construction Schedule.
    b. Application for Payment forms, including Continuation Sheets.
    c. List of subcontractors.
    d. List of products.
    e. List of principal suppliers and fabricators.

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

3. Subschedules: Where Work is separated into phases requiring separately phased payments, provide subschedules showing values correlated with each phase of payment.

B. Format and Content: Use the Project Manual table of contents as a guide to establish the format for the Schedule of Values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the Schedule of Values:
    a. Project name and location.
    b. Name of the Architect.
    c. Project number.
    d. Construction Manager 's name and address.
    e. Date of Submittal.

2. Arrange the Schedule of Value in tabular form with separate columns to indicate the following for each item listed:

a. Related Specification Section or Division.
b. Description of Work.
c. Name of subcontractor.
d. Name of manufacturer or fabricator.
e. Name of Supplier.
f. Change Orders (numbers) that affect value.
g. Dollar value.
    1) Percentage of Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Break principal subcontract amounts down into several line items.

4. Round amounts to nearest whole dollar; the total shall equal the Contract Sum.

5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed.

a. Differentiate between items stored on-site and items stored off-site. Include requirements for insurance and bonded warehousing, if required.

6. Provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

7. Margins of Cost: Show line items for indirect costs and margins on actual costs only when such items are listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete. Include the total cost and proportionate share of general overhead and profit margin for each item.

a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values.

8. Schedule Updating: Update and resubmit the Schedule of Values prior to the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.3 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.

1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.

B. Payment-Application Times: Progress-payment date is as agreed to by the Owner and Construction Manager .

C. Payment-Application Forms: Use AIA Document G702 and Continuation Sheets G703 as the form for Applications for Payment.

D. Application Preparation: Complete every entry on the form. Include notarization and execution by a person authorized to sign legal documents on behalf of the Construction Manager . The Architect will return incomplete applications without action.

1. Entries shall match data on the Schedule of Values and the Construction Manager 's Construction Schedule. Use update schedules if revisions were made.

2. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.

E. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to the Architect by a method ensuring receipt within 24 hours. One copy shall be complete, including waivers of lien and similar attachments, when required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to the Architect.

F. Waivers of Mechanics Lien: With each Application for Payment, submit waivers of mechanics lien from every entity who is lawfully entitled to file a mechanics lien arising out of the Contract and related to the Work covered by the payment.

G. Initial Application for Payment: Administrative actions and submittals, that must precede or coincide with submittal of the first Application for Payment, include the following:

1. List of subcontractors.
2. List of principal suppliers and fabricators.
3. Schedule of Values.
4. Construction Manager 's Construction Schedule (preliminary if not final).
5. Schedule of principal products.
6. List of Construction Manager 's staff assignments.
7. List of Construction Manager 's principal consultants.
8. Copies of building permits.
9. Copies of authorizations & licenses from governing authorities for performance of Work.
10. Initial progress report.
11. Report of preconstruction meeting.
12. Certificates of insurance and insurance policies.
13. Performance and payment bonds.
14. Data needed to acquire the Owner's insurance.

H. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment.

1. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

2. Administrative actions and submittals that shall precede or coincide with this application include:

a. Occupancy permits and similar approvals.
b. Warranties (guarantees) and maintenance agreements.
c. Test/adjust/balance records.
d. Maintenance instructions.
e. Meter readings.
f. Startup performance reports.
g. Changeover information related to Owner's occupancy, use, operation, and maintenance.
h. Final cleaning.
i. Application for reduction of retainage and consent of surety.
j. Advice on shifting insurance coverages.
k. Final progress photographs.
l. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.

I. Final Payment Application: Administrative actions and submittals that must precede or coincide with submittal of the final Application for Payment include the following:

1. Completion of Project closeout requirements.
2. Completion of items specified for completion after Substantial Completion
3. Ensure that unsettled claims will be settled.
4. Ensure that incomplete Work is not accepted and will be completed without undue delay.
5. Transmittal of required Project construction records to the Owner.
6. Certified property survey.
7. Proof that taxes, fees, and similar obligations were paid.
8. Removal of temporary facilities and services.
9. Removal of surplus materials, rubbish, and similar elements.
10. Change of door locks to Owner's access.

PART 2.00 - PRODUCTS (Not Applicable)

PART 3.00 - EXECUTION (Not Applicable)

END OF SECTION 01027

SECTION 01101 - ALTERNATES / APPROVED MANUFACTURERS

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Work Included: To enable the owner to compare total costs where alternate materials and methods might be used. Alternates have been established as shown on the drawings or described hereinafter in this section.

B. Related Work Described Elsewhere:

1. Materials and methods to be used in the Base Bid and in the Alternates as shown on the drawings or described in pertinent sections of this project manual or hereinafter in this section.

2. Method for stating the alternates is described in Section B - Proposal Form, of this project manual.

1.02 Definitions: Omitted

1.03 Submittals: All Alternates described hereinafter are required to be reflected on the Proposal Form submitted by bidders.

1.04 Product Handling: Alternates are additive and may be accepted by the owner as he or she may choose and in any sequence that he or she may choose.

1.05 Job Conditions: Job conditions pursuant to the installation of the various products or materials of each alternate will be as described in pertinent other sections of this project manual and in accordance with the published specifications of the manufacturer of the product or material being installed as a part of each alternate.

PART 2.00 - PRODUCTS

2.01 Alternates:

A. Deductive Alternates: NONE

B. Additive Alternates:

Add. Alt. No. 1 - Lower Level Build-out

- Remaining interior build-out of approximately 7,000 SF of heated space (see drawings)

Add. Alt. No. 2 - Porte-cochère (covered drop-off)

- Construct approximately 1,600 SF porte-cochère and covered connector walkway (see drawings)

Add. Alt. No. 3 - Covered Pavilion

- Construct approximately 900 SF covered pavilion (see drawings)

Add. Alt. No. 4 - Outdoor Amphitheatre

- Construct 1,152 SF covered roof over concrete stage (see drawings)
- Including concrete stage, concrete sidewalks, ramps, and associated guardrails (see drawings)

Add. Alt. No. 5 - Fire pits at "Sunset Picnic Area"

- Enhance area of old pavilions into stone patios with fire pits & built-in benches (demolition of existing pavilions down to slabs to be in Base Bid).

PART 3.00 - EXECUTION

3.01 Inspection: Prior to beginning installation of any alternates, the contractor shall examine the areas and conditions under which the work is to be carried out; notify the Architect in writing of conditions detrimental to the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Advance Coordination: Immediately after award of the contract, thoroughly and clearly advise all necessary personnel and suppliers as to the nature and extent of alternates selected be the owner. Use all means necessary to alert those personnel and suppliers involved as to all changes in the work caused by the owner's selection or rejection of alternates.

B. Alternates: Selected alternates will be incorporated into the building with installation being in conformance with the drawings, pertinent other sections of this project manual and the published instructions of the manufacturers whose products are being installed as a part of each alternate.

3.03 Field Quality Control:

A. General: Field quality control pursuant to the installation of the various products or materials of each alternate is described in pertinent other sections of this project manual and in accordance with the published specifications of the manufacturer of the products or materials being installed as a part of each alternate.

B. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

PART 4.00 - APPROVED MANUFACTURERS

4.01 In addition to the manufacturers and products named or described in the project manual, the manufacturers and products listed hereinafter are acceptable provided they meet the requirements of each respective section of the project manual as well as the requirements of the drawings. All coordination and

compatibility with other work necessitated by proposed substitution will be accomplished in complete and proper fashion at no cost to the owner.

4.02 Section 04201 - Unit Masonry

Brick
1. Cherokee
2. Boral

Block (Regular)
1. Williams Bros.
2. Bickerstaff
3. Solite

Mortar
1. Medusa
2. Blue Circle
3. Soloman Grind-Chem Serv.

Block (Split- Face)
1. Masonry Products
2. Williams Bros.
3. Nat'l. Concrete Masonry

Blocks (Acoustical)
1. Proudfoot
2. Williams Bros.
3. Acousta - Wal Association

Reinforcing
1. Dur-O-Wal
2. Ileckman Bldg. Prod.
3. Masonry Reinf. Corp. of Amer.

4.03 Section 05512 - Metal Spiral Stairs (Not Used)

4.04 Section 05521 - Pipe and Tube Handrails and Railings

1. Julius Blum & Co.
2. T. G. Braun
3. Lawler Machine & Foundry Co., Inc.

4.05 Section 05723 - Safety Nosings

1. Wooster Products
2. American Safety Tread
3. Armstrong Products, Inc.

4.06 Section 05800 - Expansion Control Devices

1. Metalines
2. The C/X Group
3. MM Systems
4. Balco, Inc.

4.07 Section 07114 - Below Grade Membrane Waterproofing

1. Sealtight "Melnar" by W.R. Meadows
2. Royston Waterproofing
3. America Colloid Co. (volclay)

4.08 Section 07210 - Building Insulation

1. Owens Corning
2. CertainTeed

3. Manville

4.09 Section 07535 - Reinforced Flexible Sheet Roofing System

1. Bondcote
2. Carlisle

4.10 Section 07620 - Metal Flashing and Trim

1. AEP SPAM
2. ASC Pacific, Inc.
3. Berridge Manufacturing Co.
4. MM Systems
5. American Building

4.11 Section 07812 - Structural Skylights (Not Used)

1. Gammans Architectural Product, Inc. , Newnan, GA

4.12 Section 07900 - Sealants

1. Dow Corning
2. G.E. Silicones
3. Sonneborn

4.13 Section 08363 - Rolling Counter Doors

1. Peele Rolling Pass Windows
2. Raynor Garage Doors
3. Overhead Door

4.14 Section 08401 - Aluminum Entrance & Storefronts

1. Kawneer
2. PPG
3. YKK
4. EFCO Corp.

4.15 Section 08522 - Aluminum Windows

1. Kawneer
2. EFCO Corp.
3. Traco (min.3-7/8" frame depth)
4. Alenco (min. 3-7/8" frame depth)

4.16 Section 08711 - Finish Hardware

Locksets & Cylinders
1. Schlage Lock Co.
2. Corbin
3. Yale
4. Best

Butts
1. Stanley
2. Hager Hinge Co.
3. H. Soss & Co.

Surface Closers
1. LCN Closers
2. Corbin
3. Norton

Flush Bolts
1. Triangle Brass
2. Ives
3. Stanley

Push / Pull Plates
1. Triangle Brass
2. Quality
3. Ives

Surface Bolts
1. Triangle Brass
2. Ives
3. Stanley

Silencers
1. Triangle Brass
2. Glyn-Johnson
3. Ives

Panic Devices
1. Von Duprin

Kick Plates
1. Quality
2. Bladwin
3. Ives

Threshold
1. Zero International
2. National Guard
3. Hager
4. Pemko

Weatherstripping
1. Zero International
2. National Guard
3. Pemko
4. Hager

Stop / Bumpers / Holders
1. Triangle Brass
2. Glyn-Johnson
3. Ives

4.17 Section 09553 - Strip Wood Flooring System

4.18 Section 09660 - Resilient Tile Flooring

1. Armstrong (asbestos free)
2. Azrock (asbestos free)
3. Amitco Duravinyl Tile (asbestos free)

4.19 Section 09680 - Floor Carpeting (By Owner)

1. Milliken
2. Interface
3. Shaw

4.20 Section 10441 - Building Identification Letters

1. Andco
2. Leeds
3. Matthews

4.21 Section 10500 - Metal Lockers (Not Used)

4.22 Section 10800 - Rest Room, Shower Room, & Locker Room Accessories

1. Bradley
2. Bobrick
3. A & J
4. ASI

4.23 Section 10900 - Wardrobe & Closet Specialties

1. Parker/Nutone, Inc.
2. Stanley
3. REI

4.24 Section 11050 - Library Equipment (Not Used)

4.25 Section 11181 - Dark Room Equipment (Not Used)

4.26 Section 11400 - Commercial Food Service Equipment (Not Used)

4.27 Section 11461 Unit Kitchen (Not Used)

4.28 Section 11873 - Dock Bumpers (Not Used)

1. Dura - Lock
2. Pawling Corp.
3. Serco Corp.

END OF SECTION 01101

SECTION 01200 - PROJECT MEETINGS

PART 1.00 – GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for project meetings, including, but not limited to, the following:

1. Preconstruction conferences.
2. Progress meetings.

1.2 PRECONSTRUCTION CONFERENCE

A. Schedule a preconstruction conference before starting construction, at a time convenient to the Owner and the Architect, but no later than 10 days after execution of the Agreement. Hold the conference at the Project Site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

B. Attendees: Authorized representatives of the Owner, Architect, and their consultants; the Construction Manager and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Discuss items of significance that could affect progress, including the following:

1. Tentative construction schedule.
2. Critical work sequencing.
3. Designation of responsible personnel.
4. Procedures for processing field decisions and Change Orders.
5. Procedures for processing Applications for Payment.
6. Distribution of Contract Documents.
7. Submittal of Shop Drawings, Product Data, and Samples.
8. Preparation of record documents.
9. Use of the premises.
10. Parking availability.
11. Office, work, and storage areas.
12. Equipment deliveries and priorities.
13. Safety procedures.
14. First Aid.
15. Security.
16. Housekeeping.
17. Working hours.

1.3 PROGRESS MEETINGS

A. Conduct progress meetings at the Project Site at weekly intervals. Notify the Owner and the Architect of scheduled meeting dates.

B. Attendees: In addition to representatives of the Owner and the Architect, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of the Project.

1. Construction Manager's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Construction Manager'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 schedule revisions are required to insure that current and subsequent activities will be completed within the Contract Time.

2. Review the present and future needs of each entity present, including the following:
    a. Interface requirements.
    b. Time.
    c. Sequences.
    d. Status of submittals.
    e. Deliveries.
    f. Off-site fabrication problems.
    g. Access.
    h. Site utilization.
    i. Temporary facilities and services.
    j. Hours of work.
    k. Hazards and risks.
    l. Housekeeping.
    m. Quality and work standards.
    n. Change Orders.
    o. Documentation of information for payment requests.

D. Reporting: No later than 3 days after each meeting, Construction Manager is to distribute typed minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.

1. Schedule Updating: Revise the Construction Manager's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01200

SECTION 01300 – SUBMITTALS

PART 1.00 – GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for submittals required for performance of the Work, including the following:

1. Construction Manager's construction schedule.
2. Daily construction reports.
3. Shop Drawings.
4. Product Data.
5. Samples.
6. Quality assurance submittals.

B. Administrative Submittals: Refer to other Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to, the following:

1. Permits.
2. Applications for Payment.
3. Performance and payment bonds.
4. Insurance certificates.
5. List of subcontractors.

C. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section "Applications for Payment" specifies requirements for submittal of the Schedule of Values.
2. Division 1 Section "Project Meetings" specifies requirements for submittal and distribution of meeting and conference minutes.
3. Division 1 Section "Quality Control" specifies requirements for submittal of inspection and test reports.
4. Division 1 Section "Contract Closeout" specifies requirements for submittal of Project Record Documents and warranties at project closeout.

1.2 DEFINITIONS

A. Coordination Drawings show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or to function as intended.

1. Preparation of Coordination Drawings is specified in Division 1 Section "Coordination" and may include components previously shown in detail on Shop Drawings or Product Data.

B. Field samples are full-size physical examples erected on-site to illustrate finishes, coating, or finish materials. Field samples are used to establish the standard by which the Work will be judged.

C. Mockups are full-size assemblies for review of construction, coordination, testing, or operation; they are not Samples.

1.3 SUBMITTAL PROCEDURES

A. Coordination: Coordination preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

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

3. Processing: To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for resubmittals.
    a. Allow 2 weeks for initial review. Allow additional time if the Architect must delay processing to permit coordination with subsequent submittals.
    b. If an intermediate submittal is necessary, process the same as the initial submittal.
    c. Allow 2 weeks for reprocessing each submittal.
    d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.

B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

1. Provide a space approximately 4 by 5 inches (100 by 125 mm) on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.

2. Include the following information on the label for processing and recording action taken.
    a. Project name.
    b. Date.
    c. Name and address of the Architect.
    d. Name and address of the Construction Manager.
    e. Name and address of the subcontractor.
    f. Name and address of the supplier.
    g. Name of the manufacturer.
    h. Number and title of appropriate Specification Section.

i. Drawing number and detail references, as appropriate.

C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Construction Manager to the Architect using a transmittal form. The Architect will not accept submittals received from sources other than the Construction Manager.

1. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including variations and limitations. Include Construction Manager's certification that information complies with Contract Document requirements.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart-type, contractor's construction schedule. Submit within 30 days after the date established for "Commencement of the Work."

1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values."

2. Within each time bar, indicate estimated completion percentage in 10 percent increments. As Work progresses, place a contrasting mark in each bar to indicate Actual Completion.

3. Prepare the schedule on a sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data for the entire construction period.

4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically the sequences necessary for completion of related portions of the Work.

5. Coordinate the Construction Manager's Construction Schedule with the Schedule of Values, list of subcontractors, Submittal Schedule, progress reports, payment requests, and other schedules.

6. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures necessary for certification of Substantial Completion.

B. Work Stages: Indicate important stages of construction for each major portion of the Work, including submittal review, testing, and installation.

C. Area Separations: Provide a separate time bar to identify each major construction area for each major portion of the Work. Indicate where each element in an area must be sequenced or integrated with other activities.

D. Cost Correlation: At the head of the schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of Work performed as of the dates used for preparation of payment requests.

1. Refer to Division 1 Section "Applications for Payment" for cost reporting and Payment procedures.

E. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.

1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

F. Schedule Updating: Revise the schedule after each meeting, event, or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

1.5 DAILY CONSTRUCTION REPORTS

A. Prepare a daily construction report recording the following information concerning events at the site, and submit duplicate copies to the Architect at weekly intervals:

1. List of subcontractors at the site.
2. Approximate count of personnel at the site.
3. High and low temperatures, general weather conditions.
4. Accidents and unusual events.
5. Meetings and significant decisions.
6. Stoppages, delays, shortages, and losses.
7. Meter readings and similar recordings.
8. Emergency procedures.
9. Orders and requests of governing authorities.
10. Change Orders received, implemented.
11. Services connected, disconnected.
12. Equipment or system tests and startups.
13. Partial Completions, occupancies.
14. Substantial Completions authorized.

1.6 SHOP DRAWINGS

A. Submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.

B. Shop Drawings include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates and similar Drawings. Include the following information:

1. Dimensions.
2. Identification of products and materials included by sheet and detail number.
3. Compliance with specified standards.
4. Notation of coordination requirements.
5. Notation of dimensions established by field measurement.
6. Sheet size: Except for templates, patterns and similar full-size Drawings, submit shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 24 by 36 inches. **Electrical submittals in PDF format preferred.**
7. Initial Submittal: Submit one correctable, translucent, reproducible print and three blue- or black-line prints for the Architect's review. The Architect will return the reproducible print.
8. Final Submittal: Submit 4 blue- or black-line prints and 2 additional prints where required for maintenance manuals, plus the number of prints needed by the Architect for distribution. The Architect will retain 3 prints (one each for Architect, Engineer, and Owner) and return the remainder.
    a. One of the prints returned shall be marked up and maintained as a "Record Document."
9. Do not use Shop Drawings without an appropriate final stamp indicating action taken.

1.7 PRODUCT DATA

A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.

1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information:
    a. Manufacturer's printed recommendations.
    b. Compliance with trade association standards.
    c. Compliance with recognized testing agency standards.
    d. Application of testing agency labels and seals.
    e. Notation of dimensions verified by field measurement.
    f. Notation of coordination requirements.

2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.

3. Preliminary Submittal: Submit a preliminary single copy of Product Data where selection of options is required.

4. Submittals: Submit 4 copies of each required submittal; submit 5 copies where required for maintenance manuals. The Architect will retain two and will return the other marked with action taken and corrections or modifications required.

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

5. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.

a. Do not proceed with installation until a copy of Product Data is in the Installer's possession.

b. Do not permit use of unmarked copies of Product Data in connection with construction.

1.8 SAMPLES

A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.

1. Mount or display Samples in the manner to facilitate review of qualities indicated. Prepare Samples to match the Architect's sample. Include the following:

a. Specification Section number and reference.
b. Generic description of the Sample.
c. Sample source.
d. Product name and or name of the manufacturer.
e. Compliance with recognized standards.
f. Availability and delivery time.

2. Submit Samples for review of size, kind, color, pattern, and texture. Submit Samples for a final check of these characteristics with other elements and a comparison of these characteristics between the final submittal and the actual component as delivered and installed.

a. Where variation in color, pattern, texture, or other characteristic is inherent in the material or product represented, submit at least 3 multiple units that show approximate limits of the variations.

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

c. Refer to other Sections for Samples to be returned to the Contractor 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.
d. Samples not incorporated into the Work, or otherwise designated as the Owner's property, are the property of the Contractor and shall be removed from the site prior to Substantial Completion.

3. Preliminary Submittals: Submit a full set of choices where Samples are submitted for selection of color, pattern, texture, or similar characteristics from a range of standard choices.
a. The Architect will review and return preliminary submittals with the Architect's notation, indicating selection and other action.

4. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit 3 sets. The Architect will return one set marked with the action taken.

5. Maintain sets of Samples, as returned, at the Project Site, for quality comparisons throughout the course of construction.
a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
b. Sample sets may be used to obtain final acceptance of the construction associated with each set.

B. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.

1. Field samples are full-size examples erected on-site to illustrate finishes, coatings, or finish materials and to establish the Project standard.
a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.9 QUALITY ASSURANCE SUBMITTALS

A. Submit quality-control submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals as required under other Sections of the Specifications.

B. Certifications: Where other Sections of the Specifications require certification that a product, material, or installation complies with specified requirements, submit a notarized certification from the manufacturer certifying compliance with specified requirements.

1. Signature: Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.

C. Inspection and Test Reports: Requirements for submittal of inspection and test reports from independent testing agencies are specified in Division 1 Section "Quality Control."

1.10 ARCHITECT'S ACTION

A. Except for submittals for the record or information, where action and return is required, the Architect will review each submittal, mark to indicate action taken, and return promptly.

1. Compliance with specified characteristics is the Contractor's responsibility.

B. Action Stamp: The Architect will stamp each submittal with a uniform, action stamp. The Architect will mark the stamp appropriately to indicate the action taken, as follows:

1. Final Unrestricted Release: When the Architect marks a submittal "No Exceptions Taken," the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.

2. Final-But-Restricted Release: When the Architect marks a submittal "Make Corrections Noted," the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contact Documents. Final payment depends on that compliance.

3. Returned for Resubmittal: When the Architect marks a submittal "Rejected, Resubmit," do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.
    a. Do not use, or allow others to use, submittals marked "Rejected, Resubmit" at the Project Site or elsewhere where Work is in progress.

4. Other Action: Where a submittal is for information or record purposes or special processing or other activity, the Architect will return the submittal without action.

C. Unsolicited Submittals: The Architect will return unsolicited submittals to the sender without action.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01300

SECTION 01400 - QUALITY CONTROL

PART 1.00 – GENERAL

1.1 SUMMARY

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

B. Quality-control services include inspections, tests, and related actions, including reports performed by Construction Manager, by independent agencies, and by governing authorities. They do not include contract enforcement activities performed by Architect.

C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve Construction Manager of responsibility for compliance with Contract Document requirements.

D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.

1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

2. Specified inspections, tests, and related actions do not limit Construction Manager's quality-control procedures that facilitate compliance with Contract Document requirements.

3. Requirements for Construction Manager to provide quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

E. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section "Submittals" specifies requirements for development of a schedule of required tests and inspections.

1.2 RESPONSIBILITIES

A. Construction Manager Responsibilities: Unless otherwise indicated as the responsibility of another identified entity, Construction Manager shall provide inspections, tests, and other quality-control services specified elsewhere in the Contract Documents and required by authorities having jurisdiction.

1. Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Construction Manager's responsibility, the Construction Manager shall employ and pay a qualified independent testing agency to perform quality-control services.

2. Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Owner's responsibility, the Owner will employ and pay a qualified independent testing agency to perform those services.

a. Where the Owner has engaged a testing agency for testing and inspecting part of the Work, and the Construction Manager is also required to engage an entity for the same or related element, the Construction Manager shall not employ the entity engaged by the Owner, unless agreed to in writing by the Owner.

B. Retesting: The Construction Manager is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was Construction Manager's responsibility.

1. The cost of retesting construction, revised or replaced by the Construction Manager, is the Construction Manager's responsibility where required tests performed on original construction indicated noncompliance with Contract Document requirements.

C. Associated Services: Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to, the following:

1. Provide access to the Work.
2. Furnish incidental labor and facilities necessary to facilitate inspections and tests.
3. Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.
4. Provide facilities for storage and curing of test samples.
5. Deliver samples to testing laboratories.
6. Provide the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.
7. Provide security and protection of samples and test equipment at the Project Site.

D. Duties of the Testing Agency: The independent agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with the Architect and the Construction Manager in performance of the agency's duties. The testing agency shall provide qualified personnel to perform required inspections and tests.

1. The agency shall notify the Architect and the Construction Manager promptly of irregularities or deficiencies observed in the Work during performance of its services.

2. 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.

3. The agency shall not perform any duties of the Construction Manager.

E. Coordination: Coordinate the sequence of activities to accommodate required services with a minimum of delay. Coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.

1. The Construction Manager is responsible for scheduling times for inspections, tests, taking samples, and similar activities.

1.3 SUMMITTALS

A. Unless the Construction Manager is responsible for this service, the independent testing agency shall submit a certified written report, in duplicate, of each inspection, test, or similar service to the Architect.

B. If the Construction Manager is responsible for the service, submit a certified written report, in duplicate, of each inspection, test, or similar service through the Construction Manager.

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

2. Report Data: Written reports of each inspection, test, or similar service include, but are not limited to, the following:

a. Date of issue.
b. Project title and number.
c. Name, address, and telephone number of testing agency.
d. Dates and locations of samples and tests or inspections.
e. Names of individuals making the inspection or test.
f. Designation of the Work and test method.
g. Identification of product and Specification Section.
h. Complete inspection or test data.
i. Test results and an interpretation of test results.
j. Ambient conditions at the time of sample taking and testing.
k. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.
l. Name and signature of laboratory inspector.
m. Recommendations on retesting.

1.4 QUALITY ASSURANCE

A. Qualifications for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, that are prequalified as complying with the American Council of Independent Laboratories' "Recommended Requirements for Independent Laboratory Qualification" and that specialize in the types of inspections and tests to be performed.

1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the state where the Project is located.

PART 2.00 - PRODUCTS (Not Applicable)

PART 3.00 – EXECUTION

3.1 REPAIR AND PROTECTION

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

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

C. Repair and protection is Construction Manager's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

END OF SECTION 01400

SECTION 01421 - REFERENCES, STANDARDS, AND DEFINITIONS

PART 1.00 – GENERAL

1.1 DEFINITIONS

A. General: Basic contract definitions are included in the Conditions of the Contract.

B. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on the Drawings; or to other paragraphs or schedules in the Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference. Location is not limited.

C. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the Architect, requested by the Architect, and similar phrases.

D. "Approved": The term "approved," when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.

E. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": The term "furnish" means to supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": The term "install" describes operations at the Project site including the actual unloading, temporary storage, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use.

I. "Installer": An installer is the Construction Manager or another entity engaged by the Construction Manager, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.

1. The term "experienced," when used with the term "installer," means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.

2. Trades: Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

J. "Project site" is the space available to the Construction Manager for performing construction activities, either exclusively or in conjunction with others performing other work as part of 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 on which the Project is to be built.

K. "Testing Agencies": A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.2 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of the date of the Contract Documents.

C. Conflicting Requirements: Where compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to the Architect for a decision before proceeding.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the Architect for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on the Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source and make them available on request.

E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-producing

organization, authorities having jurisdiction, or other entity applicable to the context of the text provision. Refer to Gale Research's "Encyclopedia of Associations" or Columbia Books' "National Trade & Professional Associations of the U.S.," which are available in most libraries.

1.3 SUBMITTALS

A. 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, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of Work.

PART 2.00 - PRODUCTS (Not Applicable)

PART 3.00 - EXECUTION (Not Applicable)

END OF SECTION 01421

SECTION 01501 - TEMPORARY FACILITIES AND CONTROLS

PART 1.00 - GENERAL

1.01 Quality Assurance: Temporary facilities and controls shall comply with laws, codes and regulations of the place where the project is located.

1.02 Definitions: Omitted

1.03 Submittals: Omitted

1.04 Product Handling:

A. Use all means necessary to maintain temporary facilities and controls in proper and safe condition throughout the progress of the work.

B. Replacements. In the event of loss or damage, immediately make all replacements and repairs necessary to the approval of the Architect and at no additional cost to the Owner.

1.05 Job Conditions: Make all required connections to existing utility systems necessary to provide temporary utility services described hereinafter in accordance with provisions of this project manual.

PART 2.00 - PRODUCTS

2.01 Temporary Facilities:

A. Field Offices and Sheds:

1. Furnish, install and maintain throughout the work in this project, a field office building adequate in size and accommodation for all of Construction Manager's offices, superintendent's office, supply and tool room.

2. The field office shall be available to the Architect and /or his representative, the Owner and/or his representative and cooperating agencies throughout the work in this project.

3. The Construction Manager and his subcontractors may maintain such other offices and storage facilities as may be necessary to the proper conduct of the work in this project.

B. Toilet Facilities: Furnish, install and maintain in a clean and sanitary condition throughout the work in this project, adequate enclosed toilet and washing facilities for use by persons employed on this project.

2.02 Temporary Enclosures and Controls: Furnish, install and maintain, throughout the work in this project, all required scaffolds, tarpaulins, barricades, canopies, warning signs, steps, bridges, platforms and other temporary construction necessary for the proper and safe execution of the work in this project in compliance with all pertinent safety codes and other regulations.

2.03 Temporary Utilities:

A. Water and Sewer:

1. Furnish, install and maintain all necessary temporary water lines, sewer lines and service throughout the work in this project.
2. Cost of furnishing, installing and maintaining temporary water and sewer lines and services shall be paid for by the Construction Manager.

B. Gas:

1. Furnish, install and maintain all necessary temporary gas service throughout the work of this project.
2. Cost of furnishing, installing and maintaining temporary gas service shall be paid for by the Construction Manager.

C. Electricity:

1. Furnish, install and maintain all necessary temporary electrical lines and service throughout the work of this project.
2. Furnish and install area distribution boxes so located that individual trades may use 100 feet maximum length extension cords to obtain adequate power and artificial lighting at all points where required for the work, for inspection and for safety.
3. Cost of furnishing, installing and maintaining temporary electrical services shall be paid for by the Construction Manager.

D. Telephone:

1. Make all necessary arrangements and pay all costs for installation and operation of telephone service to the Construction Manager's field office throughout the work in this project.
2. This telephone shall be made available for use by the Architect or his representative and the Owner or his representative.
3. The Construction Manager and his or her subcontractors may have other telephones as may be necessary to the proper conduct of the work of this project, making all arrangements for and paying all costs for said additional telephones and service.

E. Heat:

1. Provide, maintain and pay all costs for, throughout the work of this project, temporary heat as necessary to protect all work and materials from damage due to cold or dampness.
2. Fuel, equipment and heating shall not constitute a non-insurable fire hazard and shall be approved by the Architect prior to use.

2.04 Fencing of Construction Area: To be determined; see drawings.

2.05 Haul Roads: Omitted

PART 3.00 - EXECUTION

3.01 Inspection: Omitted

3.02 Installation: Install (locate) field offices, storage sheds, toilet facilities and all other temporary facilities as directed or approved by the Architect.

3.03 Field Quality Control:

A. Maintenance: Maintain all temporary facilities and controls and pay all costs related thereto, in a safe, functioning and sanitary condition throughout work in this project.

B. Removal:

1. Field offices, sheds, toilet facilities, temporary enclosures and controls shall be removed only after approval of their removal by the Architect.
2. Temporary utilities may be removed as soon as permanent utility services are provided and are properly working; cost for maintaining permanent utility service shall be paid by the Construction Manager until date as determined at time of issuing of the Architect's Certificate of Substantial Completion.

END OF SECTION 01501

SECTION 01700 - CONTRACT CLOSEOUT

PART 1.00 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout including, but not limited to, the following:

1. Inspection procedures.
2. Project record document submittal.
3. Operation and maintenance manual submittal.
4. Submittal of warranties.
5. Final cleaning.

B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions 2 through 16.

1.2 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.

1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete.
    a. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
    b. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.

2. Advise the Owner of pending insurance changeover requirements.

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

4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

5. Submit record drawings, maintenance manuals, and similar final record information.

6. Deliver tools, spare parts, extra stock, and similar items.

7. Make final changeover of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of changeover in security provisions.

8. Complete startup testing of systems and instruction of the Owner's operation and maintenance personnel. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.

9. Complete final cleanup requirements, including touchup painting.

10. Touch up and otherwise repair and restore marred, exposed finishes.

B. Inspection Procedures: On receipt of a request for inspection, the Architect will either proceed with inspection or advise the Construction Manager of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection or advise the Construction Manager of construction that must be completed or corrected before the certificate will be issued.

1. The Architect will repeat inspection when requested and assured that the Work is substantially complete.

2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.3 FINAL ACCEPTANCE

A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.

2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.

3. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, endorsed and dated by the Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the Architect.

4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion or when the Owner took possession of and assumed responsibility for corresponding elements of the Work.

5. Submit consent of surety to final payment.

6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Reinspection Procedure: The Architect will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the Architect.

1. Upon completion of reinspection, the Architect will prepare a certificate of final acceptance. If the Work is incomplete, the Architect will advise the Construction Manager of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.

2. If necessary, reinspection will be repeated.

1.4 RECORD DOCUMENT SUBMITTALS

A. General: Do not use record documents for construction purposes. Protect record documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for the Architect's reference during normal working hours.

B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark which drawing is most capable of showing conditions fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

1. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work.

2. Mark new information that is important to the Owner but was not shown on Contract Drawings or Shop Drawings.

3. Note related change-order numbers where applicable.

4. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.

C. Record Specifications: Maintain one complete copy of the Project Manual, including addenda. Include with the Project Manual one copy of other written construction documents, such as Change Orders and modifications issued in printed form during construction.

1. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.

2. Give particular attention to substitutions and selection of operations and information on concealed construction that cannot otherwise be readily discerned later by direct observation.

3. Note related record drawing information and Product Data.
4. Upon completion of the Work, submit record Specifications to the Architect for the Owner's records.

D. Record Product Data: Maintain one copy of each Product Data submittal. Note related Change Orders and markup of record drawings and Specifications.

1. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site and from the manufacturer's installation instructions and recommendations.

2. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.

3. Upon completion of markup, submit complete set of record Product Data to the Architect for the Owner's records.

E. Record Sample Submitted: Immediately prior to Substantial Completion, the Construction Manager shall meet with the Architect and the Owner's personnel at the Project Site to determine which Samples are to be transmitted to the Owner for record purposes. Comply with the Owner's instructions regarding delivery to the Owner's Sample storage area.

F. Miscellaneous Record Submittals: Refer to other Specifications Sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Submit to the Architect for the Owner's records.

G. Maintenance Manuals: Organize operation and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual, heavy-duty, 2-inch (51 mm), 3-ring, vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information:

1. Emergency instructions.
2. Spare parts list.
3. Copies of warranties.
4. Wiring diagrams.
5. Recommended "turn-around" cycles.
6. Inspection procedures.
7. Shop Drawings and Product Data.
8. Fixture lamping schedule.

PART 2.00 - PRODUCTS (Not Applicable)

PART 3.00 - EXECUTION

3.1 CLOSEOUT PROCEDURES

A. Operation and Maintenance Instructions: Arrange for each Installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are not experienced in operation and maintenance procedures. Include a detailed review of the following items:

1. Maintenance manuals.
2. Record documents.
3. Spare parts and materials.
4. Tools.
5. Lubricants.
6. Fuels.
7. Identification systems.
8. Control sequences.
9. Hazards.
10. Cleaning.
11. Warranties and bonds.
12. Maintenance agreements and similar continuing commitments.

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

1. Startup.
2. Shutdown.
3. Emergency operations.
4. Noise and vibration adjustments.
5. Safety procedures.
6. Economy and efficiency adjustments.
7. Effective emergency utilization.

3.2 FINAL CLEANING

A. General: The General Conditions require general cleaning during construction. Regular site cleaning is included in Division 1 Section "Construction Facilities and Temporary Controls."

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion.

    a. Remove labels that are not permanent labels.
    b. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-

obscuring materials. Replace chipped or broken glass and other damaged transparent materials.

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

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

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

C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid the Project of rodents, insects, and other pests.

D. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

E. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.

1. Where extra materials of value remain after completion of associated Work, they become the Owner's property. Dispose of these materials as directed by the Owner.

END OF SECTION 01700

SECTION 01740 - WARRANTIES

PART 1.00 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for warranties required by the Contract Documents, including manufacturers standard warranties on products and special warranties.

1. Refer to the General Conditions for terms of the Construction Manager's period for correction of the Work.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section "Submittals" specifies procedures for submitting warranties.
2. Division 1 Section "Contract Closeout" specifies contract closeout procedures.
3. Division 2 through 16 Sections for specific requirements for warranties on products and installations specified to be warranted.
4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

C. 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. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.2 WARRANTY REQUIREMENTS

A. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction or warranted construction.

B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

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

D. Owner's Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.

1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

E. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, the Owner reserves the right to refuse to accept the Work, until the Construction Manager presents evidence that entities required to countersign such commitments are willing to do so.

1.3 SUBMITTALS

A. 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 for the work, or a designated portion of the Work, submit written warranties upon request of the Architect.

1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Construction Manager during the construction period, submit properly executed warranties to the Architect within 15 days of completion of that designated portion of the Work.

B. When the Contract Documents require the Construction Manager, or the Construction Manager and a subcontractor, supplier or manufacturer to execute a special warranty, 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.

1. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.

C. 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-inch (115 -by- 280-mm) paper.

1. Provide heavy paper dividers with celluloid covered tabs for each separate 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.
2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project title or name, and name of the Construction Manager.
3. When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2.00 - PRODUCTS (Not Applicable)

PART 3.00 - EXECUTION (Not Applicable)

END OF SECTION 01740

SECTION 02110 – DEMOLITION

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Qualifications of Workmen: Provide at least one person who shall be present at all times during demolition operations and who shall be thoroughly familiar with the requirements of this portion of the work and the methods by which the same is accomplished.

B. Codes and Standards: In addition to complying with all pertinent codes and regulations, comply with the requirements of those insurance carriers providing coverage for this work.

C. Construction Manager's Responsibility: It shall be the Construction Manager's responsibility to protect all existing construction designated to remain and to provide for the public safety during all demolition operations.

1.02 Definitions: Omitted

1.03 Submittals: Omitted

1.04 Product Handling:

A. Damage to Existing Construction: In the event of damage to any construction and/or equipment not scheduled to be demolished or removed, the Construction Manager shall immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner. The Construction Manager is to provide all necessary barricades, coverings, floor protection, wall protection, door and frame protection to prevent damage to any construction that is to remain.

1.05 Job Conditions:

A. Dust Control: Use all means necessary to prevent the spread of dust during the performance of the work of this section.

B. Burning: On-site burning will not be permitted.

C. Hazardous Materials: Should, during the course of demolition, any suspect hazardous materials be encountered, stop work in suspect area and immediately notify the Architect. See Section F. Items 19 & 20 for additional information.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Barricades: Use only new and solid lumber and plywood of utility grade or better for construction of all temporary barricades.

B. Other Materials: All other material, not specifically described but required for the proper execution of the work of this section shall be selected by the Construction Manager, subject to approval by the Architect.

PART 3.00 - EXECUTION

3.01 Inspection:

A. The Construction Manager shall examine the areas and conditions under which the demolition operations are to be carried out; notify the Architect in writing of conditions detrimental to the completion of the demolition; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Preparation:

1. Notification: Notify the Architect at least two full working days prior to commencing the work of this section.

2. Site Inspection: Prior to all work of this section, carefully inspect the entire site and all objects designated to be removed and to be preserved.

3. Clarification: The drawings show generally all existing construction that is to be removed; however,

a. Remove existing ceilings as shown on the drawings.
b. Removal of various mechanical and electrical items as shown.
c. Removal of existing walls, doors, windows, frames, millwork, concrete slabs and floor finishes as shown**. Do not remove any structural columns in walls.**
d. Before commencing the work of this section, verify with the Architect all construction that is to be removed.

4. Scheduling:

a. Schedule all work in a careful manner with all necessary consideration for neighbors and the public.
b. Avoid interference with the use of and passage to and from adjacent buildings and facilities.

3.03 Field Quality Control:

A. Temporary Barricade: Construct temporary barricades to protect existing construction and the public from damage or harm caused by the work of this section; barricades shall be constructed in accordance with all pertinent codes and regulations.

B. Disconnection of Utilities: Before starting site operations, disconnect or arrange for disconnection of all utility services designated to be removed, performing all such work in accordance with the requirements of the utility company or agency involved.

C. Protection of Utilities: Preserve in operating condition all active utilities traversing the site. all active utilities designated to remain, and make all necessary temporary connections to maintain all utilities to existing building at all times.

D. Demolition: Demolish existing construction designated to be removed on the drawings or as determined under Article 3.02, A, 3, in their entirety.

E. Disposal of Debris: Remove from the site all debris resulting from the demolition operations; burning of debris on site will not be permitted; place of disposal for demolished items shall be the Construction Manager's responsibility.and should be a permitted dump site approved by State of Georgia EPD. Provide Dump Tickets to Owner and Architect

END OF SECTION 02110

SECTION 02251 - TERMITE CONTROL

PART 1.00 - GENERAL

1.01 Quality Assurance: The applicator of chemicals described hereinafter shall have been successfully engaged in the business of termite control for a period of not less than five years immediately prior to performing work of this section.

1.02 Definitions: Omitted

1.03 Submittals:

A. Proof of Compliance: Prior to commencing any work of this section, submit in triplicate to the Architect:

1. a certified statement of qualifications and

2. a certified statement to the effect that all products proposed to be used meet the requirements of this section.

B. Guarantee: Upon completion of the work, and as a condition of its acceptance, deliver to the Owner, via the Architect, three copies of guarantee in the form and with provisions as follows:

1. Form of Guarantee: The guarantee shall be in form acceptable to the Architect and shall be drawn in favor of the Owner, his successor, and his assigns.

2. Provisions Required:
   a. All soil poisoning has been performed in accordance with all requirements of this section of the project manual.
   b. The effectiveness of the soil treatment against termite infestation will continue for not less than five years after the date of treatment.
   c. All evidence of reinfestation within the guarantee period will be treated in accordance with the referenced standards and without additional cost to the Owner.
   d. Complete performance of the guarantee is assured by Surety acceptable to the Owner.

3. Performance of Guarantee: Treat, in accordance with all terms of the guarantee, all evidence of termite re-infestation which is discovered within the guarantee period.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage, installation and until date of Architect's final certificate and to protect the installed work and materials of all other trades.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions:

A. Coordination: Carefully coordinate all soil poisoning activities with the schedule for preparation of other under slab work and for placing the concrete slabs, in order to ensure orderly progress of the total work.

B. Environmental Conditions: Do not apply soil poison when the soil is wet or there is an immediate likelihood of rain.

C. Signs: Post signs in the areas of application of soil poison warning workers that soil poison has been applied; remove signs when treated areas are covered by other construction.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Chemicals: FT Termiticide by FMC Corp. Philadelphia, PA 19103 or equal.
Active Ingredient: Cypermethrin 24.8% by weight
Inert Ingredients 75.2% by weight

B. Water: all water shall be potable.

2.02 All materials must bear a current EPA registration number and all residue and excess material must be disposed of in accordance with FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) 7USC136-136Y.

PART 3.00 - EXECUTION

3.01 Inspection: The Construction Manager shall examine the areas and conditions under which the work of this section is to be performed; notify the Architect in writing of conditions detrimental to the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Surface Preparation: Remove all foreign matter from areas to be treated.

B. Application and Rates: Apply chemical solutions as follows:

1. Within building area, with or without slabs-on-grade at the rate of 1-1/2 gallons per 10 square feet (or as per manufacturer's recommendation and EPA regulations).

2. Along interior side of perimeter foundation walls and along both sides of interior foundation walls, at a rate of 4 gallons per 10 lineal feet.

3. Below expansion joints, control joints and around penetrations through concrete slabs, at a rate of 4 gallons per 10 lineal feet.

4. Outside building perimeter, in a strip at least 2 feet wide, under areaways, aprons, pads, landings, walks, paved extensions and where paving abuts perimeter of building, at a rate of 1 gallon per 10 square feet.

5. Under foundations and footings, including but not limited to horizontal and vertical surfaces of excavations, at the rate of 1-1/2 gallons per 10 square feet.

3.03 Field Quality Control:

A. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

B. Drying: Allow not less than twelve hours for drying after application before proceeding with construction activities that will cover the treated areas.

C. Protection of Treated Areas: Treated surfaces shall be protected from disturbance until covered by subsequent construction.

D. Retreatment: Should treated surfaces be disturbed reapply soil poisoning to the disturbed areas at the rates hereinbefore described.

END OF SECTION 02251

SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Qualifications of Installers:

1. For actual erection of unit masonry, use only skilled journeyman masons who are thoroughly experienced with the materials and methods described and thoroughly familiar with the design requirements of this work.

2. In acceptance or rejection of installed unit masonry, no allowance will be made for lack of skill on the part of workmen.

3. Provide one skilled journeyman mason who shall be present at all times during execution of the work of this section and who shall personally direct the execution of this portion of this work.

1.02 References:

A. Codes & Standards: (Comply with standards specified in this section.)

1. ACI 301-96, "Specifications for Structural Concrete for Buildings".
2. ACI 304R-89, "Recommended Practice Measuring, Mixing, Transporting and Placing Concrete".
3. ACI 305R-91, "Hot Weather Concreting".
4. ACI 306R-88, "Cold Weather Concreting".
5. ACI 309R-87, "Guide for Consolidation of Concrete".
6. ACI 315-92, "Details and Detailing of Concrete Reinforcement".
7. ACI 318-05, "Building Code Requirements for Structural Concrete".
8. ASTM A82-01, "Cold-Drawn Steel Wire for Concrete Reinforcement".
9. ASTM A615-01b, "Deformed and Plain Billet-Steel Bars for Concrete Reinforcement".
10. ASTM C31-00e1, "Making and Curing Concrete Test Specimens in the Field".
11. ASTM C33-01a, "Concrete Aggregates".
12. ASTM C42-99, "Obtaining and Testing Drilled Cores and Sawed Beams of Concrete".
13. ASTM C78-92, "Test Method for Flexural Strength of Concrete".
14. ASTM C94-00e2, "Ready-Mixed Concrete".
15. ASTM C143-00, "Test Method for Slump of Hydraulic Cement Concrete".
16. ASTM C150-02, "Portland Cement".
17. ASTM C171-97a, "Sheet Materials for Curing Concrete".
18. ASTM C172-99, "Sampling".
19. ASTM C173-01e1, "Test Method For Air Content of Freshly Mixed Concrete by the Volumetric Method".
20. ASTM C192-00, "Making and Curing Cylinder".
21. ASTM C231-97e1, "Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method".
22. ASTM C260-01, "Air-Entraining Admixtures for Concrete".
23. ASTM C309-98a, "Liquid Membrane-Forming Compounds for Curing Concrete".

24. ASTM C494-99ae1, "Chemical Admixtures for Concrete".
25. ASTM E329-00b "Inspection and Testing Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction."

1.03 Submittals:

A. Manufacturer's Data:

1. Specifications and instructions for installation shall be submitted for each of the products listed in part 2. Indicate instructions for storage, handling, and protection for each product.

B. Mix Designs: Submit to the Architect for each type of concrete used on project, in advance of proposed use. Verify the design mix in accordance with Section 3.9 or 3.10 of ACI 301.

1. Previous Field Experience or Trial Mixtures: Concrete proportions may be established on the basis of previous field experience if sufficient and timely data is available for full compliance with Section 3.9 of ACI 301. Where acceptable records are not available trial mixtures shall be submitted to an approved testing laboratory for mix designs in accordance with Section 3.9.3.3 of ACI 301.

2. Where acceptable field test records or trial mixture data are not available the Construction Manager may submit mix designs based on proportioning by empirical data in accordance with Section 3.10 of ACI 301.

C. Prequalify ready-mixed concrete suppliers according to the requirements of ASTM Specification C94, entitled "Ready-Mixed Concrete". Mix and transport concrete as required by ASTM C94, Paragraph 15.1 and 15.2.

D. Complete description of proposed curing methods.

E. The Construction Manager shall submit construction and control plan for approval.

F. The Construction Manager shall check all shop drawings prior to submittal. All unchecked shop drawings will be rejected.

G. Concrete placement shall not begin until mix designs have been stamped "No Exceptions" or "Make Corrections Noted" and corrections have been made and corrected and file copies submitted to Architect.

1.04 Job Conditions:

A. Weather:

1. Precaution shall be taken to prevent high temperatures in fresh concrete during hot weather, in accordance with ACI 305. Water reducing set retarding admixtures shall be used in such quantities as recommended by concrete supplier to assure that concrete remains workable and lift lines will not be visible.

2. Cold weather placement shall be in accordance with ACI 306.

1.05 Definitions:

A. Normal Weight Concrete: Composed of ASTM C33 aggregate, cement and water, weighing 145 - 150 pounds/cubic foot, cured and air dried.

1.06 Quality Criteria:

A. Allowable Tolerances in Finished, Exposed Work:

1. In linear buildings lines, elevations and conspicuous lines and arises: As specified in above standards.
2. In cross-sectional dimension: As specified in above standards.
3. Finish all interior concrete elevated slabs and slabs on grade using techniques, which will provide the following flatness criteria:

	Overall:	Min. Local:
Office Area Slab on Grade	FF25/FL20	FF20/FL15
Manufacturing Area Slab on Grade	FF35/FL25	FF30/FF20
Warehouse Area Slab on Grade	FF35/FL25	FF30/FF20

a. ACI 301, "Specification for Structural Concrete for Buildings".
b. FL for elevated floors is only applicable when concrete forms are shored and shoring is provided in accordance with section 03100 Concrete Forming. FL shall be measured prior to removal of forms. FL does not apply to sloping slabs.
c. For unshored construction, FL values do not apply except when required FL values for elevated slabs are greater than or equal to 50.
d. All flatness tests for a given slab shall be performed within 72 hours of pour.
e. Slabs that do not meet the required flatness (FF) and levelness (FL) criteria shall be repaired by grinding, planing, surface repair, retopping, or removal of the slab. Detailed drawings showing repair action and manufacture specification of materials to be used shall be submit and approved prior to corrective action. Measures shall be taken to adjust finishing techniques to obtain the flatness and levelness criteria specified prior to additional placement of additional elevated or slab on grade.

B. Location Tolerances for Cast-in items:

1. Inserts, pipe sleeves, bolts, etc., plus or minus 3/8"
2. Flashing reglets, at edge of panel, plus or minus 1/4" total
3. Reglets for glazing gasket, plus or minus 1/8"
4. Groove width for glazing gaskets, plus or minus 1/16"
5. Electrical outlets, hose bibs, etc., plus or minus 1/2"

PART 2.00 - PRODUCTS

2.01 Materials:

A. Portland Cement: Meeting ASTM C150, Type I or III, natural color, domestic manufacture. Only one brand of cement shall be used for exposed Architectural concrete throughout.

B. Mineral Admixtures: Mineral admixtures including Fly Ash shall not be used to replace Portland Cement.

C. Normal Weight Aggregate: Fine and coarse aggregate meeting ASTM C33.

D. Coarse aggregate: Crushed stone or gravel conforming to ASTM C 33, for normal weight. Maximum size shall be 1" for slabs and walls; 1-1/2" for reinforced footings and pile caps; or not more than 1/5 the narrowest dimension between the sides of the forms or 3/4 the minimum clear distance between parallel reinforcing--whichever is smaller. Coarse aggregate shall conform to a well-distributed gradation. Minimum aggregate size for all concrete mixes shall be 3⁄4", unless permitted otherwise in writing. Contractor shall examine in-place formwork and reinforcing and coordinate with engineer and architect regarding possible use of smaller aggregates it consolidation of concrete in congested areas is in question, based on contractor's examination and judgment.

E. Air-Entraining Admixture: Meeting ATM C260. Add to produce air entrainment in accordance with ACI-318.

F. Water-Reducing Admixture: Meeting ASTM C494.

G. Chemical Retarders and Accelerators: Meeting ASTM C494. Add as required for weather conditions encountered.

H. Nonshrink Grout:

1. Acceptable products:
    a. Gifford-Hill and Co., Supreme.
    b. L&M Construction Chemicals Co., Crystex.
    c. Master Builders Co., Master Flow 713.
    d. Sonneborn Building Products, Sonogrout.
    e. The Upco Co., Upcon High Flow 261.
    f. U.S. Grout Corp., Five Star Grout.
    g. W.R. Bonsal Co., Type A Construction Grout.
    h. W .R. Meadows, Inc., 588.

2. Characteristics: High flow, non-metallic, controlled expansive type grout.

I. Water: Clean, potable and free of deleterious amounts of acids, alkalis, and organic matter.

J. Expansion Joint Filler Strips: Non-extruding, non-asphaltic cork or cane fiber.

K. Calcium chloride or admixtures containing calcium chloride shall not be used in concrete without Architect's approval.

L. Water stops shall be extruded polyvinyl chlorides as manufactured by W.R. Meadows or approved equal. Size shall be 4" wide by 3/16" thick of the center bulb multi-rib type. Alternatively, waterstops may be RX type as manufactured by Volclay, or approved equal.

M. Curing Compound: Conform to ASTM C309, Type II, Class B curing compound shall be compatible with floor finishes and flooring adhesives. Contractor responsible for verifying material is compatible for all floor finishes and adhesives. Curing and sealing compounds, if used, shall likewise be compatible with floor finishes and flooring adhesives.

2.02 Concrete Types

A. Concrete shall be type, weights, and strength as listed herein, shown in the drawings, and as otherwise directed and specified.

B. Concrete type:

Item Description	Min. Strength at 28 Days	Unit Weight	Slump
As shown on drawings	4000 psi	145-150 pct (NW)	3”-5”
As shown on drawings	3000 psi	145-150 pct (NW)	3”-5”

C. Only concrete permanently exposed to weather shall be air-entrained.

PART 3.00 - EXECUTION

3.01 Inspection: Examine surfaces designated to receive work described in this section for conditions adversely affecting the finished work. Repair or replace surfaces not meeting tolerances or quality requirements imposed within specifications governing substrate construction prior to initiating this work.

3.02 Vapor Barrier:

A. Vapor Barrier (Moistop or equal): Place, protect, and repair vapor barrier according to ASTM E 1643 and manufacturer’s written instructions.
1. Lap Joints 6 inches and seal with manufacturer’s recommended tape.

3.03 Proportioning of Concrete Mixtures:

A. Proportion ingredients for concrete by weight when both the air content and slump are the maximum permitted to produce an average compressive strength at 28 days which exceeds by 25% the compressive test strength specified.

B. Air content of freshly mixed air-entrained concrete as determined by the method of ASTM C 173 shall be 6%. A field tolerance of 1% plus or minus is acceptable. Only concrete permanently exposed to freezing weather shall be air-entrained, unless specified otherwise on drawings.

C. Water reducing admixture shall be used in all concrete to reduce the total water requirement per cubic yard of concrete without loss of workability or test strength.

D. Retarding admixture shall be used to retard the setting time when anticipated ambient temperature exceeds 75 degrees F. during placing or finishing operations.

3.04 Batching & Mixing:

A. Measure cement by weight on a scale separate from those used for other materials. Cement may be measured in bags of standard weight of 94 pounds; however, no fraction of a bag shall be used in any batch.

B. Measure aggregates by weight. Batch weights shall be based on saturated surface dry materials corrected for the actual moisture condition of the aggregate.

C. Measure water by volume or by weight by devices not subject to variation due to variable pressure in the water supply line. Measuring tanks shall be provided with means for checking their calibration.

D. Devices for measuring quantities of cement, aggregates, water and admixtures shall be accurate within 1% under operating conditions.

E. Furnish delivery ticket for each batch of concrete before unloading at the site. Weights of fine and coarse aggregate, amount of cement, and total water as batches shall be printed on ticket by an automatic printing device. Delivery tickets shall, in addition, include the following:

1. Name of batch plant.
2. Serial number of ticket.
3. Date and truck number.
4. Name of contractor.
5. Job name of location.
6. Type/Purpose of concrete and slump.
7. Cubic yards of concrete.
8. Time loaded.
9. Amount water added at job.
10. Initials of Job Superintendent.

F. Batch and mix concrete in accordance with ASTM C94, except where more stringent requirements are specified. Ready-mixed concrete shall be produced and delivered in accordance with the requirements of ASTM C 94.

G. Truck mixer drums shall be thoroughly cleaned prior to each batching of concrete. Truck mixtures shall be loaded at only capacity which will insure uniform batch at slump specified. Non-uniform mixing shall be rejected.

H. Mixing time shall start after all ingredients are in mixer. Minimum mixing shall be 70 revolutions at mixing speed, if charged to maximum capacity; 50 revolutions at mixing speed, if charged to less

than maximum capacity. Discharge mixture from mixes within one hour of initial mixing.

I. Additional water shall not be added to the mix except as directed by Architect, or allowed herein for hot weather concreting.

J. Concrete shall be delivered at such a rate as will assure prompt discharge upon truck arrival. Place no concrete which has been discharged from mixer truck for longer than thirty minutes.

K. Truck mixers with unacceptable batch of concrete will be rejected. Dispose of concrete legally and clean mixer prior to refill. Rejected mixers will be singled out on new delivery for slump and mix test.

3.05 Placing:

A. General:
1. Place concrete in compliance with practices and recommendations of ACI 304, and as herein specified.
2. Provide sufficient notice to Special Inspector and Architect at least 48 hours before placing concrete in any portion of the structure to permit inspection of the forms and reinforcement. Do not place concrete without approval of forms and reinforcement by Special Inspector. All embedded items of whatever nature shall be in place prior to inspection.

B. Procedures
1. Do not place any concrete which does not meet slump requirements for concrete specified.
2. Deposit concrete continuously 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.
3. If a section cannot be placed continuously, provide construction joints as herein specified.
4. Perform concrete placing at such rate that concrete which is being integrated with fresh concrete is still plastic.
5. Deposit concrete as nearly as practicable in its final location to avoid segregation due to rehandling and flowing.
6. Do not subject concrete to any procedure which will cause segregation.
7. Screed concrete which is to receive other construction to the proper level to avoid excessive skimming and grouting.
8. Do not use concrete which becomes nonplastic and unworkable, or does not meet the required quality control limits, or which has been contaminated by foreign materials.
9. No concrete shall be placed in forms after initial set has taken. Retempering of concrete which has partially set is prohibited. Place concrete in the forms within 1-1/2 hours after initial batching. No placing will be permitted when the sun, temperature, wind or limita- tions of facilities prevent proper finishing and curing.
10. Remove rejected concrete from the site and dispose of it in an approved location.

C. Placement schedule: Place concrete in conformance with the placement schedule to ensure an even distribution of loads throughout the entire structure.

D. Concrete conveying:

1. Handle concrete from the point of delivery and transfer to concrete conveying equipment, and to the locations of final deposit, as rapidly as practicable and by methods which will prevent segregation and loss of concrete mix materials.
2. Keep interior surfaces of conveying equipment, including chutes and tremies, free from hardened concrete, debris, water, and other deleterious materials.
3. Use chutes or tremies for placing concrete where a drop of more than 72 inches is required.
4. Where free drop through tremies exceeds 18 inches, use flow checking devices.
5. Transport and place pumped concrete in accordance with ACI
requirements. Make provisions in formwork design and construction to handle effects of pump hammer. Equipment used to transport concrete shall be compatible with concrete reinforcing and desired finishes.

E. Placing concrete in forms:
1. Deposit concrete in forms in horizontal layers not deeper than 24 inches, avoiding inclined construction joints.
2. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
3. Remove temporary spreaders in forms when concrete placing has reached the elevation of such spreaders.
4. Do not place concrete in supporting elements until the concrete previously placed in columns and walls is no longer plastic.

F. Placing concrete slabs:
1. Immediately before placing concrete, ensure that any required subgrade, waterproofing, vapor barriers, bond breaks, and/or joint forms have been properly installed.
2. Install wire mesh and/or steel reinforcement as indicated and
3. Deposit and consolidate concrete in a continuous operation, within the limits of the construction joints, until the placing of a panel or area is complete.
4. Consolidate concrete during placement by use of Construction Manager approved equipment, thoroughly working concrete around the reinforcement and into corners.
5. Consolidate concrete placed against bulkheads of slabs on grade, as specified for formed concrete.
6. Consolidate concrete in remainder of slabs by vibrating bridge screeds, roller pipe screed, or other methods acceptable to the Architect.
7. Screed to correct level with straightedge to bring surface to the required finish elevation with no coarse aggregate visible.
8. Immediately following screeding finish the surface to a true even plane using bullfloats or darbies. After concrete has stiffened sufficiently to support one man's weight without imprint and the water sheen has disappeared, it shall be wood floated.
9. Unless noted otherwise on the drawings, immediately following wood floating, the surfaces shall be steel troweled to produce a smooth, dense surface free from blemishes including trowel marks. In lieu of hand finishing, an approved power finishing machine may be used in accordance with the directions of the machine manufacturer. A final hard steel troweling shall be done by hand.
10. Do not sprinkle water on the plastic surface; do not disturb the slab surfaces prior to start of finishing operations.

3.06 Consolidation:

A. Consolidate all concrete in forms in accordance with provisions of ACI 309.

B. Use vibrators for concrete consolidation. Place vibrators in concrete rapidly so as to penetrate into previous lift blending two layers and minimizing or eliminating entrapped air between concrete and form.

C. Vibrator head shall not be allowed to come within 3" of form face. Do not vibrate reinforcing.

D. Use vibrators with steady, continuous motion in concrete mass and for long enough duration at each position in a pattern to permit maximum escape of air from concrete.

E. Vibrators shall be 2-1/2" to 2-5/8" in diameter, with minimum frequency of 10,000 impulses per minute. Furnish number of vibrators as required to vibrate all concrete immediately upon placing. Maintain spare vibrators at project site in case of breakdown.

3.07 Cold Weather Concreting:

A. Take cold weather precautions when temperature on job site is at or below 40 degrees F.

B. Heat water, aggregates, or both, to maintain the temperature of the concrete at the time of delivery at not less than 55 degrees F. Provide tarps, heaters, insulated forms, or other means to maintain the temperature of deposited concrete at not less than 40 degrees F for the first 7 days after placement. Calcium chloride or other accelerating admixtures will not be permitted unless approved in writing by the Architect.

3.8 Hot Weather Concreting:

A. Take hot weather precautions when temperatures on job site are at or above 75 degrees F.

B. Add retarders to the concrete mix at the batch plant according to the mix design approved by the testing agency. Where necessary, cool aggregates or use chilled water or both to maintain concrete temperatures as delivered to the job site at or below 90 degrees F. Reject any truck mixer in which concrete temperatures are above 90 degrees F. Maintain truck discharge time within 1 hour of initial mixing and placement of discharged concrete within 30 minutes of initial discharge.

C. In hot weather, up to 10% of design mix water may be added to truck mixers at the job site to replace water lost by evaporation. Mix for a minimum of 30 additional revolutions after water is added. Make slump test and take cylinders for compression test specimens from each truck to which water has been added. These additional cylinders shall not be counted in determining "frequency of testing" as defined in Concrete Testing Section. Cost for this additional testing shall be paid for by the Construction Manager .

3.09 Curing:

A. General:

1. All concrete shall be cured by an approved method for the period of time given below:
Type I, II, IP of IS cement 7 days

2. Immediately after placement, concrete shall be protected from premature drying extremes in temperatures, rapid temperature change, mechanical injury and injury from rain and flowing water. All materials and equipment needed for adequate curing and protection shall be available and accessible prior to placing concrete. No fire or excessive heat shall be permitted near or in direct contact with the concrete at any time. Curing shall be accomplished by any of the following methods, or combination thereof, as approved by Construction Manager .

B. Moist curing: Concrete to be moist-cured shall be maintained continuously wet for the entire curing period. If water or curing materials used, stains or discolors concrete surfaces which are to be permanently exposed, the concrete surfaces shall be cleaned. When wooden forms are left in place during curing, they shall be kept wet at all times. If the forms are removed before the end of the curing period, curing shall be carried out as on unformed surfaces, using suitable materials. Horizontal surfaces shall be cured by covering with waterproof paper, polyethylene sheet, polyethylene- coated burlap or saturated burlap.

C. Membrane curing:

1. Membrane curing shall not be used on surfaces that are to receive any subsequent treatment depending on adhesion or bonding to the concrete; except a styrene acrylate or chlorinated rubber compound meeting Class B requirements may be used for surfaces which are to be painted or are to receive bituminous roofing or waterproofing, or floors that are to receive adhesive applications of vinyl composition tile.
2. Membrane curing compound shall not be used on surfaces that are maintained at curing temperatures with free steam.
3. The curing compound shall be applied to formed surfaces immediately after the forms are removed and prior to any patching or other surface treatment except the cleaning of loose sand, mortar, and debris from the surface.
4. The surfaces shall be thoroughly moistened with water and the curing compound shall be applied to slab surface as soon as the bleeding water has disappeared, with the tops of joints being temporarily sealed to prevent entry of the compound and to prevent moisture loss during the curing period.
5. The compound shall be applied in a one-coat continuous operating, at a uniform coverage in accordance with manufacturer's printed instructions.
6. Concrete surfaces which have been subjected to rainfall within three hours after curing compound has been applied shall be recoated at the same coverage rate and method herein specified. On surfaces permanently exposed to view, the surface shall be shaded from direct rays of the sun for the duration of the curing period. Surfaces coated with curing compound shall be kept free of foot and vehicular traffic and from other sources of abrasion and contamination

during the curing period.

3.10 Acceptance of Concrete:

A. The strength of concrete will be considered satisfactory if the averages of all sets of three consecutive strength test results equal or exceed the required 28- day strength and no individual strength test result is more than 500 psi below the required 28-day strength. Whenever this criteria is not met, core tests as described in Concrete Testing Section shall be taken in those areas with questionable concrete, as directed by the Architect.

END OF SECTION 03300

SECTION 03350 - CONCRETE FINISHES

PART 1.00 - GENERAL

1.01 Related Work:

A. Forming, mixing, and placing of concrete.

PART 2.00 - PRODUCTS

2.01 Sealer:

A. Sealer shall be wax free, resin free and varnish free compound, which seals and hardens the concrete surface. Approved "Guardian Clear Bond".

2.02 Abrasive Aggregate:

A. Abrasive aggregate shall be aluminum oxide or emery graded from particles retained on a #50 mesh screen to particles passed by a 1/8" screen.

PART 3.00 - EXECUTION

3.01 Patching:

A. Concrete which is not formed as shown on the plans, or for any reason is out of alignment or level or shows a defective surface shall be considered as not conforming with the intent of these specifications and shall be removed from the job by the Construction Manager , at his or her expense, unless the Architect grants permission to patch the defective area, which shall be done in accordance with the following procedure. Permission to patch any such area shall not be considered a waiver of the Architect' s right to require complete removal of the defective work if the patching does not, in his opinion, satisfactorily restore the quality and appearance of the surface.

B. When patching is authorized by the Architect, it shall be performed in accordance with the provisions of paragraph 37, "Patching" of the Architectural Concrete Specifications, published by the Portland Cement Association, current edition.

3.02 Finishes On Formed Surface:

A. Upon completion of patching, surfaces of concrete shall be finished as follows:

1. Un-exposed concrete shall be left rough.

2. Common Finish:
   a. Confine common finish to exposed concrete surfaces in mechanical, electrical, and utility spaces, and areas shown or noted in finish schedule.

b. Strip forms at earliest time permitted by provisions of "Concrete Section". Strip only those forms on areas which can be immediately finished.

c. Produce common finish by filling smoothly all the holes and honeycomb areas and knocking off and evening up burrs.

3. Smooth Rubbed Finish:

a. Provide smooth rubbed finish on vertical interior concrete exposed in the finish work, as indicated on finish schedule not to receive special textured concrete.

b. Produce smooth rubbed finish as follows: Mix 1 part Portland cement and 1-1/2 parts fine sand with sufficient water to produce a grout having the consistency of thick paint. Wet the surface of the concrete sufficiently to prevent absorption of water from the grout and apply the grout with brushes or a spray gun uniformly, completely filling air bubbles and holes. Immediately after applying the grout, float the surface with a cork or other suitable float, scouring the wall vigorously. While the grout is still plastic, the surface shall be finished with a sponge rubber float removing all excess grout. This finishing shall be done at the time when grout will not be pulled from holes or depressions. Next allow the surface to dry thoroughly, then rub it vigorously with dry burlap to completely remove any dried grout. There shall be no visible film of grout remaining after this rubbing. The entire cleaning operation for any area must be completed the day it is started. No grout shall be left on the wall overnight. After an area has been grout cleaned, if any slightly dark spots or streaks remain they shall be wiped off lightly with a fine abrasive hone without using water but the rubbing with the hone shall not be sufficient to change the texture of the concrete. This final operation shall be included as a part of the smooth rubbed finish.

3.03 Unfinished Structural Slabs:

A. Treat surfaces of structural slabs, not finished as walking surfaces or as support for resilient floor coverings as required by their intended use. Screed surfaces intended to receive cement setting beds for other materials to true planes and scraped free of a laitance or scum immediately thereafter, and roughen mechanically for bond as soon as they bear the weight of workmen. Scrub surfaces to receive setting beds before placing setting and broom a thin, neat cement grout onto the surface a short distance ahead of the fill.

3.04 Monolithic Cement Finish:

A. Apply to the surface of concrete floor slabs as follows:

1. Floors scheduled to receive resilient flooring, carpets, and all other floors, stairs, platforms or slabs scheduled or shown on the drawings to have steel troweled cement finish.

2. Screed floor slabs to an even surface by the use of straightedge grade to obtain floor level within specified tolerances after initial deflection under dead load. This means that slab is to be screeded at a center span to a rise equal to specified camber of forms, ie., + /- 0 at columns and + value at center span to attain floor slab level within the specified tolerances after removal of

forms. Float concrete with a wood float in a manner which will compact it and produce a surface free from depressions or inequalities of any kind. Floors shall be level with a tolerance of 1/8" in ten feet and shall slope no more than 1/4" except where drains occur in which case the floors shall be pitched to the drains as indicated on the drawings. After the concrete has hardened sufficiently to prevent fine materials from working to the top and allowed to stand until all water sheen has disappeared, steel trowel surface. Perform final troweling after the concrete is so hard that no mortar accumulates on the trowel and a ringing sound is produced as the trowel is drawn over the surface. The drying of the surface moisture before troweling must proceed naturally and must not be hastened by the dusting on the dry sand or cement. Perform patching required to bring slabs to specified tolerances using latex or epoxy modified Portland cement.

3.05 Sealer: (Ashford Sealer) **(Refer to drawings for exact locations)** All interior slabs which serve as the finish floor shall be covered with one coat of liquid sealer compatible with curing compound specified in "Concrete" section. Liquid sealer shall be applied in accordance with the manufacturer's recommendations immediately before releasing the building to the Owner.

END OF SECTION 03350

SECTION 03600 - CONCRETE TESTING

PART 1.00 - GENERAL

1.01 Description:

A. Testing of concrete materials, proposed mix designs and resulting concrete. Testing Agency will be selected by the Construction Manager and paid for by the Construction Manager . Additional testing required because of deficiencies, or to verify the adequacy of a condition allegedly not built in accordance with contract documents, shall be performed at the expense of the Construction Manager under the direction of the Owner' s representative.

1.02 Standard:

A. Test in accordance with chapters 16, 17, and 18 of ACI 301 entitled, "Specifications For Structural Concrete For Buildings", except as otherwise indicated.

1.03 Qualifications Of Testing Agency:

A. The testing agency shall meet the requirements of ASTM E329, entitled "Tentative Recommend Practice For Inspection And Testing Agencies For Concrete Steel As Used In Construction". The testing agency shall perform the following:

1. Check concrete materials for compliance with specifications and report results along with recommendations to Architect.
2. Sample concrete at job site and prepare compression test specimens, test for slump, air content, and unit weight as required by specifications.
3. Place concrete test specimens in designated locations after casting.
4. Transport test specimens to laboratory and perform compression tests according to specifications. Report results on field data sheet to Owner' s representative immediately of any test specimens that do not meet design strength at 28 days or 70% of design strength at 7 days.
5. Complete field test data sheet for each set of concrete test specimens. The completed data sheet shall show all information required by ACI specifications. Include: laboratory number, date, plant, truck number, time batched, time sampled, air temperature, concrete temperature, inspector, mix design number, required strength, unit weight, air content, slump, location of placement, 7 day and 28 day strength.

1.04 Record Documents:

A. Testing agency shall distribute copies of test report to:
1. One (1) copy to Owner' s representative.
2. One (1) copy to Construction Manager .
3. One (1) copy to Concrete Supplier.

PART 2.00 - PRODUCTS

2.01 Items Provided By Testing Agency:

A. Maintain supplies, apparatus, tools and devices at job site to obtain specimens and perform on-site tests as indicated. Provide not less than the following:

1. Molds for compression test specimens.
2. Slump cones with rod for slump test.
3. Scale and unit weight measure.
4. Appropriate air meters.
5. Concrete thermometer.

2.02 Items Provided By Construction Manager :

A. Provide stable, lockable storage box thermostatically controlled to maintain temperature between 60 and 80 degrees Fahrenheit for storage of cylinders for first 24 hours after molding. Box shall be a minimum of 40 cubic feet. Locate box in a permanent lockable area of approximately 100 square feet. Limit access to laboratory personnel and Construction Manager ' s superintendent.

PART 3.00 - EXECUTION

3.01 Notification:

A. Notify testing agency not less than 24 hours in advance of placing concrete to enable agency to have technician available for conducting tests and obtaining specimens.

3.02 Design Mixes:

A. Verify proposed design mixes and report recommendations to Owner's representative in accord with ACI 318, chapter 4.

3.03 Compression Tests:

A. Test specimens in accordance with all applicable ASTM Standards. At the job site, prepare cylinders for testing and perform required tests on concrete. Four cylinders shall be made for each sample of concrete to be tested; one to be broken at 7 days for information and two at 28 days for strength compliance. Hold one cylinder for 56 days. For frequency, see 3.09.

3.04 Core Tests:

A. Core tests, at Construction Manager ' s expense, shall be required whenever concrete fails to meet the "Acceptance of Concrete" criteria as described in Concrete Section. Cores shall be taken under the direction of the Owner' s representative. Criteria for acceptance of cores shall be as described in ACI 318, section 4.7.4.4. Additional core tests, at Construction Manager 's expense, may be required by the Architect whenever other requirements of these specifications are not compiled with fully.

3.05 Load Tests:

A. Perform, at Construction Manager ' s expense, when core testing is inconclusive or impracticable. Evaluate load tests in accordance with ACI 318, 301.

3.06 Test For Air Content:

A. Perform each time a set of cylinders prepared for compression testing in accordance with ASTM C231.

3.07 Slump Test:

A. Perform each time a set of cylinders prepared for compression testing in accordance with ASTM C143.

3.08 Shrinkage Test:

A. Perform only if directed by the Owner' s representative.

3.09 Frequency of Testing:

A. Take samples for strength tests for each class of concrete not less than once each placement, each 5,000 square feet of surface area, of the following:

Class of Concrete	Frequency of Testing
A	50 cubic yard
B	50 cubic yard
C	50 cubic yard

3.10 Additional Testing:

A. Perform testing of materials, other than concrete, to determine compliance with contract documents when directed by the Owner' s representative. Construction Manager shall furnish samples and deliver them to testing agency's laboratory.

END OF SECTION 03600

SECTION 04201 - UNIT MASONRY

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Qualifications of Installers:

1. For actual erection of unit masonry, use only skilled journeyman masons who are thoroughly experienced with the materials and methods described and thoroughly familiar with the design requirements of this work.

2. In acceptance or rejection of installed unit masonry, no allowance will be made for lack of skill on the part of workmen.

3. Provide one skilled journeyman mason who shall be present at all times during execution of the work of this section and who shall personally direct the execution of this portion of this work.

1.02 Definitions:

A. Face Brick: Clay masonry units which will be exposed to view in finish work; brick scheduled to receive paint finish shall be considered face brick.

B. Special Shaped Brick: Clay masonry units requiring special molding in order to produce the required size and/or shape; units which can be "job-cut" to the required size and/or shape are not considered special shaped brick; wherever special shaped brick are called for on the drawings, job cut units will not be acceptable.

C. Building Brick: Clay masonry units which will not be exposed to view in finish work.

D. Solid Brick: Clay masonry units with no holes or frogs.

1.03 Submittals:

A. Samples: Before any products of this section are delivered to the project site, submit to the Architect for review, samples of the following:

1. Face Brick: Minimum seven brick panel using full size brick for each type of face brick described hereinafter, showing full color range.

2. Solid Brick: Full size for each type described hereinafter.

3. Hollow Concrete Masonry Units: Full size in each thickness for each type.

4. Masonry Reinforcement: Full size x 24" long for each type including prefabricated corners and tees.

5. Wall Ties: Full size for each type described hereinafter.

6. Special Shaped Brick: Full size for each shape.

B. Manufacturer's Data: Accompanying the sample submittals, furnish manufacturer's descriptive literature and specifications and installation instructions for the following:

1. Masonry Reinforcement

C. Manufacturer's Certification: Accompanying the sample submittals, furnish three copies of the manufacturer' s certification that all products furnished by them for use in this work meet the requirements of this section.

D. Mock-Up:

1. After review of the samples, but prior to commencing unit masonry operations, construct on the project site, at location selected by the Architect, a sample panel approximately 4' -0" high x 6' -0" long x 1' 1" thick.

2. The sample panel shall be typical of exterior wall veneer and shall show coursing, bond, joints, extremes in color and texture of the masonry units.

3. Upon the Architect' s approval of the sample panel, unit masonry work may commence.

4. The sample panel shall remain in place and be used as a guide until all unit masonry work is complete, and until its removal is approved by the Architect.

1.04 Product Handling:

A. Delivery and Storage:

1. Cementitious materials and masonry reinforcement shall be delivered to the project site in manufacturer' s original, unopened packaging with labels intact.

2. Cementitious materials and metal items shall be stored in a housed, dry and ventilated area on a platform at least 12" above ground or floor.

3. Sand shall be stored on heavy canvas, sisalkraft or extruded vinyl sheeting and not allowed to mix with the earth it rests upon.

1.05 Job Conditions: Erect no masonry unless the ambient temperature is at least 40^{O}F and rising.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Face Brick: **$700 / thousand cash allowance for purchase and delivery**

B. Special Shaped Brick: (NOT USED)

C. Solid Brick: shall be same as face brick and shall be same in full color range.

D. Building Brick: All building brick shall be No. 2 face brick meeting requirements of ASTM C62-69, Grade SW.

E. Exterior Hollow Concrete Masonry Units: Design is based on, Type AA-1, 8" x 16" x thickness shown on drawings, hollow concrete masonry units, except 4 inch thick units shall be solid. Provide integral water-repellant system for use in block, meeting ASTME 514- 74 Water Repellency Standard and use Dry-Block Water Repellent Mortar Admix System in the mortar.

F. Below Grade Hollow Concrete Masonry: Hollow concrete masonry for use below grade and where exposed to weather, other than exterior face veneer hollow concrete masonry shall be normal weight, Type 1, Grade N-1 and manufactured to meet ASTM C90-75.

G. Interior Hollow Concrete Masonry:

1. Hollow concrete masonry for use above grade and where exposed to view in the finished work shall be normal weight, Type 1, Grade S-1, manufactured to meet requirements of ASTM C90-75 and where called for on the drawings bear Underwriter' s Laboratories, Inc. labels as follows:
    a. 6" thick unit: 1 hour
    b. 8" thick unit: 4 hour

2. Bull nose units shall be provided for all out corners, at window jambs and at other locations called for on the drawings.

3. In lieu of the above ratings (Article 2.01, G, a) fire-resistant units may be furnished on the basis of a written certification from the masonry manufacturer stating specifically that all units to be furnished are equivalent in fire rating to those furnished by producers listed in the Underwriter' s Laboratories Building Material List.

H. Acoustical Concrete Masonry Units: Omitted

I. Masonry Reinforcements:

1. Type 1: Design is based on Dur-O-waL, 2 rod, truss type, with cavity drip, reinforcement as manufactured by Dur-O-waL, Inc., Birmingham, Alabama, fabricated from No. 9 deformed rods,

with preformed corners and tees; reinforcement shall be hot-dip galvanized after fabrication in accordance with ASTM A153, Class B-2 (1.50 oz. zinc coating). Reinforcement to be installed at 16" O.C. Vertically. (Typical)

2. Type 2: Omitted

3. Type 3: Design is based on Dur-O-WaL, 2 rod, truss type reinforcement as manufactured by Dur-O-WaL, Inc., Birmingham, Alabama, fabricated from No. 9 deformed rods, with prefabricated corners and tees; reinforcement shall have bright basic finish.

J. Wall Ties: See detail 1/A9-1 on the drawings.

K. Masonry Mortar: **$16 / bag for color mortar cash allowance**

1. All masonry mortar shall conform to the requirements of ASTM C270-84, Property Specification, Type M, and Type S for use as described hereinafter.

2. Masonry cement used to produce the specified mortar types shall be premixed, consisting of Portland cement, masonry cement and hydrated lime or lime putty, and shall be of one manufacturer.

3. Masonry mortar used with face brick shall match existing color & tooling as much as possible. Split face block mortar shall match the color of split face block as much as possible with tooling flush with face split base.

L. Sand: shall be white and shall conform to the requirements of ASTM C144-84.

M. Water: All water shall be clean and potable.

N. Portland Cement: shall conform to the requirements of ASTM C150-85 and be of one manufacturer.

O. Aggregate of Cement Grout: Aggregate for cement grout shall be fine aggregate conforming to ASTM C404-70.

P. Mortar Admix System Required:

1. For Exterior Face Brick: Not Used

2. For Exterior Hollow Concrete Masonry: Provide dry-block water repellant mortar admix system in the mortar.

Q. Non-Shrink Grout: Non-shrink grout shall be one of the following:

1. Sonogrout as manufactured by Sonneborn Bldg. Prod., Minneapolis, MN.

2. Supreme as manufactured by Gifford-Hill and Co., Inc. Charlotte, NC.

3. No. 588 as manufactured by W.R. Meadows, Inc., Elgin, IL.

R. Cleaning Solution For Clay Masonry Units: All clay masonry cleaner shall be Sure Kleen No. 600 as manufactured by Pro So Co., Inc., Kansas City, KS.

2.02 Measurement and Mixing of Materials For Masonry Mortars:

A. General: Unless otherwise specifically noted, all mortars shall be mixed in a power mixer, adding 1/2 the sand and water to the mixer, followed by the entire amount of masonry cement, mixing for approximately 3 minutes, followed by adding the balance of the sand and water; continue mixing for not more than five minutes nor less than three minutes after all materials are in the mixer .

B. Detailed Requirements:

1. Mortar:
   a. Interior non-load bearing walls and partitions: Type N.
   b. Load bearing interior walls less than 20 feet in height: Type N.
   c. Load bearing walls 20 feet or greater in height: Type S.
   d. Masonry veneer (not counted as load bearing): Type N.
   e. Pointing mortar: Type N with maximum 2% ammonium stearate or calcium stearate per cement weight.
   f. Mortar Color: Shall be mineral oxide pigment; color as selected by Architect.

2. Pointing Mortar: By volume one part non-staining cement, two parts white sand, and sufficient lime or lime putty to make as stiff a mixture as can be worked; prepare one to two hours before using and do not retemper; pigment shall be added as required to match adjacent mortar where exposed to view in finish work.

3. Cement Grout: by volume in accordance with ASTM C476-83 as follows: One part Portland Cement and one-tenth part lime to aggregate proportioned at not less than two and one-fourth to three times the sum of volumes of cementitious materials used.

4. Non-Shrink Grout: Mix prepared product with water as directed by its manufacturer to give a minimum compressive strength of 6,800 psi at 28 days.

PART 3.00 - EXECUTION

3.01 Inspection: The Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Preliminary Requirements:

1. Cutting Wheel: Prior to commencing masonry work, a power operated carborundum cutting wheel shall be set up on the site and used for cutting off-sets, cut-outs, miters and for sizing units.

2. Layout:
   a. Horizontal coursing shall be carefully laid out, as shown on the drawings; lay up one course of unit masonry so that masonry jamb lines for all openings can be accurately located and marked on footing top and/or floor slab; after all guide lines and bond dimensions have been thus established, permanent work may then commence.
   b. Vertical coursing, as shown on the drawings shall be adhered to; use story pole, carefully marked with all courses to maintain uniformity.

B. Precautionary Measures:

1. Cold Weather Erection:
   a. No masonry shall be erected when temperature is below the established minimum.
   b. Masonry shall be protected from freezing for at least 48 hours after it is in place.
   c. No frozen materials shall be built upon or allowed to remain in the wall, but shall be removed or reconstructed.

2. Hot Weather Erection:
   a. Do not wet concrete masonry units.
   b. If suction due to dryness of concrete masonry units is excessive, use high water-retentive mortar.

3. Protection of Unit Masonry During Erection:
   a. Scaffolding shall be so constructed as to permit mortar cement droppings to fall clear of wall.
   b. At end of each work period and at the stoppage of work at any time, install non-staining tarpaulins or heavy gauge, untorn, plastic membrane across top.
   c. Care shall be exercised at all times not to smear mortar on face of masonry work, and no mortar shall be allowed to drop in cavity between face material and back-up material.

C. Laying Unit Masonry:

1. General:
   a. Unit masonry shall be laid true to line, level, and plumb, except as otherwise shown on drawings.
   b. Coursing shall continue, unbroken, above and below openings unless otherwise shown.
   c. Joints shall be filled solid with mortar as each course is laid.
   d. Do not use chipped or broken units.

2. Mortars:

a. Lay above grade masonry in Type N mortar. If over 20 Feet High-Type S
b. Lay below grade masonry in Type S mortar.

3. Masonry Joints:
a. Joints in exposed to view masonry shall be a uniform 3/8" wide and tooled to match existing as much as possible.
b. Joints in exterior face veneer hollow concrete masonry shall be a uniform 3/8" wide and struck "flush" with the face of the masonry units.
c. Joints in unexposed to view masonry shall be a uniform 3/8" wide and struck "flush" with the face of the masonry units, except:
d. Joints in areas scheduled to receive setting beds or plaster shall be uniform 3/8" wide, raked and left rough.

4. Masonry Bond: Unless specifically shown otherwise on the drawings, all unit masonry shall be laid in "common running bond".

5. Joint Reinforcement:
a. Install masonry reinforcement every 16" o.c. vertically and in the top course.
b. Wall openings shall be reinforced in the first two courses above and in the first course below, and shall extend not less than 12" past each jamb.
c. At splice point, lap reinforcement 6" minimum.

6. Wall Ties: Install wall ties at 24" on centers horizontally-and at 16"o.c. vertically where called for on the drawings.

7. Miscellaneous Built-In Items: Miscellaneous built-in items such as angle lintels, flexible flashings, anchors, frames and all other items called for in other sections of this project manual or on the drawings shall be accurately installed as the masonry work progresses.

8. Weep Holes: Where flexible thru-wall flashing occurs, install in the same joint a cut of #3 cotton twine, 4" long at 24" intervals; cut twine flush with mortar joint in face brick. Provide on all exterior walls even if not shown on the drawings. **Provide 2'-0" high x 1" thick x continuous mortar net at bottom of all exterior cavity walls.**

9. Hollow Metal Frames: Where hollow metal frames occur in unit masonry work, fill head and jambs solid with mortar unless otherwise noted on the drawings.

10. Anchoring of Items to Masonry Units: Where items are shown on the drawings or described in other sections of this project manual to be anchored through the masonry units, unless otherwise specifically noted, fill two cells above and one cell below with 3,000 psi concrete as described in Section 03301 of this project manual; hold concrete in place with standard galvanized hardware cloth.

3.03 Field Quality Control:

A. General: See Article 3.02, B of this section. B. Cleaning:

1. Face Brick:

   a. After laying and as soon as practical, brush wall down with soft bristles brush (metal bristles not allowed).
   b. A final cleaning shall take place after all masonry is complete using the specified cleaner, applied in strict accordance with the manufacturer' s recommendations.
   c. Use all means necessary to protect adjacent work and materials from damage during cleaning operations.
   d. Should damage occur, make all repairs or replacements necessary to the approval of the Architect and at no additional cost to the Owner.

2. Hollow Concrete Masonry:

   a. Mortar droppings which stick to hollow concrete masonry shall be allowed to dry before removing with trowel.
   b. Remaining mortar shall be removed by brushing down with dry fiber brushes (metal bristles not allowed) and/or rubbing with small piece of concrete masonry.

C. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

END OF SECTION 04201

SECTION 05501 - METAL FABRICATION

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Industry Standards:

1. Some products and execution are specified in this section by reference to published specifications or standards (with respective abbreviations used); these referenced publications may be subject to special conditions or limitations where specified hereinafter.

2. Reference Publications:
   a. The American Society for Testing & Materials (ASTM).
   b. Federal Specifications (FS).
   c. Code for "Welding in Building Construction" by American Welding Society (AWS).

B. Qualifications of Fabricator: The fabricator of the products of this section shall have been engaged in the business of metal fabrication for a period of not less than five years immediately prior to commencing fabrication of the items hereinafter described or shown on the drawings.

C. Qualifications of Welders: All welding shall be done only by welders certified in accordance with the procedures of Standard B 3.01 of AWS.

1.02 Definitions: Omitted

1.03 Submittals:

A. Proof of Compliance: Prior to commencing any work of this section, submit in triplicate to the Architect:

1. a certified statement of qualifications and
2. a certified statement to the effect that all products proposed to be used meet the requirements of this section.

B. Shop Drawings: Prior to commencing fabrication of the products of this section, submit one set of sepias and two sets of bluelines in accordance with section 01301.

C. Manufacturer' s Data: Accompanying the shop drawing submittal, submit to the Architect for review, manufacturer' s descriptive and specification data for each manufactured item shown on the drawings or described hereinafter.

D. Certificate of Welders: Prior to commencing installation of any work of this section, furnish an affidavit to the Architect stating that all welders employed in the execution of this portion of the work have been previously qualified in accordance with Article 1.01 of this section.

1.04 Product Handling:
A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions: Omitted

PART 2.00 - PRODUCTS

2.01 Materials:

A. Structural Steel:
   1. Shapes, Bars and Plates: All structural steel shapes, bars and plates shall meet requirements of ASTM A36-05.
   2. Tubing: All structural steel tubing shall meet requirements of ASTM A500-07.

B. High Strength Bolts, Nuts and Washers: All high strength bolts, nuts and washers shall meet requirements of ASTM A325-07a.

C. Other Bolts, Nuts and Washers: All other bolts, nuts and washers shall meet requirements of ASTM A449-84.

D. Expansion Shields: Expansion shields shall be of the sizes shown on the drawings and meet the requirements of federal specification ASTM A449.

E. Toggle Bolts: Toggle bolts shall be of the sizes shown on the drawings and meet the requirements of federal specification FF-B-588.

F. Checkered Plate: Checkered plate shall be 14 gauge steel.

G. Electrodes:
   1. Electrodes shall be mild steel arc welded electrodes conforming to requirements of ASTM A233.
   2. Electrodes for manual shielded arc welding shall be E70.18, subject to provisions as hereinafter described.
   3. Electrodes for automatic inert gas shielded arc welding shall be No. 70.
   4. Electrodes for automatic submerged arc welding shall SAW-2.
   5. Electrodes used in both shop and field shall be kept warm and dry after the seal is broken on the original container and shall not be used if exposed to atmospheric conditions for more than one hour.

H. Pipe: shall be standard weight of diameters shown on the drawings.

I. Anchoring Grout: All anchoring grout shall be "Por-Rok" as manufactured by Sterling Drug, Inc., Montvale, NJ.

J. Shop and Field Primer Paint: All shop and field primer paint shall be one of the following:
1. Tnemec 99 gray metal primer as manufactured by Tnemec Company.
2. Rust-Oleum 769 damp-proof gray primer as manufactured by Rust-Oleum Corp.
3. Southern Coatings RIP476 as manufactured by Southern Coatings and Chemical Company.

K. This item omitted in its entirety

2.02 Fabrication:

A. General: Fabricate all metal items, including but not necessarily limited to angle brackets for counters and strap anchors for masonry to the deigns shown on the drawings and from the materials indicated thereon; all welds shall be ground smooth.

B. Shop Cleaning and Priming:
1. All ferrous metal items shall be thoroughly cleaned at the shop after fabrication and given one shop coat of paint.
2. Dry film thickness of shop paint shall be two mils.

PART 3.00 - EXECUTION

3.01 Inspection: Contractor shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. General:
1. Work shall be erected plumb and true in relation to adjoining work unless otherwise shown.
2. The setting of items to be built into concrete or masonry work is included in their respective sections; the erection of all other items are included herein.
3. Fastening shall be concealed where shown on the drawings.
4. Joints exposed to weather shall be formed to exclude water.
5. Provide holes and connections for the work of all other trades.
6. Use toggle bolts for anchoring into concrete masonry unless noted otherwise.
7. Use metal shields for expansion bolts and screws; steel drive bolts of same size as noted for expansion bolts, with split shank, closed ends, with threads at one end may be substituted for expansion bolts into concrete.

B. Welding: All welding shall be done in accordance with the referenced standards using shielded arc electrodes.

3.03 Field Quality Control:

A. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

B. Touch-Up Priming: After installation is complete, touch-up all shop priming coats damaged during transportation and installation and prime all field welds, using the priming paint specified for shop painting.

END OF SECTION 05501

SECTION 05521 - PIPE/TUBE RAILINGS

NOTE: All exterior pipe and railings to be powder coated prior to installation.

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Industry Standards: Some products and execution are specified in this section by reference to published specifications or standards (with respective abbreviations used); these referenced publications may be subject to special conditions or limitations where specified hereinafter.

1. Reference Publications:
    a. The American Society for Testing & Materials (ASTM).
    b. Federal Specifications (FS).
    c. Code for "Welding in Building Construction" by American Welding Society (AWS).

B. Qualifications of Fabricator: The fabricator of the products of this section shall have been engaged in the business of metal fabrication for a period of not less than five years immediately prior to commencing fabrication of the items hereinafter described or shown on the drawings.

C. Qualifications of Welders: All welding shall be done only by welders certified in accordance with the procedures of Standard B 3.01 of AWS.

1.02 Definitions: Omitted.

1.03 Submittals:

A. Proof of Compliance: Prior to commencing any work of this section, submit in triplicate to the Architect:

1. a certified statement of qualifications and
2. a certified statement to the effect that all products proposed to be used meet the requirements of this section.

B. Shop Drawings: Prior to commencing fabrication of the products of this section, submit to the Architect for review fabricator' s shop drawings for each fabricated metal item shown on the drawings or described hereinafter.

C. Manufacturer' s Data: Accompanying the shop drawing submittal, submit to the Architect for review, manufacturer's descriptive and specification data for each manufactured item shown on the drawings or described hereinafter.

D. Certificate of Welders: Prior to commencing installation of any work of this section, furnish an affidavit to the Architect stating that all welders employed in the execution of this portion of the work have been previously qualified in accordance with Article 1.01 of this section.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions: Omitted.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Steel Pipe: Standard weight of the outside diameter (O.D.) as indicated on the drawings or described hereinafter.

B. Steel Tube: Size and gauge as indicated on the drawings or described hereinafter.

C. Aluminum Pipe: 1-1/4" nominal size, wall thickness of 0.140 inch and weighing 0.785 pound per lineal foot with clear anodized finish.

D. Wall Brackets:

1. Steel: Design is based on No. 306, Malleable Iron, as manufactured by Julius Blum & Co., Inc., Carlstadt, NJ
2. Aluminum: Design is based on No. 321, to receive paint, as manufactured by Julius Blum & Co., Inc., Carlstadt, NJ, with clear anodized finish.

E. Woven Wire Mesh: shall be not less than 10 gauge in 1-1/2" diamond pattern.

F. Accessories: Provide matching end terminals, as shown on the drawings, for all rails.

G. Bolts: Sizes as required in material compatible with items with which used.

H. Expansion Shields: Sizes as required for bolt with which they are used and meeting the requirements of Federal Specification FF-S-325.

I. Anchoring Grout: "Por-Rok" as manufactured by Sterling Drug, Inc., Montvale, NJ.

J. Shop and Field Primer Paint: All shop and field primer paint shall be one of the following:

1. Tnemec 99 red metal primer as manufactured by Tnemec Company.
2. Rust-Oleum 769 damp-proof red primer as manufactured by Rust-Oleum Corp.

3. Southern Coatings RIP476 as manufactured by Southern Coatings and Chemical Company.

2.02 Fabrication:

A. General: Fabricate all handrails and railings to the designs shown on the drawings and from the materials indicated thereon; all welds shall be ground smooth.

B. Shop Cleaning and Priming:
1. All ferrous metal items shall be thoroughly cleaned at the shop after fabrication and given one shop coat of paint.
2. Dry film thickness of shop paint shall be two mils.

C. Powder Coating Exterior Steel:
1. All exterior pipe and railings to be powder coated prior to installation.

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. General:
1. Work shall be erected plumb and true in relation to adjoining work unless otherwise shown.
2. The setting of items to be built into concrete or masonry work is included in their respective sections; the erection of all other items are included herein.
3. Fastenings shall be concealed where shown on the drawings.
4. Bolts or nuts exposed to view is finish work shall be hex.

B. Post Mounted Handrails: Install in the locations shown on the drawings and in accordance with the details shown thereon.

C. Wall Mounted Handrails: Install in the locations shown on the drawings, using wall brackets as shown; space brackets as shown on the drawings, but in no case more than 48 inches on centers; attach handrail to brackets as indicated with screws from under side.

D. Welding: All welding shall be done in accordance with the referenced standards using shielded arc electrodes.

3.03 Field Quality Control:

A. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

B. Touch-Up Priming: After installation is complete, touch-up all shop prime coats damaged during transportation, storage and installation and prime all field welds, using the prime paint specified for shop priming.

END OF SECTION 05521

SECTION 06101 - ROUGH CARPENTRY

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Industry Standards:

1. Some products and execution are specified in this section by reference to published specifications or standards (with respective abbreviations used); these referenced publications may be subject to special conditions or limitations where specified hereinafter.

2. Referenced Publications:

a. Southern Pine Inspection Bureau (SPIB).
b. Federal Specifications (FS).
c. American Wood Preservers Association (AWPA).
d. American Plywood Association (APA).

B. Grade Mark: All lumber and plywood shall bear the grade mark as described hereinafter.

1.02 Definitions: Omitted.

1.03 Submittals: Omitted.

1.04 Product Handling:

A. Protection:

1. Protect materials and products of this work from damage before, during and after delivery to the project site, and after installation into the work.

2. Deliver the materials to the project site and store in a safe area, out of way of traffic and shored up off the ground surface.

3. Store materials in such a manner as to insure proper ventilation and drainage and to protect against damage from weather.

4. Store lumber that has been treated with fire retardant chemical in a housed, dry and ventilated area.

5. Identify all framing lumber as to grades and store all grades separately from other grades.

6. Keep all material clearly identified with all grade marks legible; keep all damaged material clearly identified as damaged, and separately store to prevent its inadvertent use.

7. Do not allow installation of damage or otherwise non-complying material.

8. Protect all metal products with adequate water proof outer wrappings.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions: Omitted.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Framing Lumber: All framing lumber shall be SPIB grade marked No. 2 Southern Yellow Pine, kiln dried, with not more than 19 percent moisture content.

B. Insulated Sheathing: Omitted.

C. Miscellaneous Lumber: Lumber for blocking, furring, roof curbs, roof edges and other miscellaneous items shall be SPIB grade marked No. 2 Southern Yellow Pine, kiln dried, with not more than 19 percent moisture content.

D. Plywood:

1. Exterior: Unless otherwise shown on the drawings, exterior plywood shall be AWI 200G10 fabricated with type 1 adhesives, softwood veneer surfaces, (AWI 200S-5, grade A-C); plywood shall be thickness shown on the drawings.

2. Subfloor: Plywood used for subflooring shall be C-C EXT-APA, group 1, tongue and grooved long edges and shall be 3/4" thick.

3. Underlayment: Plywood used for underlayment for carpet or resilient floor covering shall be C-C EXT-APA, UNDERLAYMENT, group 1, tongue and grooved long edges and shall be 3/4" thick.

E. Nails:

1. For application to wood, nails shall be annular thread, coated steel of the sizes and types for the particular use intended and meet the requirements of Federal Specification FF-N-105.

2. For application to concrete or masonry, nails shall be smooth shank, hardened steel, with counter-sunk heads, of the sizes and types for the particular use intended and meet the requirements of Federal Specification FF-N-105.

F. Bolts and Screws: shall be of the sizes and types shown on the drawings.

G. Framing Accessories: Omitted.

H. Wood Preservative: Wood preservative used for chemically treating lumber used in this portion of the work shall be "Osmose K-33" as manufactured by Osmose, Buffalo, NY.

I. Fire Retardant: Fire retardant chemical used for treating lumber in this portion of the work shall be "Osmose Flame Proof" as manufactured by Osmose, Buffalo, NY.

2.02 Fabrication:

A. Rough Carpentry: Fabricate all framing, furring, blocking, roof curbs, roof edges and other miscellaneous items from lumber as described hereinbefore and to the designs shown on the drawings.

B. Chemical Treatment of Lumber: All lumber and fabricated wood items that will be in contact with concrete slabs on grade, masonry or used in conjunction with the roofing systems, shall be treated with the specified chemical in strict accordance with AWPA Standard P-5; retention shall be in accordance with AWPA Standards C1, C2 and C9; after treatment and before delivering of any treated materials or products to the project site, reduce moisture content of the treated material to a maximum of 19 percent.

C. Fire Retardant Treatment: All wood noted on the drawings as "fire treated" shall be treated with the specified chemical and shall bear UL FR-S labels indicating that the treated products meet the following as determined by ASTM E-84:

1. Flame Spread: 25 or less
2. Fuel Contributed: 25 or less
3. Smoke Developed: 25 or less

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Workmanship: All rough carpentry shall produce joints that are true, tight, well fastened and with all members assembled in accordance with the drawings.

B. Selection of Lumber Pieces:

1. Carefully select all members; select individual pieces so that knots and obvious defects will not interfere with placing bolts or proper nailing or making proper connections.

2. Cut out and discard all defects which will render a piece unable to serve its intended function; lumber may be rejected by the Architect, whether or not it has been installed, for excessive warp, twist, or bow, crook, mildew, fungus, or mold, as well as for improper cutting and fitting.

C. Shimming: Do not shim sills, joists, short studs, trimmers, headers, lintels or other framing components.

D. General Framing:

1. In addition to all framing operations normal to the fabrication and erection indicated on the drawings, install all backing required for the work of other trades.

2. Set all horizontal or sloped members with crown up.

3. Do not notch, bore or cut members for pipes, ducts, conduits or other reasons except as shown on the drawings or as specifically approved in advance by the Architect.

4. Install miscellaneous items for which the rough carpenter trade is customarily responsible, such as "Template" setting of anchor bolts, providing frames for openings through concrete and/or masonry, insertion of hangers for suspended ceilings and like items.

5. Make all bearings full unless otherwise indicated on the drawings.

6. Finish all bearing surfaces on which structural members are to rest so as to give sure and even support; where framing members slope, cut or notch ends as required to give uniform bearing surface.

7. Install all blocking, furring plaster grounds and similar items as shown on the drawings.

8. Install roof edges and curbs in the locations shown on the drawings and in accordance with the details shown thereon.

E. Insulated Sheathing: Omitted.

F. Laying of Subfloors and Underlayments: Subfloors and underlayments should be installed in locations shown on the drawings in strict accordance with the standard specifications of American Plywood Association's publication: "Plywood, Commercial / Industrial Construction Guide"; November, latest edition.

G. Nailing: Using only the specified nails; do all nailing without splitting wood members, preboring as required; replace all split members.

H. Bolting:

1. Drill holes 1/16" larger in diameter than the bolts being used; drill straight and true from one side only.

2. Bolt threads must not bear on wood; use washers under head and nut where both bear on wood; use washers under all nuts.

I. Screws:

1. For lag screws and wood screws, prebore holes same diameter as root of thread; enlarge holes to shank diameter for length of shank.

2. Screw, do not drive, all lag screws and wood screws.

3.03 Field Quality Control:

A. Chemical Treatment of Lumber: Apply two brush coats of the specified chemical to all field cuts of chemically treated lumber.

B. Clean Up:

1. At the end of each working day, or more often if necessary, thoroughly sweep all surfaces where refuse from this portion of the work has settled.

2. Remove the refuse to the area of the job site set aside for its storage.

3. Upon completion of this portion of the work, thoroughly broom clean all surfaces.

C. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

END OF SECTION 06101

SECTION 06221 - FINISH CARPENTRY AND MILLWORK

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Qualifications of Fabricator: The fabricator of the products of this section shall have been successfully engaged in the fabrication of millwork for a period of not less than five years immediately prior to furnishing the products of this section and shall have successfully completed projects of similar size.

B. Qualifications of Installers:

1. Finish carpentry and millwork shall be installed only by skilled journeymen finish carpenters who are familiar with the materials involved and the manufacturer's recommended methods of installations and who are thoroughly familiar with the requirements of this work.

2. In acceptance or rejection of the work of this section, no allowance will be made for lack of skill on the part of installers.

C. Industry Standards:

1. Finish carpentry and millwork shall be in accordance with "Architectural Woodwork Quality Standards and Guide Specifications", Seventh Edition, version 1.0, 1997, as published by The Architectural Woodwork Institute (AWI) to the extent of the references made hereinafter thereto.

2. Plywood shall be in accordance with the American Plywood Association (APA) standards to the extent of the references made hereinafter thereto.

1.02 Definitions: Omitted.

1.03 Submittals:

A. Proof of Compliance: Prior to commencing any work of this section, submit in triplicate to the Architect:

1. a certified statement of qualifications and

2. a certified statement to the effect that all products proposed to be used meet the requirements of this section.

B. Shop Drawings:Prior to commencing fabrication of the products of this section, submit manufacturer's shop drawings to the Architect for review, fully dimensioned, showing actual field measurements and showing method of installation and anchorage.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions:

A. Temperature: For a period of not less than ten days prior to commencing installation of products of this section, throughout installation and until date of Architect's final certificate, provide heat to maintain a temperature of not less than 50 degrees Fahrenheit.

B. Humidity: In spaces where the products are being installed, throughout installation and until date of Architect's final certificate, maintain relative humidity of not more than 60%.

C. Lighting: Maintain lighting of not less than three watts per square foot of floor area in spaces where installation of products is in progress.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Exterior Wood Columns: (Not Used)

1. Description:
   a. Columns based on Koll's Lock-Joint Constructed Wood columns manufactured by Hartmann - Sanders Company.
   b. Column design shall have the correct proportions based on Orders of Architecture.
   c. Lumber species shall be Heart Redwood.

2. Submittals:
   a. Submit product data and shop drawings clearly marked to show column requirements. Also provide all engaged columns.

3. Delivery, Storage and Handling: The protection, delivery, storage and handling of the columns and pilasters shall be according to the instructions furnished by the manufacturer. Storage must be in a dry and well ventilated area.

4. Manufacturer: Design based on: Hartmann - Sanders Company,
   4340 Bankers Circle, Atlanta, Georgia 30360
   Telephone (404) 449-1561 or in Georgia (800) 241-4303

5. Materials:
    a. All glue joints shall be pressure glued with type 1, waterproof glue.
    b. Columns which are to be painted shall be factory coated with two applications of oil base primer and hand sanded between coats as necessary. All columns designated for exterior application are to be coated inside with an asphaltum for waterproofing. Exterior pine columns are to be protected with wood preservative.
    c. Plinths shall be aluminum for exterior and wood for interior and shall be manufacturer's standard proportions for diameter indicated.
    d. Wood and composition caps shall be flashed with sheet lead provided by column manufacturer.
    e. Composition capitals shall be made of fiber reinforced #1 casing industrial grade plaster using manufacturer's standard mold of the design indicated.
    f. All matching pilasters or square columns shall be made by the column manufacturer consistent with the above specifications.

6. Installation: Follow manufacturer's detailed installation procedures.

7. Warranty:
    a. Manufacturer shall provide certification of a ten year warranty against deterioration and joint separation of redwood columns with fiberglass caps, bases, and plinths.
    b. Manufacturer shall furnish a five year warranty against manufacturing defects of all composition caps, redwood bases and plinths.
    c. Manufacturer shall furnish a one year warranty against manufacturing defects of products using other wood species.

B. Exterior Molded Millwork: Omitted.

C. Interior Wood:

1. Solid Wood (Opaque Finish): Interior solid wood scheduled to receive an opaque finish shall be AWI section 100, grade II, ponderosa pine, plain cut, kiln dried, with a moisture content of not more than 11%.

2. Solid Wood (Transparent Finish-Stained or Natural): All solid wood scheduled to receive an transparent finish (stained or natural) shall be AWI section 100, grade I, white birch, plain cut, kiln dried, with a moisture content of not more than 11%.

3. Plywood (Opaque Finish): Interior plywood scheduled to receive an opaque finish shall be AWI section 200, grade II, face grade A, white or red birch, veneer core, rotary sawn exposed to view faces.

D. Nails:

1. For application to wood, nails shall be annular thread, coated steel of the sizes and types for the particular use intended and meet the requirements of Federal Specification FF-N-101.

2. For application to concrete or masonry, nails shall be smooth shank, hardened steel with counter sunk heads of the sizes and types for the particular use intended and meet the requirements of Federal Specification FF-N-101.

3. Finish nails shall be helical thread, hardened steel, bright finish, except coated nails shall be used in exterior work, and meet the requirements of Federal Specification FF-N-101.

E. Bolts: All bolts shall be of the sizes and types for the particular use intended, except where used in exposed to view work heads shall be round.

F. Glue: All glue shall meet the requirements of CS-35, type 1 and be fully waterproof.

G. Preservative: Omitted.

H. Insect Screen: Omitted.

2.02 Fabrication:

A. General:

1. All work shall be fabricated in strict accordance with the referenced standards hereinafter described for each specific item and the original design:

2. All items shall be shop sanded.

3. All nails shall be set and left ready to putty.

B. Standing and Running Trim: Fabricate all standing and running trim in strict accordance with AWI Section 300, Premium Grade, for opaque or transparent finish as indicated on the drawings or in the schedules; wood species shall be as indicated on the drawings.

C. Paneling: Omitted

D. Wood Handrails: Omitted.

E. Wood Frames: Omitted.

F. Wood Louvers: Omitted.

G. Chemical Treatment: Omitted.

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of

the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. General:

1. Finish carpentry and millwork items shall be installed in the locations shown on the drawings and in compliance with the details shown thereon.

2. All work shall be plumb, true to line, level and accurately fitted together with joints mitered and glued, except interior corners may be coped.

3. Where work abuts other surfaces or materials, it shall be accurately scribed to such surfaces or materials.

4. Where blocking or backing is required, coordinate as necessary with other trades to ensure placement of all required blocking and backing in a timely manner.

5. Unless otherwise shown on the drawings, wood shall be attached to wood with nails, using only finishing nails in exposed to view work and wood shall be attached to concrete and masonry with nails, expansion bolts, bolts and expansion shields, or toggle bolts as the situation dictates.

B. Standing and Running Trim: Install all standing and running trim in lengths as long as possible, nailing to blocking or backing material with finishing nails at 12" on centers, maximum; all joints shall be staggered, mitered and glued.

C. Frames: Omitted.

D. Plywood: Install plywood in the locations shown on the drawings in accordance with the details shown thereon, nailing to blocking or backing material at 12" on centers, maximum.

E. Louvers: Omitted.

3.03 Field Quality Control: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

END OF SECTION 06221

SECTION 06410 - CABINETWORK

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Qualifications of Fabricator: The fabricator of the products of this section shall have been successfully engaged in the fabrication of cabinetwork for a period of not less than five years immediately prior to furnishing the products of this section and shall have successfully completed projects of similar size.

B. Industry Standards: Cabinetwork shall be fabricated in accordance with "Architectural Woodwork Quality Standards and Guide Specifications", Seventh Edition, version 1.0, 1997, as published by The Architectural Woodwork Institute (AWI) to the extent of the references made hereinafter thereto.

1.02 Definitions: Omitted.

1.03 Submittals:

A. Proof of Compliance: Prior to commencing any work of this section, submit in triplicate to the Architect:

1. a certified statement of qualifications and

2. a certified statement to the effect that all products proposed to be used meet the requirements of this section.

B. Shop Drawings: Prior to commencing fabrication of the products of this section, submit manufacturer's shop drawings to the Architect for review, fully dimensioned, showing actual field measurements and showing method of installation and anchorage.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions:

A. Temperature: For a period of not less than ten days prior to commencing installation of products of this section, throughout installation and until date of Architect's final certificate, provide heat to maintain a temperature of not less than 50 degrees Fahrenheit.

B. Humidity: In spaces where the products are being installed, throughout installation and until date of Architect's final certificate, maintain relative humidity of not more than 60%.

C. Lighting: Maintain lighting of not less than three watts per square foot of floor area in spaces where installation of products is in progress.

D. Coordination With Other Trades: Because equipment and fixtures scheduled to be installed in cabinetwork are furnished under other sections of this project manual as is utility hookups, cooperate as necessary with all other trades to ensure proper and adequate provisions for installation and anchorage of the equipment and fixtures and to insure proper and adequate provisions for the required utility sizing and locations.

PART 2.00 - PRODUCTS

2.01 Materials: Note: see Drawings for specs on maple veneer cabinets.

A. Solid Wood:

1. Exposed to View (includes inside & outside cabinets, drawers): All solid wood exposed to view in the finished work, shall be AWI section 100, grade 1, white birch, plain cut, kiln dried, with moisture content of not more than 8%.

2. Unexposed to View: All solid wood which will not be exposed to view in the finished work, such as web frames, shall be AWI section 100, grade III, southern yellow pine, plain cut, kiln dried, with moisture content of not more than 11%.

B. Plywood:

1. Exposed to View (includes inside & outside cabinets, drawers):
All plywood exposed to view in the finished work, shall be AWI section 300, grade A, white birch, veneer core, plain cut face veneers on all exposed to view faces.

2. Underlayment: All plywood used as underlayment for laminated plastic shall be AWI section 200, backing grade, mill option face veneer.

C. Particle Board: shall meet requirements of CS 236-66, type 1-B-2.

D. Laminated Plastic:

1. All laminated plastic shall be 1/16" thick and meet the requirements of NEMA LC1-1964, type 1, class 1, and Federal Specification LP508F, type 1, HP grade, class 1.

2. Colors will be as described in Section 09999 of this project manual.

E. Glue shall meet the requirements of CS-35, type 1, and be fully waterproof.

F. Nails:

1. For application to wood, nails shall be annular thread, coated steel of the sizes and types for the particular use intended and meet the requirements of Federal Specification FF-N-105.

2. For application to concrete or masonry, nails shall be smooth shank hardened steel with countersunk heads with the of the sizes and types for the particular use intended and meet the requirements of Federal Specification FF-N-105.

3. Finish nails shall be helical thread, hardened steel, bright finish except coated nails shall be used in exterior work and meet the requirements of Federal Specification FF-N-105.

G. Bolts: All bolts shall be of the types and sizes shown on the drawings.

2.02 Fabrication:

A. General:

1. All cabinetwork shall be fabricated in strict accordance with the referenced standards hereinafter described for each specific item and to the sizes and design shown on the drawings.

2. All items shall be shop sanded, with all nails set and left ready to putty.

3. All shelf standards shall be recessed.

B. Detail Requirements:

1. All cabinetwork shall be fabricated from the materials shown on the drawings.

2. Fabrication shall be in strict accordance with AWI section 400, premium grade for transparent finish without regard to the Finish Schedule or called for on the drawings or described elsewhere.

3. Cabinet hardware shall be installed at the fabricator's shop; installation of hardware:
   a. Door and Drawer Pulls: To be chrome wire pulls.
   b. Hinges - 2 per leaf, 4 for tall doors: To be snap-on type as manufactured by Grass America, Inc. and distributed by Morrison Supply Co., Inc. Chamblee, GA (404) 455-8244
   c. Recessed Shelf Standards: No. 255 with No. 256 Supports, Knape & Vogt Mfg. Co.
   d. Drawer Guides: No. 1300, Knape & Vogt Mfg. Co.
   e. Catches: No. 46, Stanley Hardware

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Cabinetwork: All cabinetwork shall be installed in the proper locations as shown on the drawings, true to line, plumb, square and lever; cabinetwork shall be anchored in place.

B. Cut-outs For Other Trades: Cut-outs for items described in other sections of this project manual to be built-in to the cabinets or counters shall be made by the cabinetwork fabricator at the project site only after the cabinetwork has been installed.

3.03 Field Quality Control:

A. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

B. Adjustment: Upon completion of the installation of the cabinetwork, inspect all cabinet hardware and adjust for proper operation.

END OF SECTION 06410

SECTION 06411 - COUNTERS AND SHELVES

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Qualifications of Fabricator: The fabricator of the products of this section shall have been successfully engaged in the fabrication of cabinetwork for a period of not less than five years immediately prior to furnishing the products of this section and shall have successfully completed projects of similar size. All counters to be casework.

B. Industry Standards: Cabinetwork shall be fabricated in accordance with "Architectural Woodwork Quality Standards and Guide Specifications", Seventh Edition, version 1.0, 1997, as published by The Architectural Woodwork Institute (AWI) to the extent of the references made hereinafter thereto.

1.02 Definitions: Omitted.

1.03 Submittals:

A. Proof of Compliance: Prior to commencing any work of this section, submit in triplicate to the Architect:

1. a certified statement of qualifications and

2. a certified statement to the effect that all products proposed to be used meet the requirements of this section.

B. Shop Drawings: Prior to commencing fabrication of the products of this section, submit manufacturer's shop drawings to the Architect for review, fully dimensioned, showing actual field measurements and showing method of installation and anchorage.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions:

A. Temperature: For a period of not less than ten days prior to commencing installation of products of this section, throughout installation and until date of Architect's final certificate, provide heat to maintain a temperature of not less than 50 degrees Fahrenheit.

B. Humidity: In spaces where the products are being installed, throughout installation and until date of Architect's final certificate, maintain relative humidity of not more than 60%.

C. Lighting: Maintain lighting of not less than three watts per square foot of floor area in spaces where installation of products is in progress.

D. Coordination With Other Trades: Because equipment and fixtures scheduled to be installed in cabinetwork are furnished under other sections of this project manual as is utility hookups, cooperate as necessary with all other trades to ensure proper and adequate provisions for installation and anchorage of the equipment and fixtures and to insure proper and adequate provisions for the required utility sizing and locations.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Solid Wood:

1. Exposed to View: All solid wood exposed to view in the finished work, shall be AWI section 100, grade 1, white birch, plain cut, kiln dried, with moisture content of not more than 8%.

2. Unexposed to View: All solid wood which will not be exposed to view in the finished work, such as web frames, shall be AWI section 100, grade III, southern yellow pine, plain cut, kiln dried, with moisture content of not more than 11%.

B. Plywood:

1. Exposed to View: All plywood exposed to view in the finished work, shall be AWI section 300, grade A, white birch, veneer core, plain cut face veneers on all exposed to view faces.

2. Underlayment: All plywood used as underlayment for laminated plastic shall be AWI section 200, backing grade, mill option face veneer.

C. Particle Board: All particle board shall meet requirements of CS 236-66, type 1-B-2.

D. Laminated Plastic:

1. All laminated plastic shall be 1/16" thick and meet the requirements of NEMA LC1-1964, type 1, class 1, and Federal Specification LP508F, type 1, HP grade, class 1.

2. Colors will be as described in Section 09999 of this project manual.

E. Glue: All glue shall meet the requirements of CS-35, type 1, and be fully waterproof.

F. Nails:

1. For application to wood, nails shall be annular thread, coated steel of the sizes and types for the particular use intended and meet the requirements of Federal Specification FF-N-105.

2. For application to concrete or masonry, nails shall be smooth shank hardened steel with countersunk heads with the of the sizes and types for the particular use intended and meet the requirements of Federal Specification FF-N-105.

3. Finish nails shall be helical thread, hardened steel, bright finish except coated nails shall be used in exterior work and meet the requirements of Federal Specification FF-N-105.

G. Bolts: All bolts shall be of the types and sizes shown on the drawings.

2.02 Fabrication:

A. General:

1. All products shall be fabricated in strict accordance with the referenced standards hereinafter described for each specific item and to the sizes and design shown on the drawings.

2. All items shall be shop sanded, with all nails set and left ready to putty.

3. All shelf standards shall be recessed.

B. Detail Requirements:

1. All products shall be fabricated from the materials described hereinbefore or as shown on the drawings.

2. Fabrication shall be in strict accordance with AWI section 400, premium grade for transparent finish without regard to the finish scheduled or called for on the drawings or described elsewhere, except towel rack shall be fabricated in accordance with AWI Section 300, premium grade for transparent finish.

3. Hardware shall be installed under pertinent other sections of this project manual.

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Counters: All counters to be laminated plastic.

B. Janitor's Shelves: Install janitor's shelves in locations shown on the drawings, true to line, plumb, square and level and securely anchored in place.

C. Towel Rack: Install towel racks in locations shown on the drawings, true to line, level and securely anchored in place.

3.03 Field Quality Control:

A. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

END OF SECTION 06411

SECTION 07111 - UNDER SLAB MEMBRANE WATERPROOFING

PART 1.00 - GENERAL

1.01 Quality Assurance: Provide at least one person who shall be present at all times during execution of this portion of the work and who shall be thoroughly experienced in installation of the specified products, the requirements of this work, the installation recommendations of the manufacturer of the products being installed and who shall direct all work performed under this section.

1.02 Definitions: Omitted.

1.03 Submittals:

A. Manufacturer's Data:

1. Before any products are delivered to the project site, submit to the Architect for review, manufacturer's detailed descriptive and specification data for the products of this section.

2. Accompanying the data submittal, furnish manufacturer's installation instructions.

B. Samples: Accompanying the data submittal, submit samples, not less than 12" x 12", of the products of this section.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions: Do not install membrane waterproofing when ambient temperature is below 40 degrees Fahrenheit.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Under Slab Membrane Waterproofing System 1: Locate under All heated slab on grade, including under **wood floor of gym**.

1. Membrane:
   a. Design is based on W. R. Meadows, " Perminator HP", 15 mil., install per manufacturer requirements and adhesives and tape. **(Provide two layers)**
   b. The following are acceptable:

1) "BFG Vinyl Water Barrier" (30 mil thick) as manufactured by B.F. Goodrich Company, Akron, OH.
2) "Sure-Seal Butyl Rubber Membrane" as manufactured by Carlisle Tire & Rubber Company, Carlisle, PA.

2. Adhesive:
   a. Design is based on Nerva-Plast" as manufactured by Rubber & Plastics Compound Company, Inc. New York, NY.
   b. The following are acceptable (for use with each specific membrane listed herein above):
      1) "BFG Construction Adhesive 104" as manufactured by B.F. Goodrich Company, Akron, OH.
      2) Adhesive as recommended by Carlisle Tire & Rubber Company for use with membrane specified hereinbefore, Article 2.01, A, 2, b.

B. Under Slab Membrane Waterproofing System 2: (NOT USED)

1. Membrane: Design is based on "Moistop" as manufactured by Fortifiber Corporation, Los Angeles, CA.

2. Joint Sealing Strips: Design is based on Fortifiber Grade 495, pressure sensitive tape as manufactured by Fortifiber Corporation, Los Angeles, CA.

3. Adhesive: shall be as recommended by the manufacturer of the membrane.

2.02 Fabrication: Omitted.

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section is to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Under Slab Membrane Waterproofing System 1:

1. Locations: Install system 1 below all concrete slabs in heated areas which includes gymnasium.

2. Preparation:
   a. compacted subgrade shall be tight and provide a smooth bearing for membrane.
   b. perimeter insulation shall be in place to the top of the compacted subgrade.

3. Application:

a. unless otherwise required by the manufacturer of the membrane being installed, place membrane with long dimension of sheet parallel to direction of concrete pour; stagger and lap joints; side joints shall be lapped 6 " and end joints shall be lapped 12".
b. lapped joints shall be sealed with specified adhesive at a rate of 30 square feet per gallon, unless otherwise required by the manufacture of the adhesive being used.
c. at perimeter and interior foundation walls extend membrane up wall to full thickness of porous fill and concrete slab and adhere to wall (prior to placing of premoulded expansion joint filler), using adhesive as recommended by the manufacturer of the membrane being installed, forming a "saucer" to receive the concrete pour.
d. at other penetrations (ie. waster and water lines, electrical conduit) turn the membrane up to full thickness of porous fill and concrete slabs and seal to same, using adhesive as recommended by the manufacturer of the membrane being installed and in addition the penetrations shall be positively sealed by placing a collar, 12 inches larger than the protrusion, of the membrane material and sealed with the recommended adhesive; re-point around all protrusions with adhesive.

B. Under Slab Membrane Waterproofing System 2: (NOT USED)

1. Locations under all heated and unheated concrete slabs not receiving ceramic tile or raised computer flooring.

2. Preparation:
   a. compacted subgrade shall be tight and provide a smooth bearing for membrane.
   b. perimeter insulation shall be in place to the top of the compacted subgrade.

3. Application: Unless otherwise required by the manufacturer of the membrane being installed, place membrane with long dimension of sheet parallel to direction of concrete pour; stagger and lap joints; side joints shall be lapped 6" and end joints shall be lapped 12".

3.03 Field Quality Control: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

END OF SECTION 07111

SECTION 07210 - BUILDING INSULATION

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Industry Standards:

1. Some products and executions are specified in this section by reference to published specification or standards (with respective abbreviations used); these referenced publications may be subject to special conditions or limitations where specified hereinafter.

2. Referenced Publications:
   a. Federal Specifications (Fed. Spec.).
   b. American Society for Testing and Materials (ASTM).

1.02 Definitions: Omitted.

1.03 Submittals:

A. Manufacturer's Data: Before any products are delivered to the project site, submit to the Architect for review, manufacturer's detailed descriptive and specification data for the products described hereinafter.

B. Samples: Accompanying the data submittal, furnish samples, not less than 6" x 6", for each type of insulation required.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions: Omitted.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Batt Insulation: Batt insulation shall be glass fiber batts, kraft faced one side, complying with Federal Specification HH-1521E, type III, density of not less than 1.5 lbs. per cubic foot, flame spread of foil facing not more than 25; fuel contribution and smoke developed of foil facing 0; size shall be manufacturer's standard thicknesses shown on the drawings.

B. Fasteners: Fasteners for all insulation shall be as recommended by the manufacturer of the insulation being installed for each particular condition.

2.02 Fabrication: Insulation shall be manufactured to meet the requirements as described hereinbefore.

PART 3.00 - EXECUTION

3.01 Inspection:Contractor shall examine the areas and conditions under which the products of this section is to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation: Install insulation above ceiling in locations shown on the drawings, tightly fitting around penetrations and abutting surfaces.

3.03 Field Quality Control: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

END OF SECTION 07210

SECTION 07543 - THERMOPLASTIC POLYOLEFIN (TPO) ROOFING [Mechanically Fastened]

*DESIGN TO BE 90 MPH ALL ROOFING MATERIALS AND FASTENERS ROOF WARRANTY
*ALL ROOF DRAIN PIPES TO BE PVC SCHEDULE 40.
*REFER TO DRAWINGS FOR ROOF DRAIN SPECIFICATIONS.
*INSULATE ALL ROOF DRAIN PIPES WITH MINIMAL OF 2" OF NON-COMBUSTIBLE INSULATION FULL LENGTH.

PART 1.00 - GENERAL

1.01 Summary:

A. Section includes:

1. Roof A (concrete Deck): Adhered TPO membrane roofing system. **(Not Used)**

2. Roof B (Metal Deck): Mechanically fastened TPO membrane roofing system

3. Roof insulation and cover board.

4. Fasteners and other roofing accessories.

B. System Overview: Roofing systems consist generally of the following:

1. Roof A (Concrete Deck): **(Not Used)**
   a. Membrane: 60 mil TPO, adhered in adhesive over cover board.
   b. Cover Board: Factory primed, gypsum board, ½" x 4' x 4', adhered in adhesive over insulation.
   c. Insulation: Two layers of 1-1/2" x 4' x 4' polyisocyanurate insulation, each layer adhered in adhesive over deck.
   d. Deck: Concrete.

2. Roof B (Metal Deck):
   a. Membrane: 60 mil TPO, mechanically fastened over cover board.
   b. Cover Board: Gypsum board, ¼" x 4' x 8', mechanically fastened over insulation.
   c. Insulation: Two layers of – Thickness of Layers as required for R-20. 4' x 8' polyisocyanurate insulation, placed over deck.
   d. Deck: Metal **(See Structural Drawings; some of the metal deck is existing)**

1.02 Definitions:

A. TPO: Thermoplastic polyolefin.

B. Roofing Terminology: See ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in the Section.

1.03 Performance Requirements:

A. General Performance: Installed membrane roofing and base flashing shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.

B. Material Compatibility: Provide roofing materials that are compatible with one another under condition of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

C. FM Approvals Listing: Provide membrane roofing, base flashing, and component material that comply with requirement in FM Approvals 4450 and FM Approvals 4470 as part of a membrane roofing system, and that are listed in FM Approvals' "RoofNav" for Class 1 for steel deck and noncombustible construction for structural concrete, as applicable, Identify materials with FM Approvals markings.

1. Hail Resistance: SH
2. Exterior Fire Classification: A
3. Interior Fire and Windstorm Classification: As described by FM Approvals in "RoofNav" Assembly Numbers specified in paragraph entitled "RoofNav" Assembly Numbers.

D. "RoofNav" Assembly Numbers: Provide roof systems that comply with the following:

1. Carlisle Syntec Systems: **90 MPH Wind Design Required**
    a. Roof A (Concrete Deck): 161393-0-0. (465 Wind Uplift, NC Interior Fire, A Exterior Fire, Severe Hail, Fully Adhered) or 167110-0-0 (300 Wind Uplift, NC Interior Fire, A Exterior Fire, Severe Hail, Fully Adhered). **(Not Used)**
    b. Roof B (Metal Deck): 142999-0-0 (FM Approved I-90, Class A, 1 Interior Fire, A Exterior Fire, Severe Hail, Mechanically Fastened).
        1) RoofNav Assembly Number is enhanced by this Section as follows:
            a) Spacing of membrane-seam fasteners I reduced to 8-inch centers to accommodate 8-inch rib module of metal deck.
            b) Quantity of preliminary fasteners securing each 4' x 8' cover board is increased to 6/board.

2. Firestone Systems: 9**0 MPH Wind Design Required**
    a. Roof A (Concrete Deck): 80133-0-0 (390 Wind Uplift, NC Internal Fire, A Exterior Fire, Severe Hail, fully Adhered). **(Not Used)**
    b. Roof B (Metal Deck): -7876-0-0 0 (FM Approved I-90, Class A, 1 Internal Fire, A Exterior Fire, Severe Hail, Mechanically Fastened).
        1) RoofNav Asembly Number is enhanced by this Section as follows:
            a) Spacing of membrane-seam fasteners is reduced to 8-inch centers to accommodate 8-inch rib module of metal deck.
            b) Gypsum-based cover board is installed over insulation.

c) Quantity of preliminary fasteners securing each 4' x 8' cover board is increased to 6/board.

3. Johns Manville Systems: 9**0 MPH Wind Design Required**
   a. Roof A (Concrete Deck): 21045-0-0 (240 Wind Uplift, NC Interior Fire, A Exterior Fire, Severe Hail, Fully Adhered). **(Not Used)**
   b. Roof B (Metal Deck): 142821-0-0 (FM Approved I-90, Class A,, 1 Internal Fire, A Exterior Fire, Severe Hail, Mechanically Fastened.)
      1) RoofNav Assembly Number is enhanced by this Section as follows:
         a) Spacing of membrane-seam fasteners is reduced to 8-inch centers to accommodate 8-inch rib module of metal deck.
         b) Gypsum-based cover board is installed over insulation.
         c) Quantity of preliminary fasteners securing each 4' x 8' cover board is increased to 6/board.

E. Perimeter/Corner Enhancements: **90 MPH Wind Design Required**

1. Roof A (Concrete Deck): **(Not Used)**
   a. Enhancements related to FM Globals' recommendations: None. (Wind uplift values provided by specified "RoofNav" Assembly Numbers exceed perimeter and corner values recommended FM Global's "Data Sheet" 1-29, Table 1. Therefore, perimeter/corner enhancement is not required by FM Global.)
   b. Enhancements related to membrane manufacturer's recommendations: Reduce spacing of urethane adhesive beads and provide other enhancements in perimeter and corner areas of each roof, all in accordance with recommendations of membrane manufacturer.

2. Roof B (Metal Deck):
   a. Enhancements related to FM Global's Recommendations: Enhance securement of roof system in perimeter and corner areas of each roof in accordance with FM Global's Data Sheet 1-29.
      1) Determine dimensions of perimeter and order areas in accordance with Data Sheet 1-28.
   b. Enhancements related to membrane manufacturer's recommendations Enhance securement of roof system in perimeter and corner areas of each roof in accordance with membrane manufacturer's recommendations, but only to extent manufacturer's recommendations exceed enhancements recommended by FM Global.

1.04 Submittals:

A. Product data: For each type of product indicated.

B. Shop Drawings: For roofing system.

1. Tapered insulation layouts, including slopes.

2. Roof plan showing orientation of steel roof deck and orientation of membrane roofing and fastening spacing and patterns for both mechanically fastened and adhesive-secured membrane roofing.

C. Samples of Verification of Color: Sheet roofing, 6" x6".

D. Manufacturer Certificates:

1. Document signed by membrane manufacturer certifying that roofing system complies with requirements specified in paragraph entitled "Performance Requirements."

2. Document signed by membrane manufacturer certifying that roof system installer satisfies installer qualifications specified in paragraph entitled "Quality Assurance."

E. Product Test Reports: Based on evaluation of comprehensive test performed by manufacturer and witnessed by a qualified testing agency, for components of membrane roofing system.

F. Field Quality Control Reports.

G. Maintenance Data: For roofing system to include in maintenance manuals.

1.05 Quality Assurance:

A. Installer Qualifications: A qualified firm that approved, authorized, or licensed by membrane manufacturer to install specified system and that is eligible to receive specified total-system warranty.

B. Source Limitations: Obtain roofing system components approved by membrane manufacturer and that meet specified "RoofNav" assembly requirements.

C. Exterior Fire-Test Exposure: ASTM E 108, Class A for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

D. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site:

1. Meet with Owner, Architect, Owner's insurer, roofing installer, roofing system manufacturer's representative, deck installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.

2. Review methods and procedures related to roofing installation, including manufacturer's written instruction and specified FM recommendations.

3. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.

4. Review deck substrate requirements for conditions and finishes, including flatness and fastening.

5. Review structural loading limitation and roof deck during and after roofing.

6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.

7. Review governing regulations and requirements for insurance.

8. Review temporary protection requirements for roofing system during and after installation.

9. Review roof observation and repair procedures after roofing installation.

E. Pre-installation Roofing Conference: Owner and architect reserves the rights to convene an additional conference at the Project Site prior to starting work specified in this section.

1. Meet with Owner, Architect, Owner's insurer, roofing installer, roofing system manufacturer's representative, deck installer, and installers whose work interfaces with or affects roofing, including installers and roof accessories and roof-mounted equipment.

2. Review methods and procedures related to roofing installation, including manufacturer's written instruction and specified FM recommendations.

3. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.

4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.

5. Review structural loading limitations of roof deck during an after roofing.

6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs and conditions of other construction that will affect roofing system.

7. Review governing regulations and requirements for insurance.

8. Review temporary protection requirements for roofing system during and after installation.

9. Review roof observation and repair procedures after roofing installation.

1.06 Delivery, Storage & Handling:

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation and cover board materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with manufacturers' written instruction s for handling, storing and protecting during installation.

D. Handle and store roofing materials and place equipment in a manner to avoid permanent defection of deck.

1.07 Project Conditions:

A. Weather limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.08 Special Warranties:

A. Manufacturer's Warranty: Submit membrane manufacturer's standard total-system form of warranty, without monetary limitations, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period.

1. Warranty is to include membrane roofing, base flashing, roof insulation, fasteners, cover board, roofing accessories, roof walk pads and other components of roofing system.

2. Warranty Period: 20 years from date of substantial completion.

B. Roofing Installer's Warranty: Submit roofing installer's warranty on warranty form included at end of this section, signed by installer, covering the work of this section, including all components of membrane roofing system for the following warranty period:

1. Warranty Period: Two years from date of Substantial Completion.

PART 2.00 - PRODUCTS

2.01 TPO Membrane & Auxiliary Materials:

A. Fabric-Reinforced Thermoplastic Polyolefin Sheet: ASTM D 6878, flexible TPO sheet. **90 MPH Wind Design Required**

1. Acceptable Products: One of the following:
    a. "Sure-Weld" TPO by Carlisle SynTec.
    b. "Ultra Ply TPO" by Firestone
    c. "JM TPO" by Johns Mansville
    d. GAF, Everguard Roofing, T-MA-N-I-45

2. Thickness:
    a. Roof A (Concrete Deck): 80 mils **(Not Used)**
    b. Roof B (Metal Deck): 45 mils

3. Maximum Sheet Width:
    a. Roof A (Concrete Deck): Not specified
    b. Roof B (Metal Deck):
        1) "Sure-Weld" TPO by Carlilsle Syntec: 96.50 inches maximum
        2) "UltraPly TPO" by Firestone: 96.0 inches, maximum
        3) "JM TPO" by Johns Manville: 96.0 inches, maximum
    c. Provide half-widths sheets in corners and perimeters as needed to comply with the more stringent of the following:
        1) FM Global's Data Sheet 1-29
        2) Membrane manufacturer's recommendations.

4. Color: White

B. Auxiliary Materials. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.

C. Sheet Finishing: Manufacturer's recommended thermoplastic polyolefin sheet flashing, 45 mils thick, of same color as sheet membrane.

D. Membrane Bonding Adhesive: Provide adhesive listed as component of applicable "RoofNav" Assembly Number.

E. Metal Termination Bars: Membrane manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 (25 by 3 mm) thick; with anchors appropriate for substrate.

F. Membrane Fasteners: Factory-control steel fasteners and compression plates complying with corrosion-resistance provision in FM Approvals 4470, designed for fastening membrane to substrate. Provide fasteners and plates that are:

1. Acceptable to membrane manufacturer as component of specified total-system warranty and;

2. Listed as component of applicable "RoofNav" Assembly Number.

G. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent flashings, preformed inside and outside corner sheet flashings, T-joint cover lap sealants, termination reglets, and other accessories recommended by membrane manufacturer.

2.02 Roof Insulations & Auxiliary Materials **90 MPH Wind Design Required**

A. Flat-Stock Insulations:

1. Acceptable Product: Polyisocyanurate roof insulation, ASTM C1289, that is:
    a. acceptable to membrane manufacturer as component of specified total-system warranty and
    b. listed as component of applicable "RoofNav" Assembly Number

2. Thickness/Layers (flat-stock boards in all roof areas): Two layers of thickness required for R-26.

3. Board Sizes:
    a. Roof A (Concrete Deck): 4' x 4' **(Not Used)**
    b. Roof B (Metal Deck): 4' x 8'

4. Compressive Strength:
    a. Roof A (Concrete Deck): 25 psi **(Not Used)**
    b. Roof B (Metal Deck): 20 psi

B. Tapered Insulation: Factory fabricated polyisocyanurate insulation matching brand of flat stock insulation.

1. Provide ¼:12 tapered board in areas where roof slope is not provided by structural roof support system, if applicable.

2. Provide 1/2:12 tapered board to construct sumps at roof drains, crickets and saddles between and adjacent to roof drains, on up-slope side of equipment curbs over 36-inches wide, and other places where tapered insulation is needed to provide slope for roof drainage.

3. Low-Edge Thickness: ½-inch along perimeter edges of crickets and saddles.

4. Compressive Strength: Same as specified for flat-stock roof insulation.

C. Adhesive (for securement of insulation board to insulation boards and insulation boards to concrete deck in Roof A areas): Provide adhesive that is:

1. acceptable to membrane manufacturer as component of specified total-system warranty and

2. listed as component of applicable "Roof Nav" Assembly Number

2.03 Walkways

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls that are recommended by membrane manufacturer.

PART 3.00 - EXECUTION

3.01 Examination

A. Examine substrates, areas, and condition for compliance with the following requirements and other conditions that may adversely affect performance of roofing system:

1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.

2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and termination and that nailers match thicknesses of insulation.

3. Roof A Areas:
   a. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
   b. Verify that concrete substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
   c. Verify that concrete curing compounds that will impair adhesion of roofing components to roof deck have been removed.

4. Roof B Areas: Verify that surface plant flatness and fastening of metal roof deck complies with requirements in Division 5 Section entitled Metal Decking.

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

3.02 Preparations

A. Clean substrate of debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.03 Roof Insulation Installation **90 MPH Wind Design Required**

A. Coordinate installing membrane roofing system components so cover board and insulation are not exposed to precipitation or left exposed at the end of the work day.

B. Install two layers of flat-stock polyisocyanurate insulation over all roof decks. (Within limits of roof-drain sumps, substitute 1/2:12 tapered insulation for upper layer of flat stock board.)

1. Install 4′ x 4′ insulation boards with 25 psi compressive strength in Roof A (Concrete Deck) areas.

2. Install 4′ x 8′ insulation boards with 20 psi compressive strength in Roof B (Metal Deck) areas.

C. Install tapered insulation over flat-stock insulation boards in the following plates:

1. Where roof slope is not provided by structural roof support system

2. To form crickets and saddles between and adjacent to roof drains and on up-slope side of equipment curbs over 36-inches in width.

3. To form sumps at interior drains.

4. Other places where tapered insulation is needed to provide slope for roof drainage.

D. Cover all insulation boards (flat-stick and tapered boards) with one layer of gypsum board.

1. Install ½″ x 4′ x 4′ cover boards in Roof A (Concrete Deck) areas.

2. Install ¼″ x 4′ x 8″ cover boards in Roof B (Metal Deck) areas.

E. Install insulation with long joints of boards in a continuous straight line with end joints staggered 12 inches between rows, abutting edges and end between boards. Fill gaps exceeding ¼ inch with insulation.

1. Cut and fit boards within ¼ inch of nailers, projections, and penetrations.

2. Offset joints between all insulation and cover board layers not less than 6 inches

3. In Roof Area B (metal deck), position bottom layer of insulation so that long edge of each board is centered over flat surface of metal deck.

F. Roof A (Concrete Deck): Set insulation and cover boards in specified adhesive.

1. Firmly press boards into place to provide firm, continuo8us contact with substrate. Walk-in board as they are set in place.

2. Continue pressing and walking-in boards until adhesive has firmly set.

3. Apply beads and spread adhesive at rates recommended by membrane manufacturer as needed to comply with appropriate "RoofNav" Assembly Number.

G. Roof B(Metal): Mechanically fasten to metal deck through all layers in insulation

1. Secure each 4' x 8' board with not less than 6 preliminary fasteners, not 4 per board as permitted by specified by "RoofNav" assembly numbers.

2. Aside from requirements to secure each board with 6t fasteners, comply with applicable "RoofNav" Assembly Number and membrane manufacturer's installation recommendations.
   a. "RoofNav" Assembly Numbers are to be enhanced as provided for in this section.

3.04 Adhered to Membrane Installation - Roof A (Concrete Deck) **(Not Used)**

A. Adhere membrane in Roof A areas according to membrane manufacturer's written instructions and criteria set forth in applicable "RoofNav" Assembly Number.

B. Start installation of membrane roofing gin presence of membrane roofing system manufacturer's technical personnel.

C. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Apply adhesive substrate and underside of membrane roofing and allow to partially dry before installing membrane roofing. Do no apply to splice area of membrane roofing.

E. In addition to adhering, mechanically fasten membrane securely at termination, penetrations, and perimeter of roofing.

F. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

G. Clean seam areas, overlap membrane roofing and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Inspect and test lap edges with probe to verify seam weld continuity. Test lap edges same day seams are hot-air welded.

2. Verify field strength of seams a minimum of twice daily, and then repair seam sample areas.

3. Repair tears, voids and lapped seams in roofing that do not comply with requirements.

H. In roof drains, securely seal membrane in place with clamping ring.

3.05 Mechanically Fastened TPO Membrane Installation - Roof B (Metal Deck) **90 MPH Wind Design Required**

A. Mechanically fasten membrane in Roof B areas and install according to membrane manufacturer's written instruction and criteria set forth in applicable "RoofNav" assembly number.

1. Enhance construction called for in specified "RoofNav" Assembly Numbers according to requirements provided in this Section.
    a. For in-splice attachment, install membranes roofing with long dimension perpendicular to steel roof deck flutes.

B. Start installation of membrane roofing in presence of roofing system manufacturer's technical personnel.

C. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimension required by manufacturer. Stagger end laps.

D. Mechanically fasten membrane securely at terminations, penetrations, and perimeter of roofing.

E. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

F. Secure one edge of TPO sheet using fastening plates centered within membrane seam and mechanically fasten TPO sheet to metal roof deck.

1. Secure seams of 8-inch centers to accommodate 8-inch rib module of metal deck (12-inch centers is not acceptable.)

2. Enhance securement in perimeter and corner in accordance with the more stringent of the following:
    a. Membrane manufacturer's recommendations
    b. FM Global's Data Sheet 1-29

G. Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Inspect and test lap edges with probe to verify seam weld continuity. Test lap edges same day seams are hot-air welded.

2. Verify field strength of seams a minimum of twice daily, and then repair seam sample areas.

3. Repair tears, voids, and lapped seams in roofing that do not comply with requirements.

H. Securely seal membrane roofing in place with clamping ring.

3.06 Membrane Flashing Installation

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instruction.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.

C. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to provide a watertight seam installation.

3.07 Walkway Installation

A. Heat weld to membrane according to roofing system manufacturer's written instructions. Install walkway material in the following locations:

1. Around three access side of roof hatches.
2. In foot and head of stairs and ladders.
3. At door openings onto roof
4. At places where downspouts discharge water from upper roof level to lower roof level, if applicable.
5. Around all roof-mounted HVAC equipment
6. Other locations noted on drawings.

3.08 Field Quality Control

A. Final roof inspection: arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

B. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.

C. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.09 Protecting and Cleaning

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report with copies to the Architect and Owner.

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free

of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

3.10 Attachement to Section

A. Form of Roofing Installer's Warranty is bound at conclusion of this Section.

ROOFING INSTALLER WARRANTY
(To Include Connection Between New and Existing Roof for a Period of Two Years)

WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

Owner: _____

Address: _____

Acceptance Date:_____

Warranty Period: Two Years

Expiration Date: _____

AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a sub contractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period.

NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

A. This Warranty is made subject to the following terms and conditions:

1. Specifically excluded from this Warranty are damages to work and other part of the building, and to building contents, caused by:
    a. Lightening;
    b. Peak gust wind speed exceeding 90 mph;
    c. Fire;
    d. Failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration and decomposition;

e. Faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
f. Vapor condensation on bottom of roofing; and
g. Activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.

2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.

3. Roofing installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects or work.

4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on dat4e of said alteration, but only to the extent said alterations affect work covered by this Warranty, If owner engages roofing installer to perform said alteration, Warranty shall not become null and void unless roofing installer, before starting said work, shall have notified owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this warranty.

5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use of service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.

6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, effects, or deteriorations.

7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrictor cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure, Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____ , 20_____.

Authorized Signature:_____

Name:_____

Title:_____

END OF SECTION 07543

SECTION 07544 - THERMOPLASTIC POLYOLEFIN (TPO) ROOFING [FULLY ADHERED]

*DESIGN TO BE 90 MPH ALL ROOFING MATERIALS AND FASTENERS ROOF WARRANTY ; ALL ROOF DRAIN PIPES TO BE PVC SCHEDULE 40; REFER TO DRAWINGS FOR ROOF DRAIN SPECIFICATIONS; INSULATE ALL ROOF DRAIN PIPES WITH MINIMAL OF 2" OF NON-COMBUSTIBLE INSULATION FULL LENGTH.

PART 1.00 - GENERAL

1.01 Summary:

A. Section includes:

1. Roof A (concrete Deck): Adhered TPO membrane roofing system. **(Not Used)**

2. Roof B (Plywood Deck): Fully Adhered TPO membrane roofing system

3. Roof insulation and cover board. (fully adhered to metal deck)

4. Fasteners and other roofing accessories.

B. System Overview: Roofing systems consist generally of the following:

1. Roof A (Concrete Deck): **(Not Used)**
   a. Membrane: 60 mil TPO, adhered in adhesive over cover board.
   b. Cover Board: Factory primed, gypsum board, ½" x 4' x 4', adhered in adhesive over insulation.
   c. Insulation: Two layers of 1-1/2" x 4' x 4' polyisocyanurate insulation, each layer adhered in adhesive over deck.
   d. Deck: Concrete.

2. Roof B (Plywood Deck):
   a. Membrane: 60 mil TPO, Fully Adhered over cover board.
   b. Cover Board: Gypsum board, ¼" x 4' x 8', mechanically fastened over insulation.
   c. Insulation: Two layers of – Thickness of Layers as required for R-20. 4' x 8' polyisocyanurate insulation, placed over deck.
   d. Deck: Metal **(See Structural Drawings; some of the metal deck is existing)**.

1.02 Definitions:

A. TPO: Thermoplastic polyolefin.

B. Roofing Terminology: See ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in the Section.

1.03 Performance Requirements:

A. General Performance: Installed membrane roofing and base flashing shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.

B. Material Compatibility: Provide roofing materials that are compatible with one another under condition of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

C. (Omitted)

D. "RoofNav" Assembly Numbers: Provide roof systems that comply with the following:

1. Carlisle Syntec Systems: **90 MPH Wind Design Required**
   a. Roof A (Concrete Deck): 161393-0-0. (465 Wind Uplift, NC Interior Fire, A Exterior Fire, Severe Hail, Fully Adhered) or 167110-0-0 (300 Wind Uplift, NC Interior Fire, A Exterior Fire, Severe Hail, Fully Adhered). **(Not Used)**
   b. Roof B (Plywood Deck): Exterior Fire, Severe Hail, Fully Adhered).

2. Firestone Systems: **90 MPH Wind Design Required**
   a. Roof A (Concrete Deck): 80133-0-0 (390 Wind Uplift, NC Internal Fire, A Exterior Fire, Severe Hail, Fully Adhered). **(Not Used)**
   b. Roof B (Plywood Deck): Exterior Fire, Severe Hail, Fully Adhered).

3. Johns Manville Systems: **90 MPH Wind Design Required**
   a. Roof A (Concrete Deck): 21045-0-0 (240 Wind Uplift, NC Interior Fire, A Exterior Fire, Severe Hail, Fully Adhered). **(Not Used)**
   b. Roof B (Plywood Deck): I-90, Class A,, 1 Internal Fire, A Exterior Fire, Severe Hail, Fully Adhered.)

E. Perimeter/Corner Enhancements: **90 MPH Wind Design Required**

1. Roof A (Concrete Deck): **(Not Used)**
   a. Enhancements related to FM Globals' recommendations: None. (Wind uplift values provided by specified "RoofNav" Assembly Numbers exceed perimeter and corner values recommended FM Global's "Data Sheet" 1-29, Table 1. Therefore, perimeter/corner enhancement is not required by FM Global.)
   b. Enhancements related to membrane manufacturer's recommendations: Reduce spacing of urethane adhesive beads and provide other enhancements in perimeter and corner areas of each roof, all in accordance with recommendations of membrane manufacturer.

2. Roof B (Metal): **(See Structural Drawings; some of the metal deck is existing)**:
   a. Enhance securement of roof system in perimeter and corner areas of each roof in accordance with I-90.

b. Enhancements related to membrane manufacturer's recommendations Enhance securement of roof system in perimeter and corner areas of each roof in accordance with membrane manufacturer's recommendations for I-90.

1.04 Submittals:

A. Product data: For each type of product indicated.

B. Shop Drawings: For roofing system.

1. Tapered insulation layouts, including slopes.

2. Roof plan showing orientation of steel roof deck and orientation of membrane roofing and fastening spacing and patterns for both mechanically fastened and adhesive-secured membrane roofing.

C. Samples of Verification of Color: Sheet roofing, 6" x6".

D. Manufacturer Certificates:

1. Document signed by membrane manufacturer certifying that roofing system complies with requirements specified in paragraph entitled "Performance Requirements."

2. Document signed by membrane manufacturer certifying that roof system installer satisfies installer qualifications specified in paragraph entitled "Quality Assurance."

E. Product Test Reports: Based on evaluation of comprehensive test performed by manufacturer and witnessed by a qualified testing agency, for components of membrane roofing system.

F. Field Quality Control Reports.

G. Maintenance Data: For roofing system to include in maintenance manuals.

1.05 Quality Assurance:

A. Installer Qualifications: A qualified firm that approved, authorized, or licensed by membrane manufacturer to install specified system and that is eligible to receive specified total-system warranty.

B. Source Limitations: Obtain roofing system components approved by membrane manufacturer and that meet specified "RoofNav" assembly requirements.

C. Exterior Fire-Test Exposure: ASTM E 108, Class A for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

D. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site:

1. Meet with Owner, Architect, Owner's insurer, roofing installer, roofing system manufacturer's representative, deck installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.

2. Review methods and procedures related to roofing installation, including manufacturer's written instruction and specified FM recommendations.

3. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.

4. Review deck substrate requirements for conditions and finishes, including flatness and fastening.

5. Review structural loading limitation and roof deck during and after roofing.

6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.

7. Review governing regulations and requirements for insurance.

8. Review temporary protection requirements for roofing system during and after installation.

9. Review roof observation and repair procedures after roofing installation.

E. Pre-installation Roofing Conference: Owner and architect reserves the rights to convene an additional conference at the Project Site prior to starting work specified in this section.

1. Meet with Owner, Architect, Owner's insurer, roofing installer, roofing system manufacturer's representative, deck installer, and installers whose work interfaces with or affects roofing, including installers and roof accessories and roof-mounted equipment.

2. Review methods and procedures related to roofing installation, including manufacturer's written instruction and specified FM recommendations.

3. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.

4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.

5. Review structural loading limitations of roof deck during an after roofing.

6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs and conditions of other construction that will affect roofing system.

7. Review governing regulations and requirements for insurance.

8. Review temporary protection requirements for roofing system during and after installation.

9. Review roof observation and repair procedures after roofing installation.

1.06 Delivery, Storage & Handling:

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation and cover board materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with manufacturers' written instruction s for handling, storing and protecting during installation.

D. Handle and store roofing materials and place equipment in a manner to avoid permanent defection of deck.

1.07 Project Conditions:

A. Weather limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.08 Special Warranties:

A. Manufacturer's Warranty: Submit membrane manufacturer's standard total-system form of warranty, without monetary limitations, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period.

1. Warranty is to include membrane roofing, base flashing, roof insulation, fasteners, cover board, roofing accessories, roof walk pads and other components of roofing system.

2. Warranty Period: 20 years from date of substantial completion.

B. Roofing Installer's Warranty: Submit roofing installer's warranty on warranty form included at end of this section, signed by installer, covering the work of this section, including all components of membrane roofing system for the following warranty period:

1. Warranty Period: Two years from date of Substantial Completion.

PART 2.00 - PRODUCTS

2.01 TPO Membrane & Auxiliary Materials:

A. Fabric-Reinforced Thermoplastic Polyolefin Sheet: ASTM D 6878, flexible TPO sheet. **90 MPH Wind Design Required**

1. Acceptable Products: One of the following:
   a. "Sure-Weld" TPO by Carlisle SynTec.
   b. "Ultra Ply TPO" by Firestone
   c. "JM TPO" by Johns Mansville
   d. GAF, Everguard Roofing, TPO

2. Thickness:
   a. Roof A (Concrete Deck): 60 mils **(Not Used)**
   b. Roof B (Plywood Deck): 60 mils

3. Maximum Sheet Width:
   a. Roof A (Concrete Deck): Not specified
   b. Roof B (Metal): **(See Structural Drawings; some of the metal deck is existing)**
      1) "Sure-Weld" TPO by Carlilsle Syntec: 96.50 inches maximum
      2) "UltraPly TPO" by Firestone: 96.0 inches, maximum
      3) "JM TPO" by Johns Manville: 96.0 inches, maximum
   c. Provide half-widths sheets in corners and perimeters as needed to comply with the more stringent of the following:
      1) Membrane manufacturer's recommendations.

4. Color: White

B. Auxiliary Materials. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.

C. Sheet Finishing: Manufacturer's recommended thermoplastic polyolefin sheet flashing, 45 mils thick, of same color as sheet membrane.

D. Membrane Bonding Adhesive: Provide adhesive listed as component of applicable "RoofNav" Assembly Number.

E. Metal Termination Bars: Membrane manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 (25 by 3 mm) thick; with anchors appropriate for substrate.

F. Membrane Fasteners: **(Fully Adhered System)**:

1. Acceptable to membrane manufacturer as component of specified total-system warranty

G. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent flashings, preformed inside and outside corner sheet flashings, T-joint cover lap sealants, termination reglets, and other accessories recommended by membrane manufacturer.

2.02 Roof Insulations & Auxiliary Materials **90 MPH Wind Design Required**

A. Flat-Stock Insulations:

1. Acceptable Product: Polyisocyanurate roof insulation, ASTM C1289, that is:
   a. acceptable to membrane manufacturer as component of specified total-system warranty and
   b. listed as component of applicable "RoofNav" Assembly Number

2. Thickness/Layers (flat-stock boards in all roof areas): Two layers of thickness required for R-20.

3. Board Sizes:
   a. Roof A (Concrete Deck): 4' x 4' **(Not Used)**
   b. Roof B (Metal): 4' x 8' **(See Structural Drawings; some of the metal deck is existing)**

4. Compressive Strength:
   a. Roof A (Concrete Deck): 25 psi **(Not Used)**
   b. Roof B (Metal): 20 psi **(See Structural Drawings; some of the metal deck is existing)**

B. Tapered Insulation: Factory fabricated polyisocyanurate insulation matching brand of flat stock insulation.

1. Provide ¼:12 tapered board in areas where roof slope is not provided by structural roof support system, if applicable.

2. Provide 1/2:12 tapered board to construct sumps at roof drains, crickets and saddles between and adjacent to roof drains, on up-slope side of equipment curbs over 36-inches wide, and other places where tapered insulation is needed to provide slope for roof drainage.

3. Low-Edge Thickness: ½-inch along perimeter edges of crickets and saddles.

4. Compressive Strength: Same as specified for flat-stock roof insulation.

C. Adhesive (for securement of insulation board to insulation boards and insulation boards to plywood deck): Provide adhesive that is:

1. acceptable to membrane manufacturer as component of specified total-system warranty and

2.03 Walkways

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls that are recommended by membrane manufacturer.

PART 3.00 - EXECUTION

3.01 Examination

A. Examine substrates, areas, and condition for compliance with the following requirements and other conditions that may adversely affect performance of roofing system:

1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.

2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and termination and that nailers match thicknesses of insulation.

3. Roof A Areas: **(NOT USED)**
   a. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
   b. Verify that concrete substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
   c. Verify that concrete curing compounds that will impair adhesion of roofing components to roof deck have been removed.

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

3.02 Preparations

A. Clean substrate of debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.03 Roof Insulation Installation **90 MPH Wind Design Required**

A. Coordinate installing membrane roofing system components so cover board and insulation are not exposed to precipitation or left exposed at the end of the work day.

B. Install two layers of flat-stock polyisocyanurate insulation over all roof decks. (Within limits of roof-drain sumps, substitute 1/2:12 tapered insulation for upper layer of flat stock board.) (Fully Adhered)

1. Install 4′ x 4′ insulation boards with 25 psi compressive strength in Roof A (Concrete Deck) areas. **(NOT USED)**

2. Install 4′ x 8′ insulation boards with 20 psi compressive strength in Roof B (Metal) areas **(See Structural Drawings; some of the metal deck is existing).**

C. Install tapered insulation over flat-stock insulation boards in the following plates:

1. Where roof slope is not provided by structural roof support system

2. To form crickets and saddles between and adjacent to roof drains and on up-slope side of equipment curbs over 36-inches in width.

3. To form sumps at interior drains.

4. Other places where tapered insulation is needed to provide slope for roof drainage.

D. Cover all insulation boards (flat-stick and tapered boards) with one layer of gypsum board.

1. Install ½″ x 4′ x 4′ cover boards in Roof A (Concrete Deck) areas. **(NOT USED)**

2. Install ½″ x 4′ x 8″ cover boards in Roof B (Metal) areas **(See Structural Drawings; some of the metal deck is existing)**.

E. Install insulation with long joints of boards in a continuous straight line with end joints staggered 12 inches between rows, abutting edges and end between boards. Fill gaps exceeding ¼ inch with insulation.

1. Cut and fit boards within ¼ inch of nailers, projections, and penetrations.

2. Offset joints between all insulation and cover board layers not less than 6 inches

F. Roof A (Concrete Deck): Set insulation and cover boards in specified adhesive. **(NOT USED)**

1. Firmly press boards into place to provide firm, continuo8us contact with substrate. Walk-in board as they are set in place.

2. Continue pressing and walking-in boards until adhesive has firmly set.

3. Apply beads and spread adhesive at rates recommended by membrane manufacturer as needed to comply with appropriate "RoofNav" Assembly Number.

G. Roof B (Metal): Fully Adhere all layers in insulation to metal deck **(See Structural Drawings; some of the metal deck is existing)**

3.04 Adhered to Membrane Installation - Roof A (Concrete Deck) **(Not Used)**

A. Adhere membrane in Roof A areas according to membrane manufacturer's written instructions and criteria set forth in applicable "RoofNav" Assembly Number.

B. Start installation of membrane roofing gin presence of membrane roofing system manufacturer's technical personnel.

C. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Apply adhesive substrate and underside of membrane roofing and allow to partially dry before installing membrane roofing. Do no apply to splice area of membrane roofing.

E. In addition to adhering, mechanically fasten membrane securely at termination, penetrations, and perimeter of roofing.

F. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

G. Clean seam areas, overlap membrane roofing and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Inspect and test lap edges with probe to verify seam weld continuity. Test lap edges same day seams are hot-air welded.

2. Verify field strength of seams a minimum of twice daily, and then repair seam sample areas.

3. Repair tears, voids and lapped seams in roofing that do not comply with requirements.

H. In roof drains, securely seal membrane in place with clamping ring.

3.05 Fully Adhered TPO Membrane Installation - Roof B (Metal) **90 MPH Wind Design Required (See Structural Drawings; some of the metal deck is existing)**

A. (Omitted)

B. Start installation of membrane roofing in presence of roofing system manufacturer's technical personnel.

C. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimension required by manufacturer. Stagger end laps.

D. Fully adhere membrane securely at terminations, penetrations, and perimeter of roofing.

E. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

F. (Omitted)

G. Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Inspect and test lap edges with probe to verify seam weld continuity. Test lap edges same day seams are hot-air welded.

2. Verify field strength of seams a minimum of twice daily, and then repair seam sample areas.

3. Repair tears, voids, and lapped seams in roofing that do not comply with requirements.

H. Securely seal membrane roofing in place with clamping ring.

3.06 Membrane Flashing Installation

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instruction.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.

C. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to provide a watertight seam installation.

3.07 Walkway Installation

A. Heat weld to membrane according to roofing system manufacturer's written instructions. Install walkway material in the following locations:

1. Around three access side of roof hatches.
2. In foot and head of stairs and ladders.
3. At door openings onto roof
4. At places where downspouts discharge water from upper roof level to lower roof level, if applicable.
5. Around all roof-mounted HVAC equipment
6. Other locations noted on drawings.

3.08 Field Quality Control

A. Final roof inspection: arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

B. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.

C. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.09 Protecting and Cleaning

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report with copies to the Architect and Owner.

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

3.10 Attachement to Section

A. Form of Roofing Installer's Warranty is bound at conclusion of this Section.

ROOFING INSTALLER WARRANTY
(To Include Connection Between New and Existing Roof for a Period of Two Years)

WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

Owner: _____

Address: _____

Acceptance Date:_____

Warranty Period: Two Years

Expiration Date: _____

AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a sub contractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period.

NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

A. This Warranty is made subject to the following terms and conditions:

1. Specifically excluded from this Warranty are damages to work and other part of the building, and to building contents, caused by:
    a. Lightening;
    b. Peak gust wind speed exceeding 90 mph;
    c. Fire;
    d. Failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration and decomposition;
    e. Faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
    f. Vapor condensation on bottom of roofing; and
    g. Activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.

2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.

3. Roofing installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects or work.

4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alteration, but only to the extent said alterations affect work covered by this Warranty, If owner engages roofing installer to perform said alteration, Warranty shall not become null and void unless roofing installer, before starting said

work, shall have notified owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this warranty.

5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use of service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.

6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, effects, or deteriorations.

7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrictor cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure, Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor. Warranty to cover any damage by grease collecting on roof membrane from two kitchen hood exhaust fans.

IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____ , 20_____.

Authorized Signature:_____

Name:_____

Title:_____

END OF SECTION 07544

SECTION 07620 - METAL FLASHING AND TRIM (See drawings for Roof Curbs)

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Qualifications of Fabricator: The fabricator of the products of this section shall have been successfully engaged in the business of fabricating metal roof flashings and trim for a period of not less than five years immediately prior to commencing fabrication of the products of this section.

B. Qualifications of Installers: The installer of the products of this section shall have been successfully engaged in the business of installing metal flashings and trim for a period of not less than five years immediately prior to performing the work of this section.

C. Industry Standards: Omitted

1.02 Definitions: Omitted

1.03 Submittals:

A. Proof of Compliance: Prior to commencing any work of this section, submit in triplicate to the Architect:

1. a certified statement of qualifications and

2. a certified statement to the effect that all products proposed to be used meet the requirements of this section.

B. Shop Drawings: Prior to commencing fabrication of the products of this section, submit manufacturer's shop drawings to the Architect for review, fully dimensioned, showing actual field measurements and showing method of installation and anchorage.

C. Samples: After review of the shop drawings, but prior to commencing fabrication, submit to the Architect for review samples of each of the following:

1. Valley flashing, showing jointing; full size x 12"
2. Cleat, full size
3. Eave drip, full size x 12"
4. Regulate and counter flashing, full size x 12”

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions: Omitted

PART 2.00 - PRODUCTS

2.01 Materials:

A. Aluminum: All aluminum shall be alloy 3003-H14, (KYNAR FINISH) where required hereinafter.

B. Felt: Unless otherwise specifically noted, felt shall be asphalt saturated, weighing 30 lbs. per 100 square feet.

C. Building Paper: All building paper shall be smooth unsaturated quality, rosin-sized and weigh not less than 6 pounds per 100 square feet.

D. Reglet and Counter Flashing: Design is based on Fry Springlok Flashing System, type SM, surface mounted, fabricated from .025 aluminum alloy, KYNAR FINISH.

E. Fastening Devices:

1. All nails, rivets, screws, expansion inserts, bolts, and similar fastenings shall be stainless steel.

2. Nails for application to wood shall be flat head, "stronghold" type, not less than 12 gauge and not less than 1" long.

3. Screws and bolts shall have round heads and shall be of proper size for the specific application.

2.02 Fabrication:

A. Provide all necessary flashings, gravel stops, scuppers, pitch pans, reglets, etc. as required.

B. Gutters require a continuous, perforated, low gravel stop.

C. Raked walls require a continuous high gravel stop.

D. All high gravel stops shall be anchored to the wall using cleats as recommended by SMACNA.

E. Gutters, downspouts, cap flashing, gravel stops and all other miscellaneous sheet metal items shall be .040" aluminum sheet metal with fluoropolymer (Kynar) finish, color as selected by Architect.

F. All sheet metal shall be fabricated in accordance with SMACNA "Architectural Sheet Metal Manual" and all other recognized industry standards.

G. Roof Base Flashing shall be as recommended by roofing manufacturer.

H. Eave Drip: Fabricate to profiles shown on the drawings and in lengths not exceeding 40 feet.

I. Miscellaneous Flashings: Fabricate to profiles shown on the drawings and in lengths not exceeding 8 feet.

J. Cleats: Fabricate cleats 2" wide and approximately 3" long.

PART 3.00 - EXECUTION

3.01 Inspection: The Contractor shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Preliminary Requirements:

1. Coordinate installation of metal flashing and trim with the installation of roofing systems and gutter work.
2. Prior to installing any metal flashing and trim over roofing felts, apply layer of building paper, using minimum number of nails, to separate metal items from the asphaltic felts.

B. Valley Flashing: Install closed type valley flashings, in accordance with the details shown thereon, lapping joints not less than 6"; hold valley flashings in place with cleats spaced not more than 36" o.c.

C. Edge Drip: Install in as long a length as is practical with expansion joints spaced not more than 40' o.c., eave drip shall be nailed to the roof deck and held in place on the face with cleats spaced not more than 36" o.c.; each joint in the eave drip shall be an expansion joint with cover approximately 4" wide in same profile as eave drip.

D. Reglet and Counter Flashing: Install in the locations shown on the drawings, nailing reglet to masonry at 12" o.c., counter flash shall be locked into reglet in as long a length as is practical with joints being lapped not less than 6"; top of reglet shall be caulked with type 1 sealant.

E. Miscellaneous Flashings: Install all other flashing where flashing is called for on the drawings in accordance with the details shown thereon lap joints 4" unless otherwise shown.

3.03 Field Quality Control: Materials and workmanship at all times shall be subject to inspection by the Architect or his representative.

END OF SECTION 07620

SECTION 07701 - FLEXIBLE FLASHING

PART 1.00 - GENERAL

1.01 Quality Assurance: For actual installation of the materials of this section, use only skilled workmen who are familiar with the products described hereinafter and the requirements of this work.

1.02 Definitions: Omitted

1.03 Submittals:

A. Manufacturer's Data: Before any products are delivered to the project site, submit to the Architect for review, manufacturer's detailed descriptive and specification data and installation instructions for the flexible flashing described hereinafter.

B. Samples: Accompanying the data submittal, submit samples, not less than 12" x 12", of the flexible flashing.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Condition: Omitted

PART 2.00 - PRODUCTS

2.01 Materials:

A. Flexible Flashing: shall be homogeneous virgin poly-vinyl chloride impervious membrane, dielectrically sealed, non-reinforced 20 mil thick sheets.

B. Adhesive: shall be elastomeric type for use with poly-vinyl chloride sheets.

2.02 Fabrication: Flexible flashing shall be cut to width and length to allow for installation as described hereinafter.

PART 3.00 - EXECUTION

3.01 Inspection: The Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Location: Flexible flashings shall be installed in the following locations:

1. In exterior walls at heads of doors, windows, louvers and similar openings.
2. In exterior walls at floor line.
3. In exterior walls at sills of windows, louvers and similar openings.
4. Other locations as shown on the drawings.

B. Flexible Flashing:

1. Flexible flashings shall be installed in full height or width strips with a minimum of running joints.
2. Such joints shall be lapped not less than 6" and sealed with the specified adhesive.
3. Do not stretch the membrane.
4. The top edge of the membrane shall be mechanically attached to the framing prior to installation of the wall sheathing.
5. The bottom edge of the membrane shall extend horizontally to within 1/2" of the exterior masonry face.
6. At head of doors, windows, louvers and other openings, extend membrane 12" beyond each jamb and at sill of all openings, except doors, unless otherwise shown on the drawings, extend membrane 12" beyond each jamb.

3.03 Field Quality Control: Materials and workmanship at all times shall be subject to inspection by the Architect or his representative.

END OF SECTION 07701

SECTION 07900 - SEALANTS

PART 1.00 - GENERAL

1.01 Quality Assurance: For actual caulking operations (installation of sealants and fillers) use only thoroughly trained and experienced mechanical who are completely familiar with the materials selected and the manufacturers recommended methods of installation and the requirements of this work.

1.02 Definitions:

A. Sealant: A weatherproof elastomer used in filling and sealing joints, having properties of adhesion, cohesion, extensibility under tension, compressibility and recovery.

B. Caulk: Term used to denote the process of filling and sealing the joints, without regard to type of material.

1.03 Submittals:

A. Manufacturer's Data:

1. Before any products are delivered to the project site, submit to the Architect for review, manufacturer's detailed descriptive and specification data for each type of sealant and joint filler described hereinafter.

2. Accompanying the data submittal, furnish manufacturer's installation instructions.

B. Samples: Accompanying the data submittal, submit samples of each type and color of sealant required and samples of the joint filler.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions: Do not caulk if the ambient temperature is below 32 degrees Fahrenheit.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Sealants:

1. Type 1: Design is based on "790 Building Sealant" as manufactured by Dow Corning Corporation, Midland, MI. Colors as selected by the Architect from manufacturer's standard colors.

2. Type 2: Sealant type 2 shall be an oleo-resinous compound, gun grade, non-staining, non-shrinking, and non-sagging plastic compound meeting or exceeding Federal Specification TT- C-598b.

3. Type 3: Design is based on "795 Building Sealant" as manufactured by Dow Corning Corporation, Midland, MI. Colors as selected by the Architect from manufacturer's standard colors.

4. Type 4: Design is based on "786 Building Sealant" as manufactured by Dow Corning Corporation, Midland, MI. Colors as selected by the Architect from manufacturer's standard colors.

B. Primer: All primer shall be as recommended by the manufacturer of the sealant being installed for the particular condition.

C. Joint Filler: Unless otherwise shown or recommended by the manufacturer of the sealant being installed, joint filler shall be polyethylene foam rod, approved by the manufacturer of the sealant material, sized to require 20% to 50% compression upon insertion.

D. Application Equipment: Sealant application equipment shall be only such equipment as is specifically recommended by the manufacturer of the sealant being installed.

PART 3.00 - EXECUTION

3.01 Inspection: The Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Preliminary Requirements:

1. Surface Preparation:
   a. Surfaces to be sealed shall be sound, clean, dry, frost free and free of contamination by laitance, form release agents, concrete curing compounds or other surface treatments.
   b. Masonry and concrete surfaces shall be wire brushed.
   c. Metal, glass and wood surfaces shall be wiped with methyl ethyl ketone.

2. Masking: Surfaces adjacent to joints shall be masked to obtain a neat sealant line.

3. Joint Filler: Joints exceeding the maximum allowable depth as hereinafter described shall be filled to within the allowable depth with the specified joint filler.

4. Primer: Apply primer to surfaces to be caulked as recommended by the manufacturer of the sealant being installed.

B. Locations:

1. As the work progresses caulk and seal all joints subject to movement or subject to passage of air or moisture.

2. Type 1 Sealant: Install all exterior locations where sealant or caulking is called for on the drawings.

3. Type 2 Sealant: Set all metal thresholds in type 2 sealant unless specifically noted otherwise on the drawings.

4. Type 3 Sealant: Install in all interior locations where sealant or caulking is called for on the drawings except where type 4 sealant is called for.

5. Type 4 Sealant: Install in all interior locations where type 4 sealant is called for on the drawings and where sealant is called for in the ceramic tile work described in Section 09310 of this project manual and where sealant is required around plumbing fixtures.

C. Application of Sealant:

1. Install sealant under pressure to fill joint, taking care to produce beads of proper width and depth; tool as recommended by the manufacturer; immediately remove all surplus sealant.

2. Width and depth of sealed joint shall not exceed the proportions of 1/2" width x 1/2" diameter and 3/4" width x 1/4" diameter, except that metal thresholds shall be set in full bed of specified sealant.

3.03 Field Quality Control:

A. Protection: To insure proper curing, sealing joints shall not be touched, washed or otherwise disturbed for 48 hours after installation unless specifically recommended otherwise by the sealant manufacturer.

B. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

END OF SECTION 07900

SECTION 08112 - HOLLOW METAL FRAMES

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Non-Labeled Frames: Manufacture non-labeled frames in accordance with Standard CHM-1-74 of the National Association of Architectural Metal Manufacturers, except as modified hereinafter.

B. Labeled Frames: Manufacture labeled frames in accordance with Standard NFPA No. 80 of the National Fire Protection Association and the requirements of Underwriters' Laboratories, Inc. (UL).

1.02 Definitions: Omitted

1.03 Submittals:

A. Shop Drawings: Submit manufacturer's shop drawings to the Architect for review prior to commencing fabrication of products of this section.

B. Hardware Templates: In order that custom hollow metal door frames may be prepared to receive finish hardware as described in section 08711 of this project manual, the shall obtain templates from the manufacturers of the finish hardware and furnish them along with one copy of the approved "Schedule of Finish Hardware" to the manufacturer of the custom metal frames.

C. Proof of Compliance: Prior to commencing any work of this section, submit in triplicate to the Architect:

1. a certified statement of qualifications and

2. a certified statement to the effect that all products proposed to be used meet the requirements of this section and the requirements of the Americans With Disabilities Act of 1990 with all amendments as of the date of opening bids.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions: Omitted

PART 2.00 - PRODUCTS

2.01 Materials:

A. Exterior Custom Hollow Metal Frames: Frames for exterior openings shall be made of commercial grade cold rolled steel conforming to ASTM Designation A366-72, not less than 14 gauge and shall have a zinc coating of not less than 0.60 ounces per square foot.

B. Interior Custom Hollow Metal Frames:

1. Frames for interior openings shall be either commercial grade cold rolled steel conforming to ASTM Designation A366-72.

2. Metal thickness for frames 4'-0" or less in width shall be not less than 16 gauge; for frames over 4'-0" wide, not less than 14 gauge.

2.02 Fabrication:

A. Custom Hollow Metal Frames:

1. All frames shall be custom made welded units with integral trim, of the sizes and shapes shown on the drawings; knocked-down frames will not be accepted.

2. All finished work shall be strong and rigid, neat in appearance, square, true and free of defects, warp or buckle and moulded members shall be clean cut, straight and of uniform profile throughout their lengths.

3. Jambs depths, trim profile and backbends shall be as shown on the drawings.

4. Corner joints shall have all contact edges closed tight, with trim faces mitered and continuously welded, and stops mitered and welded; all welds shall be ground smooth; the use of gussets will not be permitted.

5. Depth of stops shall be 5/8 inch as shown on the drawings.

6. When shipping limitations so dictate, frames for large openings shall be fabricated in sections designed for splicing in the field, splices shall be field welded and ground smooth.

7. Frames for multiple or special openings shall have mullion and/or rail members which are closed tubular shapes having no visible seams or joints; all joints between faces of abutting members shall be securely welded and ground smooth.

8. Hardware Reinforcements for Door Frames:

a. Frames shall be mortised, reinforced, drilled and tapped at the factory for fully templated mortised hardware only, in accordance with approved hardware schedule and templates provided by the Contractor; where surface-mounted hardware is to be applied, frames shall have reinforcing plates only; all drilling and tapping shall be done at the project site under section 08711 of this project manual.

b. Minimum thickness of hardware reinforcing plates shall be as follows:

Hinge & pivot reinforcements: 8 gauge, 1-1/2" x 9-1/8" min.
Strike reinforcements: 12 gauge
Flush bolt reinforcements: 12 gauge
Reinforcements for surface mounted hardware: 12 gauge

9. Floor Anchors:

a. Floor anchors shall be adjustable type, providing not less than 2" height adjustment, with two holes provided at each jamb for floor anchorage.

b. Minimum thickness of floor anchors shall be 14 gauge.

10. Jamb Anchors: Masonry anchors shall be attached at the factory and made to allow the passage of grout throughout frame. Frames shall be provided with suitable anchors, standard with the frame manufacturer, for the type wall construction in which they are to be installed and in the numbers as follows:

Frames under 7'-6" height: 3 anchors per jamb
Frames 7'-6" to 8'-0" height: 4 anchors per jamb
Frames over 8'-0" height: 1 anchor per jamb for each 2' or fraction thereof

11. Frames over 4'-0" wide shall have an angle or channel stiffener, not less than 12 gauge and not longer than the opening width, welded into the head at the factory; such stiffeners shall not be used as lintels or load-carrying members.

12. Dust cover boxes (or mortar guards) of not thinner than 26 gauge steel shall be provided at all hardware mortises on frames to be set in masonry or plaster partitions.

13. All door frames shall be provided with a steel spreader temporarily attached to the feet of both jambs to serve as a brace during shipping and handling.

14. Door frame stops shall be punched on the strike side to receive rubber silencers (3 per frame for single doors and 4 per frame for double doors).

15. Loose glazing stops shall be cold rolled steel, not less than 20 gauge thickness, butted at corner joints and secured to the frame with countersunk cadmium or zinc-plated screws.

B. Labeled Custom Hollow Metal Frames: Labeled frames shall be fabricated in strict accordance with the specifications and procedures of NFPA Standard No.80 hereinbefore referenced and shall bear the UL label called for on the drawings or in the schedule.

C. Factory Priming: After manufacture, all tool marks and surface imperfections shall be dressed, filled and sanded to make all surfaces smooth, level and free of all irregularities and then chemically

treated, to insure maximum paint adhesion, and coated with a rust inhibitive primer, standard with the manufacturer of the custom hollow metal frame.

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. General:

1. Except for frames located at in-place concrete or steel, place frames prior to construction of enclosing walls and ceilings; set frames in position; plumb, align and brace until permanent anchors are set.

2. In masonry construction, locate wall anchors per jamb at hinge and strike levels; building in of anchors and grouting of frames is described in section 04200 of this project manual.

3. At in-place concrete, or steel construction, set frames and secure to adjacent construction as shown on the drawings.

4. After wall construction is complete, remove temporary braces and spreaders leaving surfaces smooth and undamaged.

5. All cut-outs shall have pressed steel cover boxes in place.

B. Labeled Frames: Set label frames in position; plumb, align and brace until permanent anchors are set; installation shall be in accordance with NFPA Standard No. 80.

3.03 Field Quality Control: Immediately after installation, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.

END OF SECTION 08112

SECTION 08113 - HOLLOW METAL DOORS

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Non-Labeled Frames: Manufacture non-labeled doors in accordance with Standard CHM-1-74 of the National Association of Architectural Metal Manufacturers, except as modified hereinafter.

B. Labeled Frames: Manufacture labeled doors in accordance with Standard NFPA No. 80 of the National Fire Protection Association and the requirements of Underwriters' Laboratories, Inc. (UL).

1.02 Definitions: Omitted

1.03 Submittals:

A. Shop Drawings: Submit manufacturer's shop drawings to the Architect for review prior to commencing fabrication of custom hollow metal doors.

B. Hardware Templates: In order that custom hollow metal door may be prepared to receive finish hardware as described in section 08711 of this project manual, the Contractor shall obtain templates from the manufacturers of the finish hardware and furnish them along with one copy of the approved "Schedule of Finish Hardware" to the manufacturer of the custom hollow metal doors.

C. Proof of Compliance: Prior to commencing any work of this section, submit in triplicate to the Architect:

1. a certified statement of qualifications and
2. a certified statement to the effect that all products proposed to be used meet the requirements of this section.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions: Omitted

PART 2.00 - PRODUCTS

2.01 Materials:

A. Exterior Custom Hollow Metal Doors: Doors for exterior openings shall be made of commercial quality, cold rolled steel conforming to ASTM Designation A366-72, free of scale, pitting or other surface defects and shall have face sheets not less than 16 gauge and shall have a zinc coating of not less than 0.60 ounces per square foot.

B. Interior Custom Hollow Metal Doors: Doors for interior openings shall be made from commercial quality, cold rolled steel conforming to ASTM Designation A366-72, free of scale, pitting or other surface defects and shall have face sheets of not less than 18 gauge.

2.02 Design and Construction:

A. Custom Hollow Metal Doors:

1. All doors shall be custom made, of the type and sizes shown on the drawings and shall be fully welded seamless construction with no visible seams or joints on their faces or vertical edges. Interlocked and seam filled vertical edges are acceptable.

2. All doors shall be strong, rigid and neat in appearance, free from warpage or buckle and corner bends shall be true and straight and of minimum radius for the gauge of metal used.

3. Face sheets shall be stiffened by a honeycomb core. Face sheets shall be free of any visible weld marks or imperfections. The door shall be beveled lock edge. The inside of the door shall be coated with a waterproof adhesive. Minimum crush strength of 45 PSI.

4. Door faces shall be joined at their vertical edges by a continuous weld extending the full height of the door; all such welds shall be ground, filled and dressed smooth to make them invisible.

5. Top and bottom edges shall be closed with a continuous recessed steel channel of not less than 16 gauge, extending the full width of the door and spot welded to both faces; exterior doors shall have an additional flush closing channel at their top edges and, where required for the attachment of weather stripping, a flush closure also at their bottom edges; openings shall be provided in the bottom closure of exterior doors to permit the escape of entrapped moisture.

6. Edge profiles shall be provided on both vertical edges of doors as follows:
   a. Single-acting swing doors: bevel 1/8" in 2"
   b. Double-acting swing doors: rounded on 2-1/2" radius

7. Hardware Reinforcements:
   a. Frames shall be mortised, reinforced, drilled and tapped at the factory for fully templated hardware only, in accordance with approved hardware schedule and templates provided by the Contractor; where surface-mounted hardware is to be applied doors shall have reinforcing plates only; all drilling and tapping shall be done at the project site under Section 08711 of this project manual.
   b. Minimum thickness of hardware reinforcing plates shall be as follows:

Hinge and pivot reinforcements: 7 gauge
Reinforcement for lock face, flush bolts, concealed holders, concealed or surface-mounted closers: 12 gauge
Reinforcements for all other surface-mounted hardware: 16 gauge

8. Glass Mouldings and Stops:
   a. Where scheduled, doors shall be provided with hollow metal mouldings to secure to secure glazing.
   b. Fixed mouldings shall be securely welded to the door on the security side.
   c. Loose stops shall be not less than 20 gauge cold rolled steel, mitered at corner joints and secured to framed opening with countersunk cadmium or zinc-plated screws; snap on attachments will not be permitted.

9. Louvers: Where scheduled, doors shall be provided with welded blade type louvers of not less than 18 gauge commercial quality, level, cold rolled steel.

B. Labeled Custom Hollow Metal Doors: Labeled doors shall be fabricated in strict accordance with the specifications and procedures of NFPA Standard No.80 hereinbefore referenced, and shall bear the UL label called for on the drawings or in the schedule.

C. Factory Priming: After fabrication, all tool marks and surface imperfections shall be dressed, filled and sanded as required to make all faces and vertical edges smooth, level and free of all irregularities and then chemically treated, to insure maximum paint adhesion, and coated with a rust inhibitive primer, standard with the manufacturer of the custom hollow metal doors.

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. General: Install custom hollow metal doors in the locations shown on the drawings, true to line, level and plumb with clearances as described in NAAMM Standard CHM-1-74, hereinbefore referenced.

B. Labeled Doors: Install labeled doors in locations shown on the drawings with clearances as described in NFPA Standard No. 80, hereinbefore referenced.

3.03 Field Quality Control: Immediately after installation, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.

END OF SECTION 08113

SECTION 08202 - SOLID CORE FLUSH WOOD DOORS

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Qualifications of Manufacturer:

1. The manufacturer of the solid core flush wood doors shall have not less than five years continuous experience in the manufacture of solid core flush wood doors immediately prior to performing the work of this section.
2. All solid core flush wood doors shall be the product of the same manufacturer.

B. Industry Standards: All solid core flush wood doors shall be manufactured in accordance with "Architectural Woodwork Quality Standards, Guide Specifications and Quality Certification Program" published by Architectural Woodwork Institute (AWI), Seventh Edition, version 1.0, 1997.

1.02 Definitions: Definitions and terms shall be as described in the referenced standards.

1.03 Submittals:

A. Shop Drawings: Submit shop drawings to the Architect for review prior to commencing fabrication of the products of this section.

B. Manufacturer's Data: Accompanying the shop drawing submittal, furnish Architect manufacturer's detailed materials and fabrication specifications and installation instructions.

C. Certification: Upon completion of the work, and as a condition of its acceptance, furnish the Architect with a certification from the manufacturer of the solid core flush wood doors, signed by an officer of the manufacturing firm, properly attested, certifying that all solid core flush wood doors comply in all respects to the requirements of this project manual.

D. Proof of Compliance: Prior to commencing any work of this section, submit in triplicate to the Architect:

1. a certified statement of qualifications and
2. a certified statement to the effect that all products proposed to be used meet the requirements of this section.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions:

A. Environmental Requirements: For a period of ten days prior to installation of any interior solid core flush wood doors, throughout the installation, and until date of Architect's Final Certificate, provide heat to maintain a temperature of not less than 50^{O} F.

B. Glazing: All glazing of exterior openings shall be complete before beginning installation of any interior solid core flush wood doors.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Face Veneers: Face veneers for all solid core flush wood doors shall be "A" Grade, American Maple, plain cut, meeting the requirements of 200-S-7 of Section 200 of the referenced standard.

B. Core:

1. Core for all solid core flush wood doors shall be PC-5 as defined in section 1300 of the referenced standard, except
2. Labeled flush wood doors shall have non-combustible core in compliance with 1300-G-4 of section 1300 of the referenced standard for the label required on the drawings or in the schedules and except
3. Acoustical flush wood doors shall have cores in compliance with 1300-G-5 of the referenced standard for the STC rating of 40 or greater.

C. Vertical Edges: Vertical edges shall be Grade “A” Maple.

D. Top and Bottom Edges: Top and bottom edges shall be mill option hardwood.

E. Cross Bands: Cross bands shall be mill option hardwood.

F. Glue: All glue shall be type 1, fully waterproof and withstand bond test described in ANSI / NWMA 1.S-1 Series.

G. Stops:

1. Wood stops shall be Grade “A” Maple.
2. Metal stops shall meet requirements of Underwriter's Laboratories, Inc. for the door label required on the drawings or in the schedules, except where called for to be used in non-labeled doors the metal stops shall meet Underwriters' Laboratories, Inc. for 1 hour "B" label.

2.02 Fabrication:

A. Non-Labeled, Solid Core Flush Wood Doors: Except as modified hereinbefore, manufacture non-label doors in accordance with section 1300, custom grade, of the referenced standard, for transparent finish.

B. Labeled, Solid Core Flush Wood Doors:

1. Except as modified hereinbefore, manufacture labeled doors in accordance with section 1300, custom grade, of the referenced standards to meet the label requirements indicated on the drawings or in the schedules.
2. All labeled doors shall bear UL label for the rating called for.

C. Acoustical Doors: Except as modified hereinbefore, manufacture acoustical doors (sound retardant) in accordance with section 1300, custom grade of the referenced standard to meet the STC rating and UL label called for on the drawings or in the schedules. STC rating of 40 or greater.

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Non-Labeled, Solid Core Flush Wood Doors: Install in frames, in the locations shown on the drawings or called for in the schedules, hanging square, plumb and level.

B. Labeled, Solid Core Flush Wood Doors: Install in labeled hollow metal frames, in the locations shown on the drawings or called for in the schedules and in accordance with National Fire Protection Association's publication NFPA 80, hanging square, level and plumb.

C. Acoustical Doors:

1. Install in hollow metal frames called for in the locations shown on the drawings or called for in the schedules, hanging square, level and plumb.
2. Acoustical doors requiring UL label shall be installed in accordance with Article 3.02, B of this section.

3.03 Field Quality Control: Materials and workmanship at all times shall be subject to inspection by the Architect or his representative.

END OF SECTION 08202

SECTION 08711 - FINISH HARDWARE

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Qualification of Supplier:

1. The supplier of this section shall have been successfully engaged in the business of distributing contract hardware for a period of not less than five years immediately prior to furnishing the products of this section.

2. Hardware schedule requested hereinafter shall be prepared by a member in good standing of the American Society of Architectural Hardware Consultants.

B. Qualifications of Installers: For actual preparation and installation of finish hardware, use only skilled personnel who are thoroughly familiar with the products, the manufacturer's published installation recommendations and the requirements of this work.

1.02 Definitions: Omitted

1.03 Submittals:

A. Proof of Compliance Prior to commencing any work of this section, submit in triplicate to the Architect, a certified statement to the effect that all products proposed to be used in this portion of the work meet requirements of this section. Prior to commencing any work of this section, submit in triplicate to the Architect, a certified statement to the effect that all products proposed to be used in this portion of the work meet requirements of the Americans with Disabilities Act of 1990 with all amendments as of the date of opening bids.

B. Hardware Schedule: Prior to delivery of any items of finish hardware to the project site, submit to the Architect for review, an itemized schedule of finish hardware.

C. Manufacturer's Data: Accompanying the hardware schedule, furnish manufacturer's descriptive and specification data for each item described hereinafter, in the form of a cut sheet for each item of hardware to be provided.

D. Samples: If requested by the Architect, submit samples, all samples will be returned and approved samples may be incorporated in the work.

E. Templates. Furnish templates as required in order that all members receiving finish hardware may be properly prepared.

F. Report of Inspection and Adjustment: Submit to the Architect in triplicate, the inspection and adjustment report described hereinafter.

1.04 Product Handling:

A. Packaging: Furnish all items of finish hardware with each unit clearly marked or numbered in accordance with the Schedule of Finish Hardware and labeled to show the specific door to receive each item.

B. Protection: Protect the products of this section from damage during delivery, storage and after installation.

C. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions: Omitted

PART 2.00 - PRODUCTS

2.01 Finish Hardware:

A. Manufacturers:

1. Manufacturers of finish hardware items shall be as listed hereinafter in the "Schedule of Finish Hardware Manufacturers" for each specific item. See Section 01101 (Alternates / Approved Manufacturers) for other approved manufacturers.

SCHEDULE OF FINISH HARDWARE MANUFACTURERS

ITEM	MANUFACTURER / SPECIFIED (also approved)
Butts	Stanley Hardware, New Britain, CT
Surface Closers	LCN Closers, Princeton, IL
Push, Pull & Plates	Triangle Brass Co.
Silencers	Triangle Brass Co.
Stops, Bumpers, Holders	Triangle Brass Co.
Thresholds	Zero International Inc., Bronx, NY
Weather-stripping	Zero International Inc., Bronx, NY
Flush Bolts, & Strikes	Hager Hinge Co., St. Louis, MO
Coordinators	Hager Hinge Co., St. Louis, MO
Panic Devices	Von Duprin, Inc., Indianapolis, IN
Kickplates	Quality Hardware Mfg. Co. Inc., Hawthorne, CA
Locksets, Cylinders	Schlage Lock Co., San Francisco, CA
Roller Latches	Hager Hinge Co., St. Louis, MO

B. Lockset Design: Except as otherwise noted in the "Schedule of Hardware Sets" design is based on "CORBIN" keyed to Wellstar key system.

C. Finish: Unless otherwise shown in the hardware sets finishes shall be as follows:
Hinges on wood doors: 652 US26D

Hinges on metal doors: 600 USP
Locksets: 630 US32D
Exit Devices: 628 US28

D. Rated: All hardware to be rated the same as the door or doors it is being installed on.

2.02 Fabrication: Omitted

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed: notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Construction Keying: Provide a method independent of the final keying system for securing the building during construction.

B. Application of Hardware:

1. General: Items of finish hardware shall be installed in accordance with the hardware manufacturer's printed instructions contained within the material packaging.

2. Mounting Heights: Unless specifically noted otherwise on the drawings or in the hardware schedule, mount hardware units at the following locations on each door.

a. Top Butt: 5" below top of door to top of butt.
b. Bottom Butt: 10" above bottom of door to bottom of butt.
c. Intermediate Butt: Equally spaced between the top and bottom butt.
d. Locksets: Knobs centered 38" above finish floor.
e. Dead Lock: Cylinder center 60" above finish floor.
f. Dummy Knobs: Knobs centered 38" above finish floor; at bi- folding doors, center knob 38" above finish floor and on centerline of lead.
g. Push Plate: Centerline of plate 45" above finish floor and 5" from door edge.
h. Push and Pull Plate: Centerline of plate and pull 40" above finish floor and 5" from door edge.
i. Panic Device: Operating bar centered 42 inches above finish floor.
j. Flush Bolts:
    (1) Head: Operating device centered not more than 74"above finish floor.
    (2) Sill: Operating device centered not more than 12" above finish floor.
k. Surface Bolts:
    (1) Head: Operating device centered not more than 74" above finish floor.
    (2) Sill: Operating device centered not more than 12″ above finish floor.
l. Thresholds: Set all thresholds in bed of type 2 sealant as described in Section 07900 of this project manual.

3. Final Keying System:
    a. Just prior to final inspection, install final keying system in the presence of a representative of the Owner.
    b. Final keying systems shall be as follows:
        (1) Grand Master Key to allow for future buildings on this key system.
        (2) Master key all locks in one (1) set
        (3) Key locks alike where two (2) or more doors enter same space or area
        (4) Stamp all keys "DO NOT DUPLICATE"
    c. Furnish the following keys:
        (1) Six (6) master keys
        (2) Three (3) keys per lock
    d. After final keying system is installed and the above keys have been delivered to the Owner, furnish the Architect with a written receipt for the same, signed by the Owner and the installer and further stating that no keys to the permanent system are outstanding.

C. Finish Hardware Sets: Furnish finish hardware for each door in sets as shown in the following schedule: **See drawings for Finish Hardware to be provided for each door**

3.03 Field Quality Control

A. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

B. Adjustment: After all hardware has been installed, the supplier of the finish hardware shall inspect and adjust all items for proper operation and shall deliver to the Architect as hereinbefore described a written report of the inspection and adjustment certifying that all hardware is properly installed and operating correctly.

C. Cleaning: Just prior to final inspection, remove all masking and clean all items of finish hardware as recommended by their manufacturer, leaving all products in a spotless condition.

END OF SECTION 08711

SECTION 08800 - GLASS AND GLAZING

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Qualifications of Installer:The installer of the products described hereinafter shall have been successfully engaged in the business of glazing a for a period of not less than five years immediately prior to performing work of this section.

B. Codes and Standards: Comply with the requirements of the Safety Glass Act and regulations issued thereto by the Georgia State Department of Labor.

1.02 Definitions: Omitted

1.03 Submittals:

A. Proof of Compliance: Prior to commencing any work of this section, submit in triplicate to the Architect:

1. a certified statement of qualifications and
2. a certified statement to the effect that all products proposed to be used meet the requirements of this section.

B. Samples: Prior to commencing fabrication, submit samples of each type of glass described hereinafter to Architect for review; samples shall be full thickness and not less than 12" x 12".

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions:

A. Exterior: Do no glazing when the ambient temperature is below 40^{O}F.

B. Interior: Interior glazing shall be commenced only after all exterior glazing is complete and building is dry; maintain temperature during and after glazing at 40^{O}F or higher.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Glass:

1. Type 1: Design is based LOF Tuf-Flex FT Tempered Safety Glass as manufactured by Libby-Owens-Ford Co., Toledo, OH; clear float, glazing quality q^3, 1/4" thick.

2. Type 2: Design is based on Polished Misco Wire Glass as manufactured by Hordis Brothers, Inc., Pennsauken, NJ, 1/4" thick.

3. Type 3: Design is based LOF Tempered Thermopane Insulating Glass as manufactured by Libby-Owens-Ford Co., Toledo, OH; inboard light to be 3/16" thick clear, tempered; outboard light to be 3/16" thick, tempered; air space (overall glass unit 1"). Arctic Blue tinted with shading coefficient of 0.57.

4. Type 4: Design is based on LOF Thermopane Insulating Glass as manufactured by Libby-Owens-Ford Co., Toledo, OH; inboard light to be 3/16" thick, clear; outboard to be 3/16" thick, clear; air space (overall glass unit 1"). Arctic blue tinted with shading coefficient of 0.57.

B. Glazing Compound: shall be a one-part silicone construction sealant meeting Federal Specifications TT-S-00230C (COM-NBS) type II, Class A.

C. Setting Blocks: shall be neoprene with a Shore A durometer hardness of 80 to 90.

D. Edge Blocks: shall be neoprene with a Shore A durometer hardness of 60 to 70.

E. Face Shims (Continuous Spacer): shall be neoprene with a Shore A durocell hardness of 40 to 50.

F. Filler Tape: shall be medium density polyethylene or polyurethane foam.

G. CCN-Sponge: shall be closed-cell neoprene sponge with adhesive.

H. Arrow Shim: Arrow shim shall be extruded EPDM rubber.

2.02 Fabrication: Fabricate all glass to the sizes required by the drawings, and in accordance with their manufacturer's published specifications.

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Glazing: Glaze openings with glass types as indicated on the drawings and in accordance with the details shown thereon.

B. Aluminum Windows: Glazing is described in section 08524 of this project manual.

C. Metal Frames (Custom Hollow Metal and Drywall): Glaze metal frames using setting blocks, spacers and glazing compound; hold glass in place with loose stops furnished with the custom hollow metal frames.

D. Custom Hollow Metal Doors: Glaze metal doors, using setting blocks, spacers and glazing compound; hold glass in place with loose stops furnished with the custom hollow metal doors.

E. Wood Doors: Wood doors, labeled, non-labeled and acoustical shall be glazed in accordance with Standard NFPA No. 80 of the National Fire Protection Association, unless specifically shown otherwise on the drawings.

3.03 Field Quality Control:

A. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

B. Cleaning: Prior to final inspection, remove all maskings and labels (do not remove labels until they have been inspected and approved by the Architect) and then clean and polish all glass.

END OF SECTION 08800

SECTION 09260 - GYPSUM WALLBOARD SYSTEMS

PART 1.00 - GENERAL

1.01 Quality Assurance: The installer of the products of this section shall have been successfully engaged in the business of erecting and finishing gypsum wallboard for a period of not less than five years immediately prior to performing the work of this section.

1.02 Definitions: Omitted

1.03 Submittals:

A. Proof of Compliance: Prior to commencing any work of this section, submit in triplicate to the Architect:

1. a certified statement of qualifications and

2. a certified statement to the effect that all products proposed to be used meet the requirements of this section.

B. Manufacturer's Data: Before any products are delivered to the project site, submit to the Architect for review, manufacturer's detailed descriptive and specification data for the products described hereinafter.

C. Materials List: Prior to delivery of any materials to the project site, submit to the Architect for review, a complete list of all materials to be used in the project as described hereinafter.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions: Maintain a constant temperature between 55^{O}F and 70^{O}F in all areas where wallboard is being installed, cured or finished.

PART 2.00 – PRODUCTS

2.01 Materials:

A. Wood Framing including but not necessarily limited to wood studs, blocking and furring is furnished in section 06110 of this project manual.

B. Metal Framing:

1. Metal Studs: Unless specifically noted otherwise on the drawings, metal studs shall be 20 gauge 3-5/8" x 1-5/8","C" sloped, formed from galvanized steel that conforms to the requirements of ASTM A 446, Grade A (minimum yield of 33 KSI); minimum G-60 galvanized coating conforming to ASTM A 525, unless otherwise noted on the drawings if overall stud height is less than 14'-0" 25 gauge studs may be used. A min. 20 gauge stud spaced at 16" o.c. shall be used at all areas receiving cement board. Note: all exterior metal studs to be 18 gauge.

2. Track: Unless specifically noted otherwise on the drawings, track sections shall be formed from same material as metal studs, standard depth.

3. Main Runners shall be 1-1/2" cold rolled steel, not less than 20 gauge.

4. Screw Furring Channels: Screw furring channels shall be galvanized steel with face width of 1-3/8" x 7/8" furring depth and weighing not less than 292 pounds per MLF.

5. Hanger Wire: Hanger wire shall be 9 gauge, galvanized.

6. Tie Wire: Tie wire shall be 16 or 18 gauge, galvanized.

C. Gypsum Wallboard: shall be of the types and thickness as shown on the drawings, tapered edge and meeting the following requirements for each type:

1. Type "X": meet the requirements of ASTM C36-84a and fire endurance test as outlined in ASTM C473-84a.

2. Moisture Resistant: meet requirements of ASTM C630-84a.

3. Type "X"-Moisture Resistant: meet the requirements of ASTM C630-84a.

4. Cement board: meet the requirements of ASTM C627 and C947.

5. Non-rated: meet requirements of ASTM C36-84a.

D. Fasteners:

1. For attaching 1/2" gypsum wallboard to wood framing, fasteners shall be 1-1/4", type W, bugle head screws, cadmium plated.

2. For attaching 5/8" gypsum wallboard to wood framing, fasteners shall be 1-7/8" wallboard nail, cement coated.

3. For attaching 1/2" and 5/8"gypsum wallboard to metal framing, fasteners shall be 1", type S, bugle head screws, cadmium plated.

4. For attaching hanger wire to wood frames, fasteners shall be 7d x 2-1/4" annular threaded nails.

5. For attaching screw furring channels to main runners, fasteners shall be manufacturer's standard drywall furring channel clip.

6. For attaching face layer of wallboard to wood framing in double layer construction shall be 2-1/4", 7d wallboard nail, cement coated.

7. For attaching face layer of wallboard to metal framing in double layer construction shall be 1-5/8", type S, bugle head screws.

8. For attaching metal runners and furring channels to concrete or masonry shall be power actuated type capable of withstanding 192 pounds of single shear and 200 pounds bearing force without exceeding allowable stress design of fastener or member being fastened.

9. For attaching framing members together shall be type S, pan-head screws in sizes recommended by the metal stud manufacturer for applications required.

10. For attaching metal runners to structural steel shall be power actuated type as recommended by the metal stud manufacturer for applications required.

11. For attaching screw furring channels to main runners shall be manufacturer's standard drywall furring channel clip.

E. Accessories:

1. Outside corner beads shall be all metal, hot dipped galvanized, 1"x 1" and weighing not less than 114 pounds per MLF.

2. Casing beads shall be all metal, hot dipped galvanized, 7/8" flanges, "C" shaped, capable of being tapped and finished and weighing not less than 165 pounds per MLF.

3. Inside corner reinforcement shall be perforated tape as described hereinafter.

F. Tape shall be 2-1/16" wide, perforated, meeting requirements of ASTM C475-74.

G. Joint Compound shall be ready mixed, meeting requirements of ASTM C475-64.

H. Sealant: Unless specifically noted otherwise on the drawings, sealant shall be type 3 as described in section 07900 of this project manual.

2.02 Fabrication: Omitted.

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Wood Framing: Wood framing, including but not necessarily limited to wood studs, blocking and furring shall be installed under section 06110 of this project manual.

B. Suspended Ceiling System:

1. Main Runners:
    a. Install main runners at 24"o.c., at right angle to structural members above.
    b. Suspend main runners from structural system above with hanger wire spaced not more than 48"o.c.; securely anchor to structure and to runner.

2. Suspended Screw Furring Channels:
    a. Install screw furring channels at 24"o.c. and at right angle to main runners.
    b. Anchor screw furring channels to main runners with specified clips at 24"o.c..

3. Splices: At splices in main runners and in suspended screw furring channels make laps not less than 6 inches and tie each end of lap with specified tie wire.

C. Installation of Metal Tracks:

1. Attach lower tracks (floor) with specified fasteners spaced not less than 24" on centers.

2. Attach upper tracks (ceiling) with the specified fasteners at not less than 24" on centers and in conformance with the details shown on the drawings.

D. Installation of Metal Studs:

1. Position full length studs vertically, spaced not more than 16" on centers, except partitions above ceilings shall have studs spaced at 16" on centers, engaging floor and ceiling runners. Attach with specified fasteners, two each at top and bottom runners.

2. Provide double studs at interior and exterior corners, expansion joints, partition terminations and within 2" of door, borrowed lite and other openings in partitions. Locate next stud not more than 6" from double studs.

3. Secure abutting and intersecting walls with fasteners through stud flanges.

4. For horizontal reinforcement between studs and at openings, install cut-to-length runner sections with slit flanges secured to studs.

E. Installation of Gypsum Wallboard:

1. Install wallboard in accordance with manufacturer's printed installation and instructions, except where more stringent requirements are specified.

2. Use wallboards of maximum lengths to minimize end joints.

3. Stagger end joints when they occur.

4. Abut wallboards without forcing. Fit ends and edges of wallboard. Do not place butt ends against tapered edges.

5. Support ends and edges of wallboard panels on framing or furring members.

6. At ceilings, apply wallboard with long dimension at right angles to framings.

7. At walls, apply wallboard horizontally, attaching upper board first.

8. Fasten wallboard to framing members, using the specified fasteners spaced as recommended by the manufacturer of the wallboard being installed for the specific installation.

9. Install wallboard accessories in accordance with wallboard manufacturer's printed instructions and as follows:
   a. Corner Bead: Install at all outside corners.
   b. Metal Trim Shapes: At exposed edge of wallboard at door and window openings, at intersections with other materials and at intersection of walls with ceilings.

10. Caulk all perimeter joints, electrical boxes and all other penetrations with specified sealant.

11. Install metal frames where called for on the drawings, securely anchored in place, level plumb and true to line.

12. Install cement board in all walls to be covered with ceramic tile.

F. Finishing (All walls to be Level 4 Finish):

1. Taping or Embedding Joints:
   a. Apply compound to this uniform layer to all joints and angles. Center tape over joint and set tape into compound; leave approximately 1/64" to 1/32" compound under tape to provide bond.

b. Apply skim coat following tape embedment, but not to function as fill or second coat; fold tape and embed in angles to provide true angle.Dry embedding coat prior to application of fill coat.

2. Filling:
   a. Apply joint compound over embedding coat to cover tape. Feather out fill coat beyond tape and previous joint compound line, use 12" finishing knife.
   b. Do not apply fill coat on interior angles.
   c. Allow fill coat to dry prior to application of finish coat.

3. Finishing:
   a. Spread joint compound over and beyond fill coat on all joints. Feather to smooth uniform finish, use 12" finishing knife.
   b. Apply finish coat to taped angles to cover tape and taping compound.
   c. Sand final application of compound to provide surface ready for decoration.

4. Finishing Beads and Trim:
   a. First Fill Coat: Apply joint compound to beads and trim. Feather out from ground to plane of the surface; dry compound prior to application of second fill coats.
   b. Second Fill Coat: Apply joint compound in same manner as the first fill coat. Extend beyond first coat onto face of wallboard; dry compound prior to application of finish coat.
   c. Finish Coat: Apply joint compound to bead and trim; extend beyond second fill coat; feather finish coat from ground to plane of surface; sand finish coat to provide flat surface ready for decoration.

5. Filling and Finishing Depressions:
   a. Apply joint compound as first coat to fastener depressions; apply at least two additional coats of compound after first coat is dry.
   b. Leave filled and finished depressions level with plane of wallboard.

G. Installation of Sheathing: Install 3/4" thick, exterior type, gypsum sheathing for all areas on the project. Install self-adhereing vapor barrier on all sheathing.

3.03 Field Quality Control: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

END OF SECTION 09260

SECTION 09310 – PORCELAIN TILE

NOTE: See drawings for porcelain tile spec; thin set installation in base price.

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Industry Standards:

1. Some products and execution are specified in this section by reference to published specifications or standards (with respective abbreviations used); these referenced publications may be subject to special conditions or limitations where specified hereinafter.

2. Referenced Publications:
   a. American Society for Testing and Materials (ASTM)
   b. American National Standards Institute (ANSI)
   c. Tile Council of America (TCA)

B. Qualifications of Installer: The installer of the products of this section shall have been successfully engaged in the business of installing ceramic tile for a period of not less than five years immediately prior to performing the work of this section.

1.02 Definitions: Omitted

1.03 Submittals:

A. Proof of Compliance: Prior to commencing any work of this section, submit in triplicate to the Architect:

1. a certified statement of qualifications and

2. a certified statement to the effect that all products proposed to be used meet the requirements of this section.

B. Manufacturer's Data: Before any products are delivered to the project site, submit to the Architect for review, manufacturer's detailed descriptive and specification data for the products described hereinafter.

C. Samples:

1. After review of manufacturer's data, but before any products are delivered to the project site, submit to the Architect for review, samples consisting of not less than four tiles each, for each color, type and pattern of tile required.

2. Accompanying the sample submittal, submit parts list with drawings for each type or piece of trim or accessory required.

D. Extra Stock: After completion of the work, deliver to the project site not less than 2% replacement material for each 2,000 square feet (or fraction thereof) of each color, type and pattern installed, including one trim and accessory for each type and color installed; extra stock shall be from same manufactured lot as the material installed, boxed and labeled.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions:

A. Temperature:

1. Maintain temperature at no less than 50^{O}F throughout setting operations and for at least seven days after completion of tile work.

2. If temporary heaters are used, they shall be vented to the outside.

B. Ventilation: Where natural ventilation is questionable, provide ventilation by use of sparkproof fans.

C. Lighting: Maintain lighting of not less than three watts per square foot of floor area in all areas where setting and grouting operations are in progress.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Ceramic Tile:

1. Floor Tile: Design is based on standard grade, unglazed ceramic mosaics, impervious porcelain type, integral color, all-purpose edges, on back mounted sheets; face size of tile 2" x 2"; manufactured to meet ANSI A137.1-1980; furnish with 7-1/2 % abrasive grain in shower and drying areas.

2. Base Tile:

a. Type 1: Design is based on Standard Grade, matte glazed, bullnose top, coved bottom, 4-1/4" high x 6" long; in-corners to be square; out-corners to be bullnose; manufactured to meet ANSI A137.1 - 1980.

b. Type 2: Design is based on Standard Grade, matte glazed, integral type for use with wall tile, square top, coved bottom, 4-1/4"high x 4-1/4" long; in-corners to be square; out-corners to be bullnose; manufactured to meet ANSI A137.1-1980.

3. Wall Tile: Design is based on Standard Grade, matte glazed, cushioned edges, on back mounted sheets; face size 4-1/4" x 4-1/4"; in-corners to be square; out-corners to be bullnose; manufactured to meet A137.1-1980.

4. Trim Tile:
   a. Ceramic tile trim shall be full size, Standard Grade, matte glazed, manufactured to meet ANSI A137.1-1980.
   b. Observe the following:
      (1) Curbs: Bullnose and cove to provide smooth rounded surface.
      (2) Jambs and Heads: Bulnose.

5. Accessories: Ceramic accessories shall be by same manufacturer of ceramic tile and shall be of the types and sizes shown on the drawings or in the schedules, matte glazed; manufactured to meet ANSI A137.1- 1980.

6. Colors: shall be as described in Section 09999 of this project manual.

B. Setting Materials: Note: in all showers and drying areas, set tile in silicone grout, typ.

1. Portland Cement: ASTM C-150 Type 1

2. Hydrated Lime: ASTM C-206 or ASTM C-207, Type S

3. Sand: ASTM C-144

4. Water: Clean and potable.

5. Metal Lath: ANSI A42.4, self-furring galvanized weighing not less than 2.5 pounds per square yard.

6. Cleavage Membrane: 10 mil polyethylene meeting ANSI A37.77

7. Reinforcement: 2" x 2" X 16/16 gauge welded wire mesh.

8. Grout:
   a. Floors: Commercial Portland Cement, grey
   b. Walls and Base: Commercial Portland Cement, white
   c. Accessories: Commercial Portland Cement, white

C. Sealant: Type 4 as described in Section 07900 of this project manual.

2.02 Fabrication: Omitted.

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Preliminary Requirements:

1. Surface Variations: to receive tile shall be within the allowable variations of 1/8" in 6'.

2. Layout:
    a. Determine location of all movement joints.
    b. Layout all tile work so as to minimize cuts less than 1/2 tile in size.
    c. Locate both cuts in walls and floors so as to be least conspicuous.
    d. Align all floor joints to give uniform grout lines parallel to walls.
    e. Align all wall, base, and trim joints to give uniform grout lines plumb and level.

B. Setting Tile:

1. Floor Tile - concrete subfloor, cement mortar, cleavage membrane: Install floor tile in accordance with TCA Standard F111-87.

2. Floor Tile - concrete subfloor, cement mortar, bonded: Install floor tile in accordance with TCA Standard F112-87.

3. Base and Wall Tile - masonry back-up, cement mortar, bonded: Install wall and base tile in accordance with TCA Standard W211-87.

4. Base and Wall Tile - masonry back-up, cement mortar, metal lath: Install wall and base tile in accordance with TCA Standard W221-87.

5. Trim and accessories shall be installed in accordance with the requirements for the particular wall tile installation with which they are used.

C. Cleaning: After grout has stiffened, sponge and wash ceramic tile with clear water, then rub with damp cloth or sponge and then polish with dry cloth.

3.03 Field Quality Control:

A. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

B. Protection:

1. Foot Traffic: After completion of the installation, prohibit all foot traffic for a period of not less than seven days.

2. Protective Covering: Cover all ceramic tile floors with a non-staining construction paper, masked in place; remove just prior to final inspection, rinse floor and wall tile with clear water and polish with clean dry cloth.

END OF SECTION 09310

SECTION 09342 - MARBLE THRESHOLDS

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Qualifications of Fabricator: Fabricator of products described hereinafter shall have been successfully engaged in the business of marble fabrication for a period of not less than five years immediately prior to performing the fabrication of the products of this section.

B. Qualifications of Installer: The products of this section shall be installed by the installers of the ceramic and quarry tile.

1.02 Definitions: Omitted

1.03 Submittals:

A. Proof of Compliance: Prior to commencing work of this section, submit in triplicate to the Architect a certified statement of qualifications.

B. Shop Drawings: Submit fabricator's shop drawings to the Architect for review prior to commencing fabrication of marble thresholds.

C. Samples: Accompanying the shop drawing submittal, furnish samples not less than 3 inches x 3 inches x 3/4 inch for each color of marble required; the samples shall be representative of the color range.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions:

A. Temperature:

1. Maintain temperature at not less than 50 degrees Fahrenheit throughout setting operations and for at least seven days after completion of marble work.

2. If temporary heaters are used, they shall be vented to the outside.

B. Ventilation: Where natural ventilation is questionable, provide ventilation by use of spark proof fans.

C. Lighting: Maintain lighting of not less than three watts per square foot of floor area in all areas where setting and grouting operations are in progress.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Marble: Marble shall be White Georgia.

B. Setting Materials: Setting bed shall be cement mortar, as described in section 09310 of this project manual.

C. Dowels: shall be 3/8" diameter x 3" long, non-corrosive metal alloy.

2.02 Fabrication: Marble thresholds shall be fabricated to the sizes and designs shown on the drawing with honed finish on all exposed to view surfaces.

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Surface Variations: Surface to receive marble thresholds shall be within the allowable variations of 1/8 inch in 6 feet.

B. Setting Marble: Set marble threshold in full bed of cement mortar, level and true to line; dowel into concrete subfloor with concealed dowels (3 per threshold).

C. Cleaning: After grout has stiffened, sponge and wash marble with clean water, then rub with damp cloth or sponge and then polish with dry cloth.

3.03 Field Quality Control:

A. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

B. Protection:

1. Foot Traffic: After completion of the installation, prohibit all foot traffic for a period of not less than seven days.

2. Protective Covering: Cover all marble with a non-staining construction paper, masked in place; remove just prior to final inspection, rinse with clear water and polish with clean dry cloth.

END OF SECTION 09342

SECTION 09510 - ACOUSTICAL TILE CEILINGS

PART 1.00 - GENERAL

1.01 Quality Assurance: The installer of the products of this section shall have been successfully engaged in the business of erecting acoustical tile ceilings for a period of not less than five years immediately prior to performing the work of this section.

1.02 Definitions: Omitted

1.03 Submittals:

A. Proof of Compliance: Prior to commencing work of this section, submit in triplicate to the Architect:

1. a certified statement of qualifications and

2. a certified statement to the effect that all products proposed to be used meet the requirements of this section.

B. Shop Drawings: Prior to commencing installation of the products of this section, submit shop drawings to the Architect for review, fully dimensioned and superimposed over duct work; show locations of all mechanical and electrical items located in the ceiling tile.

C. Samples: Accompanying the shop drawing submittal, furnish samples of each type of ceiling tile and suspension system described hereinafter; ceiling tile samples shall be not less than 12" x 12".

D. Manufacturer's Data: Accompanying the shop drawing submittal, furnish manufacturer's detailed material and fabrication specifications and installation instructions for each type of acoustical tile for each suspension system described hereinafter.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions:

A. Environmental Requirements: For a period of ten days prior to and throughout the installation of acoustical tile and until date of Architect's Final Certificate, maintain a temperature of not less than 50 degrees Fahrenheit and a relative humidity of not more than 60 percent.

B. Glazing: All glazing of exterior openings shall be complete and exterior doors shall be in place before beginning installation of any work under this section.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Acoustical Tiles:

1. Type 1: Acoustical ceiling tile shall be 24" x 24" x 5/8" thick, reveal edge for installation in Type 1 suspension system described hereinafter; tile shall be non-directional fissured, manufactured to meet requirements of Federal Specification SS-S-118a, have an STC rating of 35 to 39, with min. density of 16 lbs. per cubic foot, with light reflectance of "A" and have a flame spread of 0-25 (ASTM E84). **(Submit samples to Architect for approval) Ceiling tiles to be Armstrong 704-A, reveal edge. Provide shadow edge molding thru out.**

2. Type 2: Design is based on vinyl covered, waterproof gypsum board panels as manufactured by United States gypsum, 24" x 24" x ½". **Install in all toilet rooms and janitor's rooms even if not called for in the drawings.**

B. Suspension Systems:

1. Type 1: Design is based on DX exposed grid system as manufactured by Donn Corporation, Westlake, OH, in manufacturer's standard white finish. Provide shadow edge moulding, typ.

2. Type 2: See Acoustical Tile Type 2 for grid requirements.

C. Tile Markers: Ceiling tile installer to provide 30 rosettes to be field located and installed in ceiling tile.

1. Rosettes: Rosettes shall be 2" diameter x 1/16" thick aluminum with white baked enamel finish. Locate on ceiling tiles at all valves above ceiling.

2. Adhesive: Coordinate locations with mechanical. Adhesive to be an epoxy compatible with the ceiling tile with which used.

2.02 Fabrication: Omitted

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Layout:

1. Acoustical tile ceilings shall be centered within areas, producing no tile less than 1/2 size, unless specifically shown otherwise on the drawings.

2. Lines shall be established by the Construction Manager and maintained by him or her throughout the work and all trades shall work to these lines.

B. Erection of Suspension Systems:

1. Type 1: Erect in accordance with the manufacturer's published literature producing:
   a. a 24" x 24" grid for installation of Type 1 acoustical tile and
   b. a 24" x 24" grid for installation of Type 2 acoustical tile.

2. Type 2: Erect in accordance with the manufacturer's published literature producing a 24" x 24" grid for installation of Type 3 acoustical tile.

C. Installation of Acoustical Tiles: Acoustical tiles shall be installed in their respective suspension systems in accordance with the tile manufacturer's installation procedures and recommendations.

3.03 Field Quality Control:

A. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

B. Cleaning: Upon completion of work, clean all spots and leave ceiling tile and trim in a clean and spotless condition.

END OF SECTION 09510

SECTION 09660 - RESILIENT TILE FLOORING

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Manufacturers: Resilient tiles, divider strips, edging strips and adhesives shall be the products of the same manufacturer.

B. Qualifications of Installer: The installer of the products of this section shall have been successfully engaged in the business of installing resilient tile floor covering for a period of not less than five years immediately prior to performing the work of this section.

1.02 Definitions: Omitted

1.03 Submittals:

A. Proof of Compliance: Prior to commencing work of this section, submit in triplicate to the Architect:

1. a certified statement of qualifications and

2. a certified statement to the effect that all products proposed to be used meet the requirements of this section.

B. Manufacturer's Data:

1. Before any products are delivered to the project site, submit to the Architect for review, the manufacturer's detailed descriptive and specification data for the products described hereinafter.

2. Accompanying the data submittal, furnish the manufacturer's installation instructions.

C. Samples: After review of manufacturer's data, but before any products are delivered to the project site, submit to the Architect for review, full sized samples of the resilient tile for each type and color required; the samples shall be representative of the color range and pattern variation of the tile.

D. Maintenance Guides: Furnish manufacturer's printed maintenance instructions for the resilient flooring.

E. Extra Stock: After completion of the work, deliver to the project site not less than 2 percent replacement material for each 2,000 square feet (or fraction thereof) of each tile color and pattern installed; extra stock shall be from same manufactured lot as the material installed, boxed and labeled.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions:

A. Temperature: For a period of at least 24 hours before commencing installation, during installation and for at least 48 hours after installation is complete, maintain a temperature of not less than 70 degrees Fahrenheit.

B. Ventilation: Where natural ventilation is questionable, provide ventilation by use of spark proof fans.

C. Lighting: Maintain lighting of not less than three watts per square foot of floor area in all areas where products of this section are being installed.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Resilient Tiles: (Note: all colors from same color group)

1. Type 1: Tiles shall be composed of vinyl resins and mineral fibers, 12" x 12" x 1/8" thick, thru chip, free of physical defects and meeting Federal Specifications SS-T-312 B, type IV.

2. Type 2: Same as type 1, except for difference in color; see drawings.

3. Type 3: Same as type 1, except for difference in color, see drawings.

B. Neutral Dividing Strips: Neutral dividing strips shall be composed of vinyl resins and mineral fibers, 2" wide x 1/8" thick, unless otherwise specifically noted, in lengths as required by the drawings and meeting Federal Specifications SS-T-312 B, type W.

C. Neutral Edging Strips: Neutral edging strips shall be composed of vinyl resins and mineral fibers, 2 inches wide x 1/8 inch thick, unless otherwise specifically noted, in lengths as required by the drawings, bullnose one edge and meeting Federal Specifications SS-T-312 A, type IV.

D. Adhesive: Adhesives shall be only that which is recommended by the manufacturer of the resilient material being installed in the work.

E. Colors:

1. Resilient Tiles: Colors for resilient tile shall be as described in Section 09999 of this project manual.

2. Neutral Dividing Strips: Black

3. Neutral Edging Strips: Black

2.02 Fabrication: Omitted

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Preliminary Requirements:

1. Surface Variations: Surfaces to receive resilient tile shall be within the allowable variations of 1/8" in 6 feet and 1/16 inch in 1 foot.

2. Locations: Type 1 resilient tile shall be installed in all locations shown on the drawings or in the schedules where "resilient tile" is called for except

3. Layout: Fields, patterns and borders shall be centered on applied areas. See drawings for designs of different colored resilient tile.

B. Application of Adhesives: Apply adhesive in accordance with manufacturer's instructions contained in the adhesive packaging material.

C. Laying Resilient Tiles: Unless otherwise specifically shown on the drawings, lay tiles square with room axes, in patterns and with borders as shown on the drawings; surfaces shall be smooth and even, joints shall be tight and accurately aligned; lay full tile at center of space and partial tiles at walls.

D. Laying Neutral Divider Strip: Lay neutral dividing strip directly beneath all doors in areas receiving resilient tile; where cased openings occur, dividing strip shall be full depth of cased opening frame.

E. Laying Neutral Edging Strip: Where resilient tile terminates at a point higher than contiguous flooring and where carpet surfacing abuts resilient tile, lay edging strip.

3.03 Field Quality Control:

A. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

B. Cleaning and Protection: Upon completion of the installation, remove excess adhesive and blemishes from tile and adjacent surfaces, using a neutral type cleaner and then provide a non-staining paper pathway taped to the tile in direction of foot traffic; remove just prior to final inspection and then clean tile and related items and buff with a mechanical buffer.

3.04 Contractor Cleaning Instructions To Owner and floor contractor installer of sealer:

Prior to occupancy of the Owner, floor covering subcontractor to submit written detailed cleaning and sealing requirement for the upkeep of the resilient tile floor. Floor covering subcontractor to demonstrate to Owner's Representative proper cleaning and sealing procedure and submit signed letter from Owner's Representative stating instructions were given to Architect. Floor covering subcontractor is to clean and seal all flooring with Manufacturer's recommendation on number of coats of sealer prior to final inspection (but not less than 4 coats).

END OF SECTION 09660

SECTION 09661 - RESILIENT BASE

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Manufacturers: Resilient base and adhesives shall be the products of the same manufacturer.

B. Qualifications of Installer: The installer of the products of this section shall have been successfully engaged in the business of installing resilient tile floor covering for a period of not less than five years immediately prior to performing the work of this section.

1.02 Definitions: Omitted

1.03 Submittals:

A. Proof of Compliance: Prior to commencing work of this section, submit in triplicate to the Architect:

1. a certified statement of qualifications and

2. a certified statement to the effect that all products proposed to be used meet the requirements of this section.

B. Manufacturer's Data:

1. Before any products are delivered to the project site, submit to the Architect for review, the manufacturer's detailed descriptive and specification data for the products described hereinafter.

2. Accompanying the data submittal, furnish the manufacturer's installation instructions.

C. Samples: After review of manufacturer's data, but before any products are delivered to the project site, submit to the Architect for review, samples 6" long for each type and color required; the samples shall be representative of the color range.

D. Maintenance Guides: Furnish three copies of manufacturer's printed maintenance instructions for the resilient base.

E. Extra Stock: After completion of the work, deliver to the project site not less than 15 linear feet of base for each color and type of resilient base installed; extra stock shall be from same manufactured lot as material installed, boxed and labeled.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions:

A. Temperature: For a period of at least 24 hours before commencing installation, during installation and for at least 48 hours after installation is complete, maintain a temperature of not less than 70 degrees Fahrenheit.

B. Ventilation: Where natural ventilation is questionable, provide ventilation by use of spark proof fans.

C. Lighting: Maintain lighting of not less than three watts per square foot of floor area in all areas where products of this section are being installed.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Resilient Base: Resilient base shall be set on type, cove, 4" x .080" thick, fabricated from homogeneous vinyl and conforming to Fed. Specifications SS-W-40A, type II.

B. Adhesive: Adhesive shall be only that which is recommended by the manufacturer of the base being installed.

C. Colors: Colors for resilient base shall be as described in Section 09999 of this project manual. 3 colors from the same color group will be used.

2.02 Fabrication: Omitted

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Preliminary Requirements: Surfaces to receive resilient base shall be within the allowable variations of 1/8 inch in 6 feet and 1/16 inch in 1foot.

B. Application of Adhesives: Apply adhesive in accordance with manufacturer's instructions contained in the adhesive packaging material. Apply 3 beads of adhesive to surfaces receiving resilient base.

C. Resilient Base: Apply resilient base in all areas as shown on the drawings, in as long lengths as practicable, tightly bonding base to backing throughout the length of each piece, with continuous contact at horizontal and vertical surfaces; do not stretch base; tightly wrap corners with a continuous piece of resilient base with the nearest seam not less than 18" from the corner.

3.03 Field Quality Control:

A. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

B. Cleaning: Upon completion of the installation, remove excess adhesive and blemishes from the base and adjacent surfaces using a neutral type cleaner; just prior to final inspection clean base with soap and water and buff with dry cloth.

END OF SECTION 09661

SECTION 09680 - CARPET FLOORING

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Qualifications of Manufacturers: Manufacturers of the products of this section shall have been successfully engaged in the manufacture of the specific item to be furnished by them for a period of not less than five years immediately prior to furnishing the products for this work.

B. Qualifications of Installer: The installer of the products of this section shall have been successfully engaged in the business of installing carpet floor covering and related items for a period of not less than five years immediately prior to performing the work of this section.

1.02 Definitions: Omitted

1.03 Submittals:

A. Proof of Compliance: Prior to commencing work of this section, submit in triplicate to the Architect:

1. a certified statement of qualifications and
2. a certified statement to the effect that all products proposed to be used meet the requirements of this section.

B. Samples: Furnish samples to the Architect for review as follows:

1. Floor Carpet: 18" x 18" for each type and color described hereinafter.
2. Carpet Cushion: 18" x 18".
3. Accessories: full size x 12" long for each accessory described hereinafter.

C. Shop Drawings: Accompanying the sample submittal, submit shop drawings to the Architect for review, showing locations of all seams and accessory items.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions:

A. Temperature:

1. Maintain temperature at not less than 50^{O}F. throughout installation operations and for at least seven days after completion of carpet work.
2. If temporary heaters are used, they shall be vented to the outside.

B. Ventilation: Where natural ventilation is questionable, provide ventilation by use of sparkproof fans.

C. Lighting: Maintain lighting of not less than three watts per square foot of floor area in all areas where installation operations are in progress.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Type: See Drawings for Carpet Tile Spec.

B. Entrance Carpet: Design is based on Interface's "Super Flor".

1. Specifications: Super Flor

Modular,	6090002504
50cm x 50cm	
Glasbac Tile	
Yarn System	82.5% nylon, 17.5% polyester
Color System	yarn dyed
Life time Antimicrobial	
Soil/Stain Protection	
Pile Height	.165 in., 4.2 mm
Pile Density	8945
Weight Density	366,764

2. Colors: may vary from space to space; see Section 09999 of this project manual.

C. Accessories: Reducers:shall be fabricated from homogeneous vinyl and of the types shown on the drawings; color shall be as selected by the Architect to complement color of carpet with which it is used.

D. Adhesive: Carpet adhesive shall be release type which will allow removal of carpet without damage, comply with flame spread and smoke density requirements of Type 1 carpet and be only that which is recommended by the manufacturer of the carpet being installed.

2.02 Fabrication: Omitted

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. the allowable variations of 1/8" in 6' and 1/16" in 1', dry and broom clean.

B. Laying:

1. Test Sample: In the presence of the Architect, install a test sample not less than 10' x 10' to demonstrate adhesion and removal capability of the bonding system.

2. Reducers: Install reducers where carpet terminates higher than contiguous abutting floor finish, applying adhesive in accordance with the manufacturer's instructions contained in the adhesive packaging material; reducers shall be accurately aligned, with tight joints at abutting surfaces; intermediate joints in reducers will not be permitted.

3. Carpet:
   a. Prior to application of adhesive, cut and fit carpet for each area.
   b. Apply adhesive in accordance with manufacturer's instructions contained in the adhesive packaging material.
   c. Install carpet with tightly butted seams and edges true to line; roll to a uniform bond, eliminating all air pockets.

4. Carpet:
   a. Install in locations shown on the drawings using continuous lengths and as broad width as possible to minimize seams.
   b. Cut edges shall be trued and appropriately treated to form invisible and non-raveling joints where exposed.
   c. Carpet shall be installed in accordance with manufacturer's recommendations for seam technique and for proper amount of stretch in width and length.
   d. Transition material shall be installed in the locations shown on the drawings and shall be exposed to view type or concealed type as shown thereon; installation shall be in accordance with manufacturer's recommendations contained in the material packaging.
   e. Reducers shall be installed in the locations shown on the drawings and shall be of the designs shown thereon; installation shall be in accordance with manufacturer's recommendations contained in the material packaging.

3.03 Field Quality Control:

A. Inspection:
   1. Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

2. Installed carpet shall be free of spots, dirt, soil, and shall be without tears, frays or pulled tufts.

B. Cleaning:

1. Reducers: Upon completion of the installation, remove excess adhesive and blemishes from the reducers and adjacent surfaces using a neutral type cleaner.
2. Carpet: Upon completion of the installation, remove adhesive from face of carpet and adjacent surfaces; vacuum all carpets with a commercial machine with rotating agitator or beater in nozzle; remove soiled spots using only cleaner which is recommended by the manufacturer of the carpet installed; remove blemishes from adjacent surfaces.

C. Protection: Cover carpet and accessories with a non-staining paper, masked in place, remove just prior to final inspection, vacuum carpet and clean all exposed to view accessories as recommended by their manufacturers.

END OF SECTION 09680

SECTION 09900 - PAINTING

PART 1.00 - GENERAL

1.01 Quality Assurance: The applicator of the products described hereinafter shall have been successfully engaged in the business of painting for not less than five years immediately prior to performing the work of this section.

1.02 Definitions:

A. Paint: Term used in a general sense and has reference to sealers, primer, stains, oils, alkyd, latex, epoxy and enamel type paints.

B. Painting: Term used in a general sense and has reference to the application of "paint", without regard to the type of material to an item.

C. Back Prime: Term used in a general sense and has reference to the application of "paint" (first coat), without regard to the type of material, to the back side (unexposed to view) of an item.

1.03 Submittals:

A. Proof of Compliance: Prior to commencing work of this section, submit in triplicate to the Architect:

1. a certified statement of qualifications and

2. a certified statement to the effect that all products proposed to be used meet the requirements of this section.

B. Materials List: Prior to delivery of any paint materials to the project site, submit to the Architect for review, a complete list of all paint materials to be used in this project as described hereinafter.

C. Manufacturer's Data: Accompanying the materials list, furnish the paint manufacturer's detailed descriptive and specification data and application instructions for each type of paint required.

D. Color Samples:

1. After review of the material list and manufacturer's data, but prior to delivery of any paint to the project site, submit color samples, not less than 12" x 12" each, for each type and color of finish required.

2. Wherever possible, the material upon which the sample colors are applied shall be the same material as that on which the paint will be applied in the project.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions:

A. Temperature: Maintain a constant temperature of not less than 50^{O} F. during painting and drying operations and until date of Architect's Final Certificate.

B. Ventilation: Provide ventilation to allow for the proper drying of the paint materials by using either of the following:

1. temporary air circulators (sparkproof).

2. air conditioning system.

C. Lighting: Maintain lighting of not less than three watts per square foot of floor area in all areas where painting operations are in progress.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Paint:

1. All paints selected for the coating system for each type of surface shall be the product of a single manufacturer and as described hereinafter.

2. Thinners, when used, shall be only those thinners recommended for that purpose by the manufacturer of the material to be thinned.

3. Colors shall be as specified in Section 09999 of this project manual.

B. Equipment:

1. Application Equipment: Brushes, rollers, spray apparatus and like application equipment are not required to be new, but they shall be capable of producing the required results specified hereinafter.

2. Accessory Equipment: Ladders, scaffolding, drop cloths, scrapers, dusters, and like items are not required to be new, but they shall be safe, adequate and capable of producing the results for which they are intended.

2.02 Fabrication: Omitted.

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Preliminary Requirements:

1. Surface Preparation:
   a. Protection: Prior to all surface preparation and painting operations, completely mask, remove or otherwise adequately protect all hardware, accessories, machined surfaces, plates, lighting fixtures, and similar items in contact with painted surfaces, but not scheduled to receive paint. All locksets, surface mounted closers, push and pull plates, kick plates, panic devices, door and drawer pulls and similar items shall be removed prior to commencing painting operations.
   b. Priming: Spot prime all exposed nails and other metals which are to be painted with emulsion paints, using a primer recommended by the manufacturer of the coating system.
   c. Cleaning:
   (1) Before applying paint or other surface treatment, thoroughly clean all surfaces involved.
   (2) Schedule all cleaning and painting so that dust and other contaminates from the cleaning process will not fall on wet, newly painted surfaces.

2. Mildew:
   a. Remove and neutralize mildew by scrubbing affected areas thoroughly with a solution made by adding 2 oz. Trisodium Phosphate type cleaner and 8 oz. Sodium Hypochloride to 10 gal. of warm water.
   b. Use a scouring powder if necessary to remove mildew spores.
   c. Rinse with clear water and allow to dry thoroughly before painting.

3. Efflorescence: Scrub off with a commercial lime solvent or one part commercial muriatic acid to five parts water and then rinse with clear water and allow surface to thoroughly dry before painting.

4. Wood:
   a. Sandpaper to smooth and even surface, then dust off.
   b. Before priming coat is applied, touch up all knots, pitch streaked and resinous sapwood with shellac, four pound cut.
   c. After priming coat has dried, putty all nail holes, cracks, open joints and other defects.

d. Putty shall be colored to match stain or paint.

e. Prior to installation, painted wood trim shall be back-primed and stained wood trim shall be back-sealed.

5. Plaster (Gypsum):
   a. Rake small cracks, scratches and abrasions deeply.
   b. Undercut large crack edges, coat with shellac and fill with prepared patching plaster.
   c. Spot coat patches with prime coat when dry and prior to applying specified prime coat.
   d. Do not use sandpaper on plaster surfaces to be painted.
   e. Before painting any plaster, surfaces shall be tested with a moisture testing device.
   f. No paint or sealer shall be applied on plaster when moisture content exceeds 20%, except as may otherwise be required by the manufacturer of the paint materials to be used.

6. Gypsum Wallboard: Fill all minor irregularities with spackling compound and sand to a smooth, level surface, exercising care to avoid raising nap of paper.

7. Concrete, Unit Masonry and Exterior Plaster (Portland Cement):
   a. Patch large openings and holes with Portland cement mortar and finish flush with adjacent surface.
   b. After priming, fill any remaining small holes with Swedish putty made by mixing dry whiting with prime coat of paint.
   c. Remove form-oil from poured-in-place concrete by washing concrete with Xylol.
   d. Surfaces shall be allowed to dry completely, usually 60 to 90 days in moderate weather, before painting.
   e. No painting shall be done until surfaces are tested by moisture meter and shown to be within the acceptable limits of the specified manufacturer and safe to paint.

8. Ferrous Surfaces:
   a. Remove dirt and grease with mineral spirits and wipe dry with clean cloths.
   b. Remove rust, mill scale and defective paint down to bare metal, using scraper, sandpaper or wire brush as necessary.
   c. Grind if necessary to remove shoulders at edge of sound paint to prevent flaws from photographing through finish coats.
   d. Touch up all bare metal and damaged shop coats with specified rust inhibitive primer.

9. Galvanized Surfaces:
   a. Remove dirt and grease with mineral spirits and dry with clean cloth.
   b. All galvanized steel surfaces shall be pretreated with proprietary acid-bound resinous or crystalline zinc phosphate preparation prior to painting.

10. Lead Coated Copper: Remove dirt and grease with mineral spirits and wipe dry with clean cloth.

B. Paint Application:

1. General:
   a. Paint all surfaces except aluminum, glass, face brick and prefinished items unless otherwise shown on the drawings.
   b. Paint all access panels, registers and grilles to match the color of the adjacent walls or ceilings.
   c. Prime coated butts shall be painted the same color as the door trim.
   d. Exposed piping, conduit, ductwork, and hangers, generally in finished areas, shall be painted to match the walls or ceilings adjacent to them; where adjacent surfaces are unpainted these items will be painted black.
   e. The top and bottom edges of all wood and metal doors shall be finished with two coats of paint or varnish as used for finished coat, applied after fitting but before faces are painted.
   f. The interior of all cabinets, including drawers and shelves, shall be finished the same as in the exterior surfaces.
   g. Where aluminum materials are placed in contact with or fastened to dissimilar metals, with the exception of stainless steel or galvanized metals, the contact surfaces shall be given a heavy brush coat of zinc chromate primer made with a synthetic resin vehicle, followed by two coats of aluminum metal and masonry paint.
   h. Where aluminum materials are placed in contact with, or built into masonry or plaster, they shall be given a heavy brush coat of methacrylate lacquer.
   i. Where aluminum materials are placed in contact with green or wet wood, or any absorptive material subjected to repeated wetting, or wood treated with a non-compatible preservative, the contact surfaces shall be given a heavy brush coat of aluminum pigmented bituminous paint.
   j. Dissimilar metals shall be painted if drainage from them passes over aluminum work.

2. Drying:
   a. Allow sufficient drying time between coats.
   b. Modify the period as recommended by the material manufacturer to suit adverse weather conditions.
   c. Oil-base and oleo-resinous solvent type paints shall be considered dry for re-coating when the paint feels firm, does not deform or feel sticky under moderate pressure of the thumb, and the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

3. Environmental Conditions:
   a. Comply with the manufacturer's recommendation as to environmental conditions under which the coating systems may be applied.
   b. Do not apply paint in areas where dust is being generated.

4. Moisture Content:
   a. Use a moisture meter approved by the Architect to test surfaces.

b. Do not apply the initial coating until moisture meter reading is within limits recommended by the paint materials manufacturer.

5. Defects: Sand and dust between coats to remove all defects visible to the unaided eye from a distance of five feet.

6. Color of Undercoats: Slightly vary the color of succeeding coats.

C. Inspection:

1. General: Do not apply additional coats until completed coat has been inspected and approved by the Architect.

2. Number of Coats: Only inspected and approved coats of paint will be considered in determining the number of coats applied.

D. Reinstallation of Removed Items: Following completion of painting in each area, promptly reinstall all items removed for painting, using only workmen skilled in the particular trade.

E. Painting Systems Schedule:

1. Exterior: (provide mildew resistant additive to all exterior paint).

a. Exterior Gypsum Wallboard: shall be painted with one of the following:

(1) Sherwin-Williams Company
1 coat A-100 Exterior Latex Primer
2 coats Tile Clad II Enamel B-62 Series

(2) PPG Industries
1 coat Pit Glaze Pigmented Sealer
2 coats Pit Glaze

(3) Glidden
1 coat Spred Primer Sealer No. 3416
2 coats Glid-Tile Epoxide

b. Ferrous Metal: shall be painted with one of the following:

(1) Sherwin-Williams Company
1 coat Kem Kromik Primer
2 coats Industrial Primer

(2) PPG Industries
1 coat 54-208 Rust Control Primer

2 coats Quick Drying Exterior Enamel

(3) Glidden
1 coat 4570 Red Oxide Primer
2 coats Glid-Guard Alkyd Enamel

c. Galvanized Metal; Lead Coated Copper: All galvanized metal shall be painted with one of the following:

(1) Sherwin-Williams Company
1 coat Galvite
2 coats Industrial Enamel

(2) PPG Industries
1 coat 6-209 Galvanized Iron Primer
2 coats Quick Drying Exterior Enamel

(3) Glidden
1 coat #5229 Galvanized Iron Primer
2 coats Glid-Guard Alkyd Enamel

d. Cast-In-Place Concrete: All exposed to view Cast-In-Place Concrete to receive paint coating except sidewalk and stairs. Where called for on the drawings, cast-in-place concrete shall be painted with one of the following:

(1) Sonneborn Building Products
2 coats (10 mil film thickness each coat)
Hydrocide Super Color Coat

(2) Tnemec
1 coat (7.8 mil film thickness) System 52-1

e. Wood (Painted): Where called for on the drawings; wood shall be painted with one of the following:

(1) Sherwin-Williams Company
1 coat A-100 Alkyd Primer Y24W20
2 coats SWP Gloss Paint A2 Series

(2) PPG Industries
1 coat Sun-Proof Universal Primer
2 coats Sun-Proof House and Trim Paint

(3) Glidden
1 coat Y-1951 Base Coat
2 coats Y-1901 House and Trim Paint

2. Interior:

a. Concrete: Interior concrete exposed to view, except floors, shall be painted with one of the following systems:

(1) Sherwin-Williams Company
2 coats Pro Mar 200 Latex Semi Gloss B31W200

(2) PPG Industries
2 coats No. 6-510 Latex Semi Gloss

(3) Glidden
2 coats Spred Low Lustre Latex Enamel No. 3700

b. Hollow Concrete Masonry - Special Coating:

(1) Sherwin-Williams Company
1 coat H.D. Block Filler B42W46
2 coats Tile Clad II Epoxy

(2) PPG Industries
1 coat Pit Glaze Block Filler 16-9
2 coats Pit Glaze

(3) Glidden
1 coat 5512 Glid-Tile Block Filler
2 coats 5550/5552 Glid-Tile Epoxide

c. Hollow Concrete Masonry: Interior hollow concrete masonry not scheduled to receive special coating shall be painted with one of the following:

(1) Sherwin-Williams Company
1 coat Block Filler B25W25
2 coats Pro Mar 200 Latex Semi Gloss B31W200

(2) PPG Industries
1 coat Speedhide Masonry Block Filler 6-7
2 coats No. 6-510 Latex Semi Gloss

(3) Glidden
1 coat 581-W-8101 Block Filler
2 coats Spread Low Lustre Latex Enamel No. 3700

d. Plaster (Gypsum): Omitted.

e. Plaster - Special Coating: Omitted.

f. Ferrous Metal: Ferrous metal exposed to view, including but not limited to all mechanical piping, structural steel and air conditioning ducts, shall be painted with one of the following systems:

(1) Sherwin-Williams Company
1 coat Kem Kromik Primer
2 coats Industrial Enamel B54 Series

(2) PPG Industries
1 coat 54-208 Primer
2 coats Speedhide Semi Gloss Enamel

(3) Glidden
1 coat 4520 Glide Guard Red Oxide Primer 2 coats Spred Lustre 4600 Series

g. Gypsum Wallboard: (Eggshell Finish) Gypsum wallboard scheduled to receive paint (not special coatings) shall be painted with one of the followings systems:

(1) Sherwin-Williams Company
1 coat of Manufacturer's recommended primer
2 coats Pro Mar 200 Latex Eg-Shel B20W200

h. Gypsum Wallboard - Special Coating: Gypsum wallboard scheduled to receive special coating shall be painted with one of the following systems:

(1) Sherwin-Williams Company
1 coat Pro Mar 200 Primer B28W200
2 coats Tile Clad II Epoxy B62 Series

(2) PPG Industries
1 coat Pit Glaze Pigmented Sealer
2 coats Pit Glaze

(3) Glidden
1 coat Spred Primer Sealer No. 3416
2 coats Glid-Tile Epoxide

i. Wood (Stained): All wood scheduled to be stained shall be painted with one of the following:

(1) Sherwin-Williams Company
1 coat Interior Oil Stain A48 Series
1 coat Oil Base Varnish A66V91 Gloss

1 coat Oil Base Varnish Stain

(2) PPG Industries
1 coat Rez Stain
2 coats Rez Varnish Satin Finish

(3) Glidden
1 coat 200 Series Spred Wood Stain
2 coats Spred Urethane Stain Varnish 10

j. Wood (Painted): All wood scheduled to be painted shall be painted with one of the following systems:

(1) Sherwin-Williams Company
1 coat Wall and Wood Primer B49W2
1 coat Pro Mar 200 Alkyd Semi Gloss

(2) PPG Industries
1 coat 6-6 Enamel Undercoat
1 coat 27-109 Semi Gloss Enamel

(3) Glidden
1 coat Spred Wood Y-555, Enamel Undercoat
1 coat Spred Lustre 4600 Series Semi Gloss Enamel

3.03 Field Quality Control:

A. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

B. Clean Up:

1. During progress of the work, do not allow the accumulation of empty containers or other excess items except in areas specifically set aside for that purpose.

2. Prevent accidental spilling of paint materials and, in event of such spill, immediately remove all spilled material and the waste or other equipment used to clean up the spill, and wash the surfaces to their original undamaged condition.

3. Upon completion of this portion of the work, visually inspect all surfaces and remove all paint and traces or paint from surfaces not scheduled to be painted.

END OF SECTION 09900

SECTION 09999 - COLOR SCHEDULE

PART 1.00 - GENERAL

1.01 Quality Assurance: Quality assurance is described in pertinent other sections of this project manual.

1.02 Definitions: Definitions are listed in pertinent other sections of this project manual.

1.03 Submittals:

A. Samples, Color Charts, Manufacturer's Data: Samples, color charts, manufacturer's data and other submittals are described in pertinent other sections of this project manual.

B. Color Schedule:

1. Upon written request from the Contractor and after receipt and review of all samples, color cards, and manufacturer's data pursuant to color and finishes, the Architect will prepare for the Contractor's use, a color schedule for each space scheduled to receive any finish material and a color board illustrating each color described in the color schedule. Colors may vary from space to space.

2. The color board and/or copy of the color schedule shall be kept at the project site until date of Architect's Final Certificate and at that time it shall be returned to the Architect.

1.04 Product Handling: Product handling is described in pertinent other sections of this project manual.

1.05 Job Conditions: Job conditions are described in pertinent other sections of this project manual.

PART 2.00 - PRODUCTS

2.01 Materials: Materials and manufacturers are described in pertinent other sections of this project manual.

2.02 Fabrication: Fabrication, measurement and mixing of products and materials are described in pertinent other sections of this project manual.

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation: Installation of various finish materials and products is described in pertinent other sections of this project manual.

3.03 Field Quality Control:

A. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

B. Protection and Cleaning: Protection and cleaning of the various finishes are described in pertinent other sections of this project manual.

END OF SECTION 09999

SECTION 10001 - FIRE EXTINGUISHERS AND CABINETS

PART 1.00 - GENERAL

1.01 Quality Assurance: The products of this section shall be the same manufacturer.

1.02 Definitions: Omitted

1.03 Submittals:

A. Manufacturer's Data: Before any products of this section are delivered to the project site, submit to the Architect for review, manufacturer's detailed descriptive and specification data for the products described hereinafter.

B. Shop Drawings: After review of the manufacturer's data, but prior to delivery of the products of this section to the project site, submit manufacturer's shop drawings to the Architect for review.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions: Omitted.

PART 2.00 – PRODUCTS

2.01 Fire Extinguishers and Cabinets: (Prior to ordering, verify type and size with local Building Official.)

A. Fire Extinguishers:

1. Type 1: to be 4A60BC.

a. Design is based on Cosmic, as manufactured by J.L. Industries, Bloomington, MN for cabinet mounting.
b. The following are acceptable (or equal):
(1) _____as manufactured by Larsen's Manufacturing Company, Minneapolis, MN for cabinet mounting.
(2) _____as manufactured by Potter-Roemer
(3) _____ as manufactured by Amerex.

2. Type 2: To be 40 B:C Regular Dry Chemical Fire extinguisher type 2 shall be the same MFS as type 1.

B. Fire Extinguisher Cabinets: **See Detail B/A2-2 for cabinet specifications.**

2.02 Fabrication: Omitted.

PART 3.00 – EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Cabinets and Wall Brackets: Install cabinets and wall brackets in the locations and at the heights shown on the drawings, anchoring securely in accordance with the details of the manufacturer of the products being installed.

B. Fire Extinguishers: After cabinets and wall brackets are in place install one fire extinguisher in each cabinet and each wall bracket.

C. Filling and Servicing: All fire extinguishers shall be filled and tagged according to NFPA 10 Guidelines and federal, state and local codes.

3.03 Field Quality Control:

A. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

B. Cleaning: Upon completion of the installation, clean all surfaces as recommended by the manufacturer of the products installed.

END OF SECTION 10001

SECTION 10100 - TACKBOARDS & MARKERBOARDS

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Qualifications of Manufacturer: The manufacturer of the products of this section shall have been successfully engaged in the manufacture and fabrication of chalkboards, tackboards and markerboards for a period of not less than five years immediately prior to furnishing the products of this section.
B. Special Requirements: The products described hereinafter shall be by the same manufacturer.

1.02 Definitions: Omitted

1.03 Submittals:

A. Proof of Compliance: Prior to commencing any work of this section, submit in triplicate to the Architect:
   1. a certified statement of qualifications and
   2. a certified statement to the effect that all products proposed to be used meet the requirements of this section.
B. Shop Drawings: Prior to commencing fabrication of the products of this section, submit to the Architect for review, manufacturer' s shop drawings.
C. Manufacturer' s Data: Accompanying the shop drawing submittal, furnish the Architect for review, manufacturer' s detailed materials and fabrication specifications and installation instructions.
D. Color Cards: Accompanying the shop drawing submittal, furnish manufacturer' s full range color cards.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage and after installation.
B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

1.05 Job Conditions: All painting and glazing of exterior openings shall be complete before beginning installation of any of the products of this section.

PART 2.00 - PRODUCTS

2.01 Materials:

A. Chalkboards: (not used)
   3. Design is based on Series 1, as manufactured by Claridge Products & Equipment, Inc. Harrison, AR, with 1/2", 2 ply Duracite writing surface, staff lined shall be provided where called for on the drawings.
   4. The following are acceptable:
      a. Series 200 with No. 510 2-ply writing surface as manufactured by Carolina Chalkboard company, Charlotte, NC.

b. No. 102 chalkboard with type 5 trim, factory assembled units as manufactured by Lemco Corporation, Salt Lake City, UT.

B. Tackboards:
1. Design is based on Series 1, as manufactured by Claridge Products & Equipment, Inc. Harrison, AR, with 1/2" No. 1380 Fabricork panel.
2. The following are acceptable:
a. Series 200 with No. 1925 panel as manufactured by Carolina Chalkboard Company, Charlotte, NC.
b. No. 331 tackboard with Type No. 19E trim, factory fabricated units as manufactured by Lemco Corporation, Salt Lake City, UT.

C. Markerboards:
1. Design is based on Series 1, as manufactured by Claridge Products & Equipment, Inc. Harrison, AR, with LCS surface, on 3/8" particle board with foil backing.
2. The following are acceptable:
a. Series 200 with Vitrasteel surface, factory fabricated units as manufactured by Carolina Chalkboard Co., Charlotte, NC.
b. No. 254 with Type No. 19E trim, factory fabricated units as manufactured by Lemco Corporation, Salt Lake City, UT.

D. Colors: Chalkboard, tackboard, and markerboard colors will be selected from manufacturer' s standard colors and will be as described in Section 09999 of this project manual.

2.02 Fabrication: Chalkboards, tackboards, and markerboards shall be fabricated to the designs and sizes shown on the drawings from the materials and components described hereinbefore or shown on the drawings.

PART 3.00 - EXECUTION

3.01 Inspection: Contractor shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation: Chalkboards, tackboards and markerboards shall be installed in the locations and at the heights shown on the drawings, level, plumb and true to line and shall be anchored firmly in place in accordance with the details shown in the manufacturer' s printed instructions contained in the material packaging.

3.03 Field Quality Control:

A. Inspection: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

B. Cleaning: Prior to final inspection, remove maskings and labels and clean all exposed to view surfaces as recommended by the manufacturer of the items installed.

END OF SECTION 10100

SECTION 10351 - FLAGPOLES

PART 1.00 - GENERAL

1.01 Quality Assurance:

A. Qualification of Manufacturer: The manufacturer of the products of this section shall have been successfully engaged in the business of manufacturing aluminum flag poles for a period of not less than five years immediately prior to furnishing the products of this section.

1.02 Definitions: Omitted

1.03 Submittals:

A. Proof of Compliance: Prior to commencing fabrication of the products of this section, submit in triplicate to the Architect:

1. a certified statement of qualifications and
2. a certified statement to the effect that all products proposed to be used meet the requirements of this section.

B. Shop Drawings: Prior to commencing fabrication of the products of this section, submit manufacturer's shop drawings to the Architect for review.

C. Manufacturer's Data: Accompanying the shop drawing submittal, furnish to the Architect for review, manufacturer's detailed materials and fabrication specifications and installation recommendations; include catalogue cuts of all hardware, anchors & accessories.

1.04 Product Handling:

A. Protection: Protect the products of this section from damage during delivery, storage, and after erection.

B. Replacements: In the event of damage, immediately make all repairs and replacements as directed by the Architect.

PART 2.00 - PRODUCTS

2.01 Flagpole:

A. Manufacturer:

1. Design is based on *American Cone Tapered Aluminum Flagpole*, ground set, one (35 feet) exposed height, as manufacturers by *American Flagpole*, Abingdon, VA.

2. The following are acceptable:
    a. Tapered aluminum flagpole, ground set, one (35 feet) exposed height as manufactured by *Concord Industries, Inc.*, Addison, TX.
    b. Tapered aluminum flagpole, ground set, one (35 feet) exposed height as manufactured by *The Morgan-Francis Co., Inc.*, Stratford, CT.

B. Finish: Finish shall be manufacturer's *AM Tone Standard Finish*.

C. Fittings: The following fittings shall be furnished:

1. Finial Ball: anodized finish **(General Contractor Confirm color with Owner)**

2. Truck: revolving type of same material and finish as flagpole

3. **Halyards to be internal**

4. Cleat: 9 inch aluminum

5. Mounting Hardware:
    a. Aluminum flash collar.
    b. Counterweight tilting box.

D. Concrete: Concrete shall be 3000 psi at 28 days as described in Section 03300 of this project Manual.

2.02 Fabrication:

A. Measurement and Mixing of Concrete: Concrete shall be proportioned and mixed as described in Section 03300 of this Project Manual.

B. Flagpole: Ground set, tapered aluminum flagpole shall be fabricated from the materials and in accordance with the published specifications of the manufacturer.

PART 3.00 - EXECUTION

3.01 Inspection: Construction Manager shall examine the areas and conditions under which the products of this section are to be installed; notify the Architect in writing of conditions detrimental to the installation of the products of this section and the completion of the work; do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 Installation:

A. Foundation: Construct foundation as shown on the drawings and in accordance with the details shown thereon, placing concrete in accordance with Section 03300 of this Project Manual.

B. Flagpole: Erect flagpole where shown on the drawing, plumb and true to line and in accordance with the details shown thereon and the manufacturer's printed instructions contained in the material packaging.

3.03 Field Quality Control: Materials and workmanship at all times will be subject to inspection by the Architect or his representative.

END OF SECTION 10351

SECTION 13122 - METAL BUILDING

(All exterior main frame columns to be straight to 14’-0” above finish floor)

PART 1.00 - GENERAL

1.01 Summary:

A. All material, labor and equipment to complete the pre-engineered metal building which includes all necessary trim, flashing, gutters, downspouts, copings, fascia panels and framing to support masonry walls and all accessories.

B. The requirements of Division 0 - "Bidding and Contract Requirements" andDivision 1 - "General Requirements" of this project manual shall apply to all work required in this section.

C. Pre-engineered metal building shall be designed by a professional engineer licensed in the state of Georgia. Column reactions shall be submitted with anchor bolt drawings for review prior to construction of foundation. If reactions exceed those estimated for foundation design foundations will be revised as necessary. The building frame is to be designed with an allowable drift of H/500 due to wind load. Design loads shall include 10 psf collateral loads in addition to live and building dead loads. Also provide additional steel support for hung HVAC unit and additional 1400 lb of load at HVAC and ductwork. **Provide additional load of 4,000 lbs at each basketball goal location.**

1.02 Related Sections: Curbs, Wood Nailers and other carpentry: Section 06101.

1.03 Referenced Standards: Current edition of each applies:

A. Steel Association:
1. American Institute of Steel Construction Code of Standard Practice.
2. A.I.S.I. Specifications for Light Gauge Metal.

B. American Society of Testing Materials:
1. A-792 General Requirements for Aluminum Coated Sheet
2. B-209 Aluminum Alloy Sheet and Plate
3. A-525 General Requirements for Galvanizing
4. A-466, A572 and A36 Steel Classification
5. ASTM E-330 Modified Air Bag Test

C. National Roofing Contractors Association:
1. Construction Details

D. Sheet Metal and Air Conditioning Contractors National Association:
1. S.M.A.C.N.A. Architectural Sheet Metal Manual

1.04 Submittals:

A. Shop drawings must comply with the general section of the specification and must be in a scale large enough to clearly show all details. Include dimensions of fabricated work, reference dimensions to structure, type, size and spacing of fasteners; material thickness and finish, layout showing panel length used in each area, erection sequence and coordination required with other trades. Shop drawings must be reviewed and stamped by a Registered Structural Engineer in the State of Georgia, prior to commencement of work.

B. Submit with drawings, copies of performance data on the panels, anchor clips, fasteners, material samples or mock-ups required.

C. Prior to commencement of work, submit Manufacturer's Letter of Compliance stating that all requirements of the specifications have been met or exceeded. Further, state that materials furnished are the same as those tested.

D. Submit calculations stamped by a Registered Engineer for all items furnished under this specification. Calculations must be based on date obtained from ASTM E-330.

1.05 Guarantees - Quality Control:

A. Prior to commencement of work submit to the Architect:

1. Copy of the manufacturer's Quality Control Program

2. Certification that clips used for this project have been tested for UL index class 30 rating. This is for quality control only. Actual loads contained herein and on drawings must also be met.

3. Provide Owner a twenty (20) year weather tightness warranty - warranty to cover both labor and materials.

PART 2.00 - PRODUCTS

2.01 Acceptable Manufacturers and Installers:

A. Manufacturers Qualifications: The panel manufacturer shall have been in the business as a panel manufacturer for at least 10 years. The manufacturer must submit at least ten (10) projects similar in size and scope prior to commencement of work listing the architect, owner, scope, location and name of project.

B. Installer Qualifications:

1. The installer shall be authorized by the metal building manufacturer prior to bid date (in writing) and the actual work shall be supervised by personnel trained by the manufacturer in the proper application of
the product.

2. The installer shall have a minimum of 5 years experience with similar type products. The installer must submit a list of five (5) similar projects prior to commencement of work. Project list shall include: name of project, architect, owner, job location, scope and name of manufacturer.

2.02 System Description:

A. Roof panels shall be fabricated from a min. of 24 (0.024) gauge galvalume sheets. Panel design based on American Building Loc-Seam Standing Seam with 1-3/4" high rib.

B. Panels must be fabricated in one piece from building ridge to eave.

C. Flashing shall be made from the same material type and finish as the roof panels.

D. Wall panels to be with 24 (0.024) Profile gauge sheets. Color and profile from Standards

E. Fascia panels to be from Standards.

F. Provide all metal gutters and downspouts, as shown on the Drawings ; see drawings for locations.

G. Fluorocarbon Coating Finish:

1. Prepare galvalume steel in accordance with manufacturer's recommendations to properly bond factory applied and baked on coating system.

2. Apply manufacturer's chemically resistant primer to galvalume steel at dry film thickness of minimum 0.20 to 0.25 mils each side.

3. Apply manufacturer's thermoset finish top coat inorganically pigmented with polyester resin modified by copolymerization with a silicone resin intermediate to primer at dry film thickness of minimum 0.70 - 0.90 mils.

4. Finish coat surface shall provide approximately 30 reflective specular gloss when tested in accordance with ASTM D523.

5. Color of exterior finish shall be standard color as selected by the Architect.

6. Coil coating facility must be made available for inspection by representative of the owner.

2.03 Product Performance:

A. The roof panel system shall be designed to safely resist the following positive and negative loads as specified below. Provide stamped calculations by a Registered Structural Engineer before proceeding with the work.

	Negative	Positive
Roof Panel Zone 1:	(as needed per local codes)	(as needed per local codes)
Ridges, Eaves & Rakes:	(as needed per local codes)	(as needed per local codes)
Ridge Ends, Eave & Rake Corners:	(as needed per local codes)	(as needed per local codes)

B. Panels and flashing attachments shall be designed to accommodate the thermal expansion/ contraction of the roofing material through a 150 degree Fahrenheit temperature range.

C. Panels shall carry the uniform design loads shown above with a maximum total deflection of L/ 240 as measured in the flat of the panel.

D. Manufacturer to certify the the metal building components and building system furnished by manufacturer are designed to comply with the following criteria: See drawing for design load and deflection requirements. These design loads and combinations are applied in accordance with the Metal Building Systems Manual (MBMA '90) and or Standard Building Code, 1994 Edition.

2.04 Materials - Accessory Items:

A. Exposed fasteners shall be stainless steel. For weather tightness, screws shall have separate washers with hot bonded neoprene faces, and pop-rivets shall be set in wet sealant. Exposed fasteners shall be a minimum #14 size screw or 3/16" diameter rivet.

B. Sealant used with the roofing shall be applied between surfaces during assembly with a minimum amount exposed on the complete installation.

1. Concealed sealant may be a non-curing, non-skinning butyl, polyisobutylene or polybutane tape of sufficient thickness to make full contact with both surfaces.

2. Exposed sealant shall be a curing elastomeric type with excellent weather and sunlight resistance. Color shall match the exterior metal. Sealant shall be applied in accord with the sealant manufacturer's
recommendations.

3. All sealant shall have an indicated service life of 20 years.

2.05 Fabrication:

A. Minimum inside bend radius on flashing shall be 3T, and all edges shall have open hems for stiffness.

B. Insofar as possible, attachment screws shall be eliminated, in favor of cleats and clips.

PART 3.00 - EXECUTION:

3.01 Installation:

A. Storage and Handling: Protection shall be provided during shipment, site storage and erection to prevent mechanical abuse, stains, discoloration and corrosion. During shipment, all surfaces shall be protected from abrasion by interleaf sheeting between areas of contact. Jobsite shall be in a clear dry area out of direct contact with the ground, under cover of slope for drainage, protected from abuse by traffic and from contamination by corrosive or staining materials. Stored materials and unfinished work shall be secured against damage by wind. Installed panels shall be protected from abuse by other trades. It shall be the responsibility of the Contractor to provide walk boards in areas of heavy traffic and to take any other measures required to prevent damage by his or her own crews. The General Contractor shall be advised of any necessity for protection from work of other trades. It will be the responsibility of the General Contractor to see that work is protected from wet cement, plaster and painting operations.

B. Before installation of any panels, this Contractor shall verify that the structure is ready to receive work. The Contractor shall check field dimensions and alignment of structural members to assure that the roof panels and flashing will be straight and true. The Architect shall be notified on conditions which may adversely affect the appearance of the installed roof, and work on that location will not proceed until resolved by the Architect.

C. All work shall be installed in accord with approved shop details under direct supervision of an experienced sheet metal craftsman trained in application of the manufactured product. Attachments on joints shall allow for expansion/ contraction from temperature changed without distortion or elongation of fastener holes. Flashing shall be installed in strict accord with the recommended practice in the AA, NCRA and SMACNA architectural sheet metal manuals, without fasteners in the end laps.

D. Completed work shall be plumb, true and free of dents. Panel ribs shall be on the module indicated in the contract drawings and within the tolerance allowed by the actual construction dimensions. Excess sealant shall be removed. Any panels which are badly damaged and in the judgement of the Architect cannot be repaired shall be removed and replaced.

E. Panel lengths to be continuous ridge to eave. No horizontal joints allowed.

END OF SECTION 13122

SECTION 32310 - CHAINLINK FENCES & GATES

PART 1.00 - GENERAL

1.01 Related Documents

A. Division 01- General Requirements: Drawings, quality, product and performance requirements, general and supplemental conditions apply as applicable to the project and project documents.

1.02 Summary

A. This Section includes industrial/commercial chain link fence and gates specifications:
3. Galvanized steel coated chain link fabric
4. Aluminum coated steel chain link fabric
5. Polymer coated steel chain link fabric
6. Zinc 5% Aluminum alloy coated steel chain link fabric
7. Galvanized steel framework and fittings
8. Polymer coated galvanized steel framework and fittings
9. Gates: swing and cantilever slide
10. Barbed wire
11. Barbed tape
12. Installation

B. Related Sections: [Delete sections not included in specification]
1. Certificates
2. Shop Drawings, product data
3. Manufacturers Qualifications
4. Installer Qualifications
5. Quality Control
6. Product Delivery Requirements
7. Product Storage and Handling Requirements
8. Miscellaneous Cast in Place Concrete
9. Integrated Automation [pertinent to gate operator access control]
10. Electrical distribution [relating to gate operators]
11. Finish Grading

1.03 References

A. ASTM A121 Specification for Metallic-Coated Carbon Steel Barbed Wire
B. ASTM A392 Specification for Zinc-Coated Steel Chain-Link Fence Fabric
C. ASTM A491 Specification for Aluminum-Coated Steel Chain-Link Fabric
D. ASTM A780 Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
E. ASTM A817 Specification for Metallic-Coated Steel Wire for Chain Link Fence Fabric and Marcelled Tension Wire
F. ASTM A824 Specification for Metallic-Coated Steel Marcelled Tension Wire for Use With Chain Link
G. ASTM F552 Standard Terminology Relating to Chain Link Fencing
H. ASTM F567 Standard Practice for Installation of Chain Link Fence

I. ASTM F626 Specification for Fence Fittings
J. ASTM F668 Specification for Polymer Coated Chain Link Fence Fabric
K. ASTM F900 Specification for Industrial and Commercial Swing Gates
L. ASTM F934 Specification for Standard Colors for Polymer-Coated Chain Link
M. ASTM F1043 Specification for Strength and Protective Coatings of Steel Industrial Chain Link Fence Framework
N. ASTM F1083 Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures
O. ASTM F1184 Specification for Industrial and Commercial Horizontal Slide Gates
P. ASTM F1345 Specification for Zinc-5% Aluminum-Mischmetal Alloy-Coated Steel Chain-Link Fence Fabric
Q. ASTM F1664 Specification for Poly (Vinyl Chloride) (PVC) and Other Conforming Organic Polymer-Coated Steel Tension Wire Used with Chain-Link Fence
R. ASTM F1665 Specification for Poly (Vinyl Chloride) (PVC) and Other Conforming Organic Polymer-Coated Steel Barbed Wire Used with Chain-Link Fence
S. ASTM F1910 Specification for Long Barbed Tape Obstacles
T. ASTM F1911 Standard Practice for Installation of Barbed Tape
U. ASTM F2200 Specification for Automated Vehicular Gate Construction
V. UL325 Automatic operators: Door, Drapery, Gate, Louver and Window

1.04 Submittals

A. Shop drawings: Site plan showing layout of fence location with dimensions, location of gates and opening size, cleared area, elevation of fence, gates, footings and details of attachments. Comply with the provisions of Section 01 33 23.
B. Certifications: Manufacturers material certifications in compliance with the current ASTM specifications; comply with the provisions of Section 01 33 13.
C. Domestic certifications: Material certifications, Made in U.S.A., Buy American Act or Buy America when required, follow the provisions of Section 01 33 13.
D. Material samples: Provide representative samples of chain link fabric, framework and fittings. **<Specify size and number of samples>**
E. Specification Changes: May not be made after the date of bid.

1.05 Quality Assurance

A. Manufacturer: Company headquartered in the United States having U.S. manufacturing facility/ facilities specializing in manufacturing chain link fence products with at least 5 years experience; comply with Section 01 43 13.
B. Fence contractor: Company with demonstrated successful experience installing similar projects and products in accordance with ASTM F567 and have at least 5 years experience in accordance with the provisions of Section 01 43 23.
C. Tolerances: Current published edition of ASTM specifications tolerances apply. ASTM specification tolerances supersede any conflicting tolerance.

1.06 Delivery, Storage, and Handling

A. Delivery: Deliver products to site per the requirements of Section 01 65 00.
B. Storage: Store and protect products off the ground when required, Section 01 66 00

PART 2.00 - PRODUCTS

2.01 Manufacturers

A. Framework, posts, rails, fabric, and fittings for chain link fence system:
MERCHANTS METALS®
www.merchantsmetals.com
Tech-Info@merchantsmetals.com
Phone: (888) 260-1600

2.02 Chain Link Fabric

A. Steel Chain Link Fabric: [Height or heights indicated on drawings] <Select from table below and insert ASTM serial designation, mesh size, wire gauge, coating specification, including class and color when applicable, top/bottom selvage >
1. **COLORBOND®** Polymer Coated Steel Fabric: ASTM F668, wire gauge specifi ed is that of the metallic coated steel core wire.
a. Class 1 extruded
b. Class 2a extruded and adhered
c. Class 2b fused and adhered
d. Color - choose one: [green] [brown] [black] in compliance with ASTM F934.
2. Fabric Selection Table: Steel chain link mesh sizes and gauges produced in one piece widths 3 feet (910 mm) to 12 feet (3660 mm)

3. Fabric selvage: Standard fabric selvage for 2 in (50 mm) mesh 72 in. (1.8 m) high and higher is knuckle finish at one end, twist at the other, [K&T]. < Specify K&K for added safety for play and park applications> Fabric less than 72 in (1.8 m), knuckle finish top and bottom, K&K. [Manufacturing and installation issues dictate all mesh sizes less than 2 in. (50 mm) have a knuckle selvage for both top and bottom, K&K.]

2.03 Round Steel Pipe Fence Framework [Specify option A. or B.]

A. Round steel pipe and rail: Schedule 40 standard weight pipe, in accordance with ASTM F1083, 1.8 oz/ ft² (550 g/m²) hot dip galvanized zinc exterior and 1.8 oz/ft² (550 g/m²) hot dip galvanized zinc interior coating. {Specify Grade: Regular or High Strength] Regular Grade: Minimum steel yield strength 30,000 psi (205 MPa) High Strength Grade: Minimum yield strength 50,000 psi (344 MPa)
1. Line post <Insert outside diameter, zinc coating, weight >
2. End, Corner, Pull post <Insert outside diameter, zinc coating, weight >
3. Top, brace, bottom and intermediate rails, 1.660 in. (42.2 mm) OD: <Insert outside diameter, zinc coating, weight>
B. Round steel pipe and rail: Cold-rolled electric-resistance welded pipe in accordance with ASTM F1043 Materials Design Group IC **(LG-40)**, minimum steel yield strength 50,000 psi (344 MPa). Type B external coating, hot dip galvanized zinc 0.9 oz/ ft² (305 g/m²) with a clear polymeric overcoat, Type D interior 90% zinc-rich coating having a minimum thickness of 0.30 mils (0.0076 mm).

1. Line post <Insert outside diameter, weight>
2. End, Corner, Pull post < Insert outside diameter, weight>
3. Top, brace, bottom and intermediate rails, 1.660 in. (42.2 mm) OD: <Insert, outside diameter, weight>

C. Typical post and rail size for normal Commercial / Industrial applications

D. **COLORBOND®** Polymer Coated Pipe: Polymer coated pipe shall have a [PVC or Polyester] coating fused and adhered to the exterior zinc coating of the galvanized pipe in accordance with ASTM F1043. The minimum thickness of the PVC coating shall be 10-mils (0.254 mm), for polyester 3 mils (0.0076 mm). Color to match fabric [green] [brown] [black] per ASTM F934.

Framework Wind Load Caution:
Fences containing windscreens or privacy slats and fences greater than 8 feet (2.4 m) in height using, 1 in. (25 mm) mesh or smaller - recommend a wind load force analysis for post selection and post spacing. See Chain Link Manufactures Institute – Wind Load Guide CLFMI: WLG 2445. A interactive Wind load Fence Post Calculator is available at www.wheatland.com]

2.04 Tension Wire

A. **COLORBOND®** Polymer Coated Steel Tension Wire: 7 gauge core (0.177 in.) (4.50 mm) wire complying with ASTM F1664. [Match coating class and color to that of the chain link fabric] <Insert material coating class and color>
1. Class 1, extruded
2. Class 2a, extruded and adhered
3. Class 2b, fused and adhered

2.05 Barbed Wire

A. **COLORBOND®** Polymer Coated Barbed Wire: Comply with ASTM F1665, 14 gauge (0.80 in) (2.03 mm) double twisted galvanized steel strand core wire; zinc coated steel or aluminum alloy four point, 14 gauge (0.080 in.) (2.03 mm) barbs spaced 5 inches (127 mm) on center <Match strand wire coating class and color to the chain link fabric> <Barbs are not polymer coated> <Insert strand wire class coating and color>
1. Class 1, extruded
2. Class 2a, extruded and adhered
3. Class 2b, fused and adhered

2.06 Fittings

A. Tension and Brace Bands: Galvanized pressed steel complying with ASTM F626, minimum steel thickness of 12 gauge (0.105 in.) (2.67 mm), minimum width of 3/4 in. (19 mm) and minimum zinc coating of 1.20 oz/ft² (366 g/m²). Secure bands with 5/16 in. (7.94 mm) galvanized steel carriage bolts.

B. Terminal Post Caps, Line Post Loop Tops, Rail and Brace Ends, Boulevard Clamps, Rail Sleeves: In compliance to ASTM F626, pressed steel galvanized after fabrication having a minimum zinc coating of 1.20 oz/ft² (366 g/m²).

C. Truss Rod Assembly: In compliance with ASTM F626, 3/8 in. (9.53 mm) or 5/16" (7.94 mm) diameter steel truss rod with a pressed steel tightener, minimum zinc coating of 1.2 oz/ft² (366 g/m²), assembly capable of withstanding a tension of 2,000 lbs. (970 kg).

D. Tension Bars: In compliance with ASTM F626. Galvanized steel one-piece length 2 in. (50 mm) less than the fabric height. Minimum zinc coating 1.2 oz. /ft² (366 g/m²).

- *[Bars for 2 in. (50 mm) and 1 ¾ in. (44 mm) mesh shall have a minimum cross section of 3/16 in. (4.8 mm) by 3/4 in. (19 mm)]
- *[Bars for 1 in. (25 mm) mesh shall have a cross section of 1/4 in. (6.4 mm) by 3/8 in. (9.5 mm)]
- *[Small mesh 3/8 in. (10 mm), 1/2 in. (13 mm) and 5/8 in. (16 mm) shall be attached (sandwiched) to the terminal post using a galvanized steel strap having a minimum cross section of 2 in. (51 mm) by 3/16 in. (4.8 mm) with holes spaced 15 in. (381 mm) on center to accommodate 5/16 in. (7.9 mm) carriage bolts which are to be bolted thru the strap the mesh and thru the terminal post.]

E. Barbed Wire Arms: In compliance with ASTM F626, pressed steel galvanized after fabrication, minimum zinc coating of 1.20 oz. /ft² (366 g/m²), capable of supporting a vertical 250 lb (113 kg) load. [Type I – three strand 45 degree (0.785 rad) arm] [Type II – three strand vertical arm] [Type III – "V" shaped six strand arm]

F. **COLORBOND®** [Polymer Coated Color Fittings: In compliance with ASTM F626, minimum coating thickness 0.006 in. (0.152 mm) fused and adhered to the zinc coated fittings] [Match color to fence system]

2.07 Tie Wire & Hog Rings

1. Basic commercial / industrial applications - specify 9 gauge core aluminum alloy ties and hog rings per ASTM F626.
2. Added security or fence containing privacy slats specify 9 gauge core (0.148) (3.76 mm) steel Galvanized Before Weave (GBW) with preformed power fastened wire ties and preformed hog rings having minimum zinc coating 1.20 oz/ft² (366 g/m²) per ASTM F626.
3. Polymer coated **COLORBOND®**, match the coating, class and color to that of the chain link fabric>

2.08 Swing Gates

A. Swing Gates: Galvanized steel pipe welded fabrication in compliance with ASTM F900. Gate frame members 1.900 in. OD (48.3 mm) <Insert pipe specification> [ASTM F 1083 schedule 40 galvanized steel pipe] or [ASTM F1043 Group IC (LG-40) galvanized steel pipe] Frame members spaced no greater than 8 ft. (2440 mm) apart vertically and horizontally. Welded joints protected by applying zinc-rich paint in accordance with ASTM Practice A780. Positive locking gate latch, pressed steel galvanized after fabrication. Galvanized malleable iron or heavy gauge pressed steel post and frame hinges. Provide lockable drop bar and gate holdbacks with double gates. <Match gate fabric to that of the fence system> Gateposts per ASTM F1083 schedule 40 galvanized steel pipe. <Select the gatepost diameter from table 2.9 B> <Insert diameter and weight> <COLORBOND® Polymer coated gate frames and gateposts; match the coating type and color to that specified for the fence framework. Moveable parts such as hinges, latches and drop rods may be field coated using a liquid polymer touch up> <electrically operated gates must comply with ASTM F2200 and UL325>

B. Gateposts: Regular Grade ASTM F1083 Schedule 40 pipe

Gate fabric height up to and including 6 ft. (1.2m)		
Gate leaf width	**Post Outside Diameter**	**Weight**
up to 4 ft. (1.2 m)	2.375 in. (60.3 mm)	3.65 lb/ft (5.4 kg/m)
over 4 ft. to 10 ft. (1.2 to 3.05 m)	2.875 in. (73.0 mm)	5.79 lb/ft (8.6 kg/m)
over 10 ft. to 18 ft. (3.05 to 5.5 m)	4.000 in. (101.6 mm)	9.11 lb/ft (13.6 kg/m)
Gate fabric height over 6 ft. to 12 ft. (1.2 to 2.4m)		
Gate leaf width		
up to 6 ft. (1.8 m)	2.875 in. (73.0 mm)	5.79 lb/ft (8.6 kg/m)
over 6 ft. to 12 ft. (1.8 to 3.7 m)	4.000 in. (101.6 mm)	9.11 lb/ft (13.6 kg/m)
over 12 ft. to 18 ft. (2.4 to 5.5 m)	6.625 in. (168.3 mm)	18.97 lb/ft (28.2 kg/m)
over 18 ft. to 24 ft. (5.5 to 7.3 m)	8.625 in. (219.1 mm)	28.58 lb/ft (42.5 kg/m)

2.09 Horizontal Slide Gates

A. Cantilever Slide Gates: **SECURE-TRAC®** Made in accordance with ASTM F 1184 Type II Class 2, and in compliance with UL-325, and ASTM 2200. (No substitution) Gate to be made of Aluminum Alloy 6005A-T61. All square members are 2" sq. weighing 0.94 lb/FT (139 kg/m). Complete frame welded to top one piece track and 4" x 2" bottom rail weighing 1.71 lbs./ft. (2.54 kg/m) Supply 2 truck assemblies that are swivel type having lubricated and scaled ball bearing wheels that will align in the track during all normal operations of the gate. Gates 31'0" (9449 mm) through 40'0" (12192 mm) dual top tracks and two additional truck assemblies. For gates over 40’0” (12192 mm), contact Merchants Metals for custom drawings and specs.
B. Chain Link 2” Fabric: **COLORBOND®** Thermally Fused & Adhered 2b PVC.
C. Finish - choose one: Natural Aluminum or Polymer coated horizontal slide gates and posts shall match the coating type and color as that specified for the fence framework, available colors - black, green, or brown.
D. Gateposts, 4” O.D. (101.6 mm) schedule 40 weighing 9.11 lb/ft (13.6 kg/m). Single gates with single tracks require 3 gate posts. (1 latch post and 2 support posts) Single gates with dual tracks require 5 gate posts. (1 latch and 2 dual support posts) Double gates require twice the number of support posts but do not have a latch post.
E. Electrically operated horizontal slide gates must be manufactured and installed to comply with the safety requirements of ASTM F2200 and UL 325.

2.10 Concrete: Concrete for post footings shall have a 28-day compressive strength of 2,500 psi.

PART 3.00 - EXECUTION

3.01 Clearing Fence Line:
Surveying, clearing, grubbing, grading and removal of debris for the fence line or any required clear areas adjacent to the fence <Insert project requirement> [is included in the earthwork contractor’s

contract under the provisions of Division 31 - Earthwork.] [is not included in the earthwork contractor's contract and is the responsibility of the fence contractor in accordance with the provisions of Division 31 - Earthwork.] The contract drawings indicate the extent of the area to be cleared and grubbed.

3.02 Framework Installation Posts:

A. Posts shall be set plumb in concrete footings in accordance with ASTM F567. Minimum footing depth, 24 in. (609.6 mm) plus an additional 3 in. (76.2 mm) depth for each 1 ft. (305 mm) increase in the fence height over 4 ft. (1220 mm). Minimum footing diameter four times the largest cross section of the post up to a 4.00" (101.6 mm) dimension and three times the largest cross section of post greater than a 4.00" (101.6 mm) dimension. <Insert footing depth and diameter> <**Local codes, site soil conditions, local frost depth, fence height and wind load may require larger diameter or deeper footings - See Chain Link Manufactures Institute – Product Guide and Wind Load Guide CLFMI: WLG 2445**> Top of concrete footing to be [at grade crowned to shed water away from the post or 6 inches (152 mm) below grade] <Insert footing grade requirement> crowned to shed water away from the post. Line posts installed at intervals not exceeding 10 ft. (3.05 m) on center.
B. Top rail: When specified, install 21 ft. (6.4 m) lengths of rail continuous thru the line post or barb arm loop top. Splice rail using top rail sleeves minimum 6 in. (152 mm) long. Rail shall be secured to the terminal post by a brace band and rail end. Bottom rail or intermediate rail shall be field cut and secured to the line posts using boulevard clamps or brace band with rail end. <Fences 12 feet (3.66 m) high or higher require mid rail>
C. Terminal posts: End, corner, pull and gate posts shall be braced and trussed for fence 6 ft. (1.8 m) and higher and for fences 5 ft. (1.5 m) in height not having a top rail. The horizontal brace rail and diagonal truss rod shall be installed in accordance with ASTM F567.
D. Tension wire: Shall be installed 4 in. (101.6 mm) up from the bottom of the fabric. Fences without top rail shall have a tension wire installed 4 in. (101.6 mm) down from the top of the fabric. Tension wire to be stretched taut, independently and prior to the fabric, between the terminal posts and secured to the terminal post using a brace band. Secure the tension wire to each line post with a tie wire. <Install the top tension wire through the barb arm loop for fences having barbed wire and no top rail.>

3.03 Chain Link Fabric Installation:

Install fabric to [outside or inside] of the framework maintaining a ground clearance of no more than 2 inches (50 mm). Attach fabric to the terminal post by threading the tension bar through the fabric; secure the tension bar to the terminal post with tension bands and 5/16 in. (7.94 mm) carriage bolts spaced no greater than 12 inches (304.8mm) on center. Small mesh fabric less than 1 in. (25 mm), attach to terminal post by sandwiching the mesh between the post and a vertical 2 in. wide (50mm) by 3/16 in. (4.76 mm) galvanized steel strap using carriage bolts, bolted thru the bar, mesh and post spaced 15 in. (381 mm) on center. Chain link fabric to be stretched taut free of sag. Fabric to be secured to the line post with tie wires spaced no greater than 12 inches (304.8 mm) on center and to horizontal rail spaced no greater than18 inches (457.2 mm) on center. [Aluminum alloy tie wire shall be installed following ASTM F567: Wrap the tie around the post or rail and attached to a fabric wire picket on each side of the post or rail by twisting the tie wire around the fabric wire picket two full turns, cut off excess wire and bend over to prevent injury.] [Preformed 9 gauge power-fastened wire ties shall be installed following ASTM F626: Wrap the tie a full 360° around the post or rail and fabric wire picket, using a variable speed drill, twist the two ends together three full turns, cut off any excess wire and bend over to prevent injury.] Secure the fabric to the tension wire by crimping hogs rings around a fabric wire picket and tension wire.

3.04 Barbed Wire Installation:

Stretched taut between terminal posts and secured in the slots provided on the line post barb arms. Attach each strand of barbed wire to the terminal post using a brace band. <Indicate type of barb arm, Type I, II or III and direction [inward] [outward] for installation of Type I arm. >

3.05 Gate Installation

A. Swing Gates: Installation of swing gates and gateposts in compliance with ASTM F 567. Direction of swing shall be [inward or outward.] Gates shall be plumb in the closed position having a bottom clearance of 3 in. (76 mm), grade permitting. Hinge and latch offset opening space shall be no greater than 3 in. (76 mm) in the closed position. Double gate drop bar receivers shall be set in a concrete footing minimum 6 in. (152 mm) diameter 24 in. (609.6 mm) deep. Gate leaf holdbacks shall be installed for all double gates.
   Electrically operated gates must be manufactured and installed in compliance with ASTM F2200 and UL 325.
B. Horizontal Slide Gates: Install according to manufacturer's instructions and in accordance with ASTM F567. Gates shall be plum in the closed position, installed to slide with an initial pull force no greater than 40 lbs. (18.14 kg). Double gate drop bar receivers to be installed in a concrete footing as required by site conditions and codes. Ground clearance shall be 3 in. (76 mm), grade permitting. Electrically operated gate installation must conform to ASTM F2200 and UL 325.

3.06 Nuts & Bolts:

Carriage bolts used for fittings shall be installed with the head on the secure side of the fence. All bolts shall be peened over to prevent removal of the nut.

3.07 Electrical Grounding:

Grounding of the fence and gates is not the responsibility of the fence contractor and not included in the fencing scope of work for this contract. Grounding, when required, shall be specified and included in Contract Section 33 79 00 Site Grounding. A licensed electrical contractor shall install grounding when required.

3.08 Clean Up:

The area of the fence line shall be left neat and free of any debris caused by the installation of the fence.

END OF SECTION 32310