PROJECT MANUAL FOR:

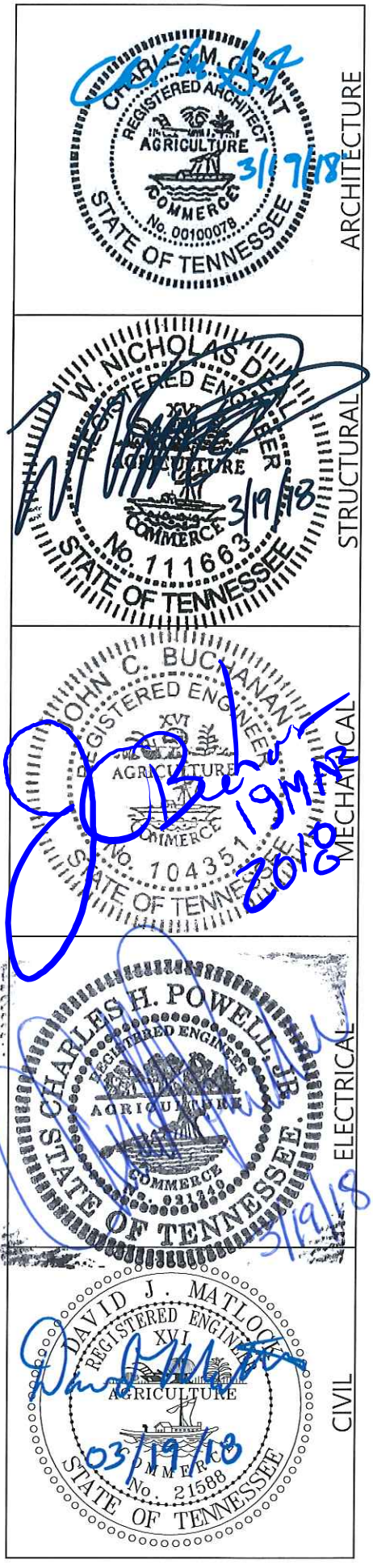
A NEW DEVELOPMENT FOR:

NET ZERO ENERGY BUILDING

130 MAVERICK CIRCLE
CLINTON, TN 37716

OWNER
ANDERSON COUNTY
100 N. MAIN ST.
CLINTON, TN 37716

COMM. NO. 180042.01
MARCH 19, 2018



PROFESSIONALS OF RECORD:
CHARLES M. GRANT, AIA – ARCHITECT
Phone No. 865-584-0999
W. NICHOLAS DEAL, PE – STRUCTURAL ENGINEER
Phone No. 865-584-0999
JOHN BUCHANAN, PE – MECHANICAL ENGINEER
Phone No. 865-584-0999
CHARLES H. POWELL Jr., PE – ELECTRICAL ENGINEER
Phone No. 865-584-0999
DAVID MATLOCK, PE – CIVIL ENGINEER
Phone No. 865-584-0999

Michael Brady Inc.

299 N WEISGARBER RD, KNOXVILLE, TN 37919
865-584-0999 / Fax 865-584-5213
www.michaelbradyinc.com
mbi@mbiarch.com

SET NO. _____

KNOXVILLE, TENNESSEE

A NEW DEVELOPMENT FOR:

ANDERSON CO. HIGH SCHOOL
NET ZERO ENERGY BUILDING

130 MAVERICK CIRCLE, CLINTON, TN 37716

TABLE OF CONTENTS **PAGE**

SECTION 00 01 15 - LIST OF CONTRACT DRAWINGS

The following drawings, identified as “A New Development For: Anderson Co. High School Net Zero Energy Building, 130 Maverick Circle, Clinton, TN 37716”, comprise the list of Contract Drawings:

CVR COVER SHEET

Civil and Site Engineering
C0.1 CIVIL LEGENDS AND NOTES
C1.0 EROSION PREVENTION AND SEDIMENT CONTROL PLAN
C3.0 SITE LAYOUT, GRADING, AND UTILITY PLAN
C4.0 FIRE HYDRANT EXHIBIT
C8.0 CIVIL DETAILS
C8.1 CIVIL DETAILS

Architectural
A0.4 LIFE SAFETY PLAN
A1.1 FLOOR PLANS, ARCHITECTURAL & STRUCTURAL NOTES
A1.2 STRUCTURAL NOTES
A2.1 DOOR SCHEDULE, DOOR / FRAME ELEVATIONS AND DETAILS
A3.1 ROOF PLAN, REFLECTED CEILING PLAN NOTES AND DETAILS
A4.1 EXTERIOR ELEVATIONS & NOTES
A5.1 BUILDING SECTION

Mechanical
M0.1 MECHANICAL LEGENDS, SPECIFICATIONS, AND NOTES
M1.1 FLOOR PLAN - HVAC
P0.1 PLUMBING LEGEND AND NOTES
P1.1 FLOOR PLAN, DETAILS, SCHEDULES - PLUMBING

Electrical Engineering
E0.1 ELECTRICAL LEGEND AND GENERAL NOTES
E1.1 FLOOR PLAN - ELECTRICAL
E4.1 RISER DIAGRAM, PANELBOARD SCHEDULE, AND LIGHTING FIXTURE SCHEDULE
ES1.1 SITE PLAN - ELECTRICAL

End of Section

Anderson County Government

Request for Bids

100 North Main Street, Suite 214
Courthouse
Clinton, Tennessee 37716
(865) 457-6218 Office
(865) 457-6252 Fax

purchasing@andersontn.org
http://andersontn.org/purchasing

Bid No.: 4816

Date Issued: March 19, 2018

Bids will be received until 2:30 p.m. Eastern Time on April 19, 2018

Sealed bids are subject to the ***General Terms and Conditions*** of this bid, and any other data attached or incorporated by reference. Bids will be received in the Anderson County Purchasing Office until the date and time specified above, and at that time publicly opened and read aloud.

ANDERSON COUNTY RESERVES THE RIGHT TO WAIVE ANY INFORMALITIES IN OR TO REJECT ANY OR ALL PROPOSALS AND TO ACCEPT THE PROPOSAL DEEMED FAVORABLE AND IN THE BEST INTEREST OF ANDERSON COUNTY.

_____
Natalie Erb, Director of Finance

BID DESCRIPTION

Bid for a net-zero building at Anderson County High School. A mandatory pre-bid meeting will be held on April 3, 2018 at 10:00 am at Anderson County High School.

All vendors are to submit one (1) original and two (2) exact copies of their response.

STATE OF TENNESSEE CONTRACTORS' LICENSE LAW (T.C.A. 62-6-119) b): Bids for which the total cost of the project is twenty-five thousand dollars ($25,000) or more, the outside of the sealed bid envelope/package containing the bid provides the following information: the Company Name, the Contractor's license number, license classification, the date of the license expiration and that part of each license classification applying to the bid. In addition, each heating ventilation or air conditioning, plumbing and electrical subcontractor's license number, date of the license expiration and that part of each classification applying to the bid if the value of the work is $25,000 or greater, must be notated. If the value of either the contractor or the subcontractor's work is less than $25,000, the bid envelope/package containing the bid is to be notated with the phrase "Contractor or Subcontractor's Bid is Less than $25,000" after each appropriate heading. In the case of joint ventures, each party submitting the bid must provide this information. If no subcontractors are being used, the outside of the envelope/package containing the bid must state, "No Subcontractors are being used on this project."

Contact Purchasing in writing with any questions. Refer to General Terms and Conditions Section 1.2.

General Terms and Conditions

BID ENVELOPE SUBMISSION INSTRUCTIONS:

Bids are to be received in a sealed envelope/package with the bid number, company name and opening date clearly marked. Failure to comply may result in rejection of the entire bid. Anderson County will not be responsible for any lost or misdirected mail. Late bids, e-mailed bids and faxed bids will not be considered nor returned. It is the sole responsibility of the bidder to ensure their bid is delivered to the Purchasing Department. Late bids will not be considered.

Please note that Anderson County Government does not receive a guaranteed delivery time for express mail and/or packages. PLEASE MAIL ACCORDINGLY**.**

ANDERSON COUNTY PURCHASING DEPARTMENT
100 NORTH MAIN STREET, SUITES 214 AND 218
CLINTON, TN 37716

Email: purchasing@andersontn.org
Website: http://andersontn.org/purchasing

(865) 457-6218 Phone
(865) 457-6252 Fax

Bid documents must be completed in ink or typed, signed in ink, and free from alterations, erasures or mark-throughs.

SECTION 1 - GENERAL TERMS AND CONDITIONS

1.1 ALTERATIONS OR AMENDMENTS: Alterations, amendments, changes, modifications or additions to this solicitation shall not be binding on Anderson County without prior written approval.

1.2 NO CONTACT POLICY: After vendor receives a copy of this bid, any contact initiated by any vendor with any Anderson County representative, other than the Purchasing Department, concerning this invitation for bid is prohibited and agreements made thereto will not be considered binding on Anderson County. Any such unauthorized contact may cause the disqualification of the bidder from this procurement transaction.

1.3 QUESTIONS: Pursuant to TCA §12-4-113, questions regarding the specifications or bid procedures must be received by the Purchasing Agent and/or designer no less than ninety-six (96) hours before the bid opening date. No addenda within less than forty-eight (48) hours of the bid opening date shall be permitted. Any questions concerning the bid document must be submitted to purchasing@andersontn.org no less than ninety-six (96) hours before bid opening date.

1.4 BID CLOCK: The bid/time clock in the Anderson County Purchasing office will be the time of record.

1.5 TAXES: Anderson County is not liable for Federal excise or State sales tax. Tax exemption certificates will be provided upon request.

1.6 CONFLICT OF INTEREST: If requested by the Purchasing Agent, vendors must complete and submit a "Conflict of Interest Affidavit Statement" prior to contract award, see T.C.A. 5-14-114 and T. C. A. 12-4-101.

1.7 NON-COLLUSION: Vendors, by submitting a signed bid, certify that the accompanying bid is not the result of, or affected by, any unlawful act of collusion with any other person or company engaged in the same line of business or commerce, or any other fraudulent act punishable under Tennessee or United States law.

1.8 NON-DISCRIMINATION: Contracted vendors will not discriminate against any employee or applicant for employment because of race, religion, sex, national origin or disability except where religion, sex, national origin or disability is a bona fide occupational qualification reasonably necessary to the normal operation of the contractor.

1.9 SAME AS OR EQUIVALENT TO: Vendors are to bid as specified herein or propose an approved equal. Determination of equality is solely Anderson County's responsibility. Any designated brands are for reference purpose only, not a statement of preference. When an alternate manufacturer, brand, model or make is bid, Anderson County will determine if the item bid meets or exceeds the items as specified. If the bidder does not indicate that an alternate manufacturer, brand, model or make is being bid, it is understood that the item(s) bid are the same manufacturer, brand, model or make as requested in the Invitation to Bid. Comparable products of other manufacturers will be considered if proof of comparability is contained in the bid submission. It shall be the responsibility of the vendors, including vendors whose product is referenced to furnish upon request catalog pages, brochures or other data to provide an adequate basis for determining the quality and functional capabilities of the product offered. Failure to provide this data may be considered valid justification for rejection of bid.

1.10 MULTIPLE BIDS/AWARDS: Anderson County may consider multiple bid awards.

1.11 STATE OF TENNESSEE CONTRACTORS' LICENSE LAW (T.C.A. 62-6-119) b): Bids for which the total cost of the project is twenty-five thousand dollars ($25,000) or more, the outside of the sealed bid envelope/package containing the bid provides the following information: the Company Name, the Contractor's license number, license classification, the date of the license expiration and that part of each license classification applying to the bid. In addition, each heating ventilation or air conditioning, plumbing and electrical subcontractor's license number, date of the license expiration and that part of each classification applying to the bid if the value of the work is $25,000 or greater, must be notated. If the value of either the contractor or the subcontractor's work is less than $25,000, the bid envelope/package containing the bid is to be notated with the phrase "Contractor or Subcontractor's Bid is Less than $25,000" after each appropriate heading. In the case of joint ventures, each party submitting the bid must provide this information. If no subcontractors are being used, the outside of the envelope/package containing the bid must state, "No Subcontractors are being used on this project."

1.12 ACCEPTANCE: Vendors shall hold their price firm and subject to acceptance by Anderson County for a minimum period of sixty (60) working days from the date of the bid opening, unless otherwise indicated in their bid. Any or all bids may be rejected for good cause.

1.13 BID AWARDS: Bids will be awarded to the lowest and best bidder, taking into consideration the qualities of the articles to be supplied, their conformity with specifications and their suitability to the requirements of Anderson County and the delivery terms. Anderson County also reserves the right to not award this bid.

1.14 PROTEST: Any vendor wishing to protest the bid award shall notify in writing the Anderson County Purchasing Agent and the County Law Director, 101 S. Main Street, Suite 310, Clinton, TN 37716. No protest will be accepted, except those protests made in writing and received within (10) ten calendar days of the bid award. Protests must be in writing and envelopes/package containing protest must be clearly marked with bid number and words "BID PROTEST". The Purchasing Agent, in conjunction with the Purchasing Committee, and with the advice and counsel of the County Law Director, shall review and make a final decision as to any bid protest. Appeals shall be filed in the Circuit or Chancery Courts of Anderson County within sixty (60) days of the final decision.

VENDORS PLEASE NOTE: ANDERSON COUNTY WILL NOT STOP THE PURCHASE PROCESS. THE PURCHASE MAY BE COMPLETED OR THE PROJECT MAY BE RE-BID WHILE THE PROTEST PROCEDURE IS STILL IN OPERATION. IF A RE-BID IS MADE, THE PROTESTING VENDOR SHOULD SUBMIT A NEW BID. OTHERWISE, THEY WILL BE WITHOUT A BID ON THE RE-BID. FURTHER, THE RE-BIDDING WILL NOT END THE APPEALS PROCESS. IT WILL CONTINUE UNTIL A FINAL DECISION IS REACHED OR THE COMPLAINANT WITHDRAWS THE APPEAL.

1.15 DELIVERY: Bid pricing is to include complete supply and delivery to Anderson County, Tennessee. Vendors are to state the delivery time in the bid. Anderson County requires that vendors deliver all products "free on board" to final destination unless indicated otherwise in the bid requirements.

1.16 PROOF OF FINANCIAL AND BUSINESS CAPABILITY: Bidders must, upon the request of Anderson County, provide satisfactory evidence of their ability to furnish products or services in accordance with the terms and conditions of these specifications. Anderson County will make the final determination as to the bidder's ability.

1.17 VENDOR'S DEFAULT: Anderson County reserves the right, in case of vendor default, to procure the articles or services from other sources and hold the defaulting vendor responsible for any excess costs occasioned thereby.

1.18 DUPLICATE COPIES: Vendors are to submit one original and at least one exact copy of their bids, including brochures; unless additional copies are requested in bid specifications.

1.19 DRUG-FREE WORKPLACE: Under the provisions of Tennessee Code Annotated §50-9-113 enacted by the General Assembly effective 2001, all employers with five (5) or more employees who contract with either the state or a local government to provide construction services are required to submit an affidavit stating that they have a drug free workplace program that complies with Title 50, Chapter 9, in effect at the time of submission of a bid at least to the extent required of governmental entities. The statute imposes other requirements on the contractor and contractors should consult private legal counsel if legal questions arise under this section or any other provision of this document. All contractors with five (5) or more employees that will be providing construction services are to return the provided written affidavit signed by the principal officer of a covered employer acknowledging that the contracting entity is in compliance with the Drug Free Workplace laws of State of Tennessee.

1.20 RESTRICTIVE OR AMBIGUOUS SPECIFICATIONS: It is the responsibility of the bidder to review the entire Invitation to Bid document and to notify the Purchasing Department if the Invitation to Bid is formulated in a manner that would unnecessarily restrict competition or if it is ambiguous in what is being requested. The Purchasing Agent must receive questions regarding the specifications or bid procedures no less than ninety-six (96) hours prior to the time set for the bid opening.

1.21 SCHOOL CAFETERIA BIDS: If this bid is for Anderson County School's Cafeteria Food Service Department, bidders must be in compliance with Section 104(d) of the William F. Goodling Child Nutrition Reauthorization Act of 1998 which requires school and institutions participating in the National School Lunch Program (NSLP) and School Breakfast Program (SBP) to "Buy American" to the maximum extent practicable.

1.22 TERMINATION: Anderson County reserves the right to terminate contracts in whole or in part with thirty (30) days written notification to the contractor. In the event of termination, the County shall not be liable for any costs other than the cost of services performed and materials delivered and accepted prior to termination date.

1.23 OSHA SAFETY: The Vendor is responsible for training their employees in Safety and Health Regulations for the job, assuring compliance with Tennessee Occupational Safety and Health regulations and any other Regulatory Agency.

1.24 PERFORMANCE BOND: A standard surety or performance bond or an irrevocable letter of credit in favor of Anderson County Government at a federally insured financial institution will be required to be submitted with bid, if indicated in section four, item six insurance requirement checklist.

1.25 BACKGROUND CHECKS: Contractors shall comply with Public Chapter 587 of 2007, as codified in Tennessee Code Annotated Section 49-5-413, which requires all contractors to facilitate a criminal history records check conducted by the Tennessee Bureau of Investigation and the Federal Bureau of Investigation for each employee prior to permitting the employee to have contact with students or enter school grounds when students are present.

1.26 AWARD RESULTS: As soon as practicable after proposal or bid evaluations, Anderson County shall post the award decision to Vendor Registry at www.vendorregistry.com. Individual notices are normally not mailed or e-mailed except to the successful vendor.

1.27 PRICE INCREASE/DELIVERY CHARGES: Request for price or delivery charge increases must in be received in writing 30-days prior to implementation. The Anderson County Purchasing Agent will review requests and make a determination to continue or cancel services.

1.28 INDEMNIFICATION/HOLD HARMLESS: Vendor shall indemnify, defend, save and hold harmless Anderson County and, its officers, agents and employees from all suits, claims, actions or damages of any nature brought because of, arising out of, or due to breach of the agreement by Vendor, its subcontractors, suppliers, agents, or employees or due to any negligent act or occurrence or any omission or commission of Vendor, its subcontractors, suppliers, agents or employees.

1.29 DECLARATIVE STATEMENT: Any statement or words (i.e.: must, shall, will, etc.) are declarative statements and the proposer must comply with the condition. Failure to comply with any such condition may result in their bid being non-responsive and disqualified.

1.30 WAIVING OF INFORMALITIES: Anderson County reserves the right to waive minor informalities or technicalities when it is in the best interest of Anderson County.

1.31 APPROPRIATION: Funding for multi-year contracts are subject to budget appropriations. In the event no funds are appropriated by Anderson County for the goods or services in any fiscal year or insufficient funds exist to purchase the goods or services of a contract, then that contract shall expire upon the expenditure of previously appropriated funds or the end of the current fiscal year, whichever occurs first, with no further obligations owed to or by either party.

1.32 ASSIGNMENT: Vendor shall not assign or sub-contract any agreement, its obligations or rights hereunder to any party, company, partnership, incorporation or person without the prior written specific consent of Anderson County.

1.33 QUANTITIES: Anderson County does not guarantee quantities to be purchased off this bid.

1.34 UNIT PRICE: In case of discrepancy between any unit price and an extended price, the unit price will be presumed to be correct, subject, however, to correction to the same extent and in the same manner as any other mistake.

1.35 MODIFICATION OR WITHDRAWAL OF BIDS: When it is certain that a mistake has been made in the preparation of the bid, a request will be made to the bidder to confirm the bid. Provisions must be made so that mistakes can be taken care of and the ambiguity resolved satisfactorily. Bids may be modified or withdrawn by written notice received in the Purchasing Department prior to the time and date set for the bid opening. The changes or withdrawal of the bids shall be in writing and signed by an official of the company. The envelope containing the modification should clearly state “modification to bid.” Either the entire bid or a particular item may be withdrawn or modified in this manner.

1.36 PRE-BID CONFERENCES: Attendance at Pre-bid Conferences is mandatory. When deemed necessary a Mandatory Pre-bid Conference will be held. A company representative MUST be in attendance and sign the Pre-bid sign-in sheet in order to be considered for bid award.

1.37 ADDENDUM: § T.C.A. 12-14-113 Anderson County Government reserves the right to amend this solicitation by addendum. Addenda will be posted to the vendor registry up to 48 hours in advance of the bid/proposals due date and time. It is the bidder's responsibility to check the website for addendum. If in the County's opinion revisions are of such a magnitude, the deadline for this solicitation may be extended in an addendum. Addenda may change specifications, reply sheets, and times and dates for pre-bid meetings as well as due dates/deadlines for questions and bids/proposals.

1.38 OWNERSHIP: All bids, once received, become property of Anderson County Government and will not be returned.

1.39 WEATHER AND COURTHOUSE CLOSINGS: In the event of a situation severe enough to necessitate the closing of Anderson County Government offices during a planned bid opening, vendors will receive notification of the new date and time upon re-opening of county government offices. No bids will be opened until the rescheduled date for bid opening and all bidders/proposers whose submissions meet the extended deadline will be given equal consideration at that time. Anderson County shall not be liable for any commercial carrier's decision regarding deliveries during inclement weather.

1.40 IRAN DIVESTMENT ACT OF 2014: Pursuant to the Iran Divestment Act of 2014, Tenn. Code Ann. § 12-12-106 requires the State of Tennessee Chief Procurement Officer to publish, using creditable information freely available to the public, a list of persons it determines engage in investment activities in Iran, as described in § 12-12-105. Inclusion on this list makes a person ineligible to contract with Anderson County; if a person ceases its engagement in investment activities in Iran, it may be removed from the list. The State of Tennessee list is available here: http://tennessee.gov/generalservices/article/Public-Information-library.

AIA® Document A701™ – 1997

Instructions to Bidders

for the following PROJECT:
(Name and location or address)
A New Development for: Anderson Co. High School
Net Zero Energy Building, 130 Maverick Circle, Clinton, TN 37716

MBI Comm. No. 180042.01

THE OWNER:
(Name, legal status and address)
Anderson County
100 N. Main Street
Clinton, TN 37716

THE ARCHITECT:
(Name, legal status and address)
Michael Brady Inc.
299 N. Weisgarber Road
Knoxville, TN 37919

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

TABLE OF ARTICLES

ARTICLE 1 DEFINITIONS

§ 1.1 Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements consist of the Advertisement or Invitation to Bid, Instructions to Bidders, Supplementary Instructions to Bidders, the bid form, and other sample bidding and contract forms. The proposed Contract Documents consist of the form of Agreement between the Owner and Contractor, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications and all Addenda issued prior to execution of the Contract.

§ 1.2 Definitions set forth in the General Conditions of the Contract for Construction, AIA Document A201, or in other Contract Documents are applicable to the Bidding Documents.

§ 1.3 Addenda are written or graphic instruments issued by the Architect prior to the execution of the Contract which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.

§ 1.4 A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

§ 1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added or from which Work may be deleted for sums stated in Alternate Bids.

§ 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

§ 1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment or services or a portion of the Work as described in the Bidding Documents.

§ 1.8 A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.

§ 1.9 A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment or labor for a portion of the Work.

ARTICLE 2 BIDDER'S REPRESENTATIONS

§ 2.1 The Bidder by making a Bid represents that:

§ 2.1.1 The Bidder has read and understands the Bidding Documents or Contract Documents, to the extent that such documentation relates to the Work for which the Bid is submitted, and for other portions of the Project, if any, being bid concurrently or presently under construction.

§ 2.1.2 The Bid is made in compliance with the Bidding Documents.

§ 2.1.3 The Bidder has visited the site, become familiar with local conditions under which the Work is to be performed and has correlated the Bidder's personal observations with the requirements of the proposed Contract Documents.

§ 2.1.4 The Bid is based upon the materials, equipment and systems required by the Bidding Documents without exception.

ARTICLE 3 BIDDING DOCUMENTS

§ 3.1 COPIES

§ 3.1.1 Bidders may obtain complete sets of the Bidding Documents from the issuing office designated in the Advertisement or Invitation to Bid in the number and for the deposit sum, if any, stated therein. The deposit will be refunded to Bidders who submit a bona fide Bid and return the Bidding Documents in good condition within ten days after receipt of Bids. The cost of replacement of missing or damaged documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the Bidding Documents and the Bidder's deposit will be refunded.

§ 3.1.2 Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the Advertisement or Invitation to Bid, or in supplementary instructions to bidders.

§ 3.1.3 Bidders shall use complete sets of Bidding Documents in preparing Bids; neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

§ 3.1.4 The Owner and Architect may make copies of the Bidding Documents available on the above terms for the purpose of obtaining Bids on the Work. No license or grant of use is conferred by issuance of copies of the Bidding Documents.

§ 3.2 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

§ 3.2.1 The Bidder shall carefully study and compare the Bidding Documents with each other, and with other work being bid concurrently or presently under construction to the extent that it relates to the Work for which the Bid is submitted, shall examine the site and local conditions, and shall at once report to the Architect errors, inconsistencies or ambiguities discovered.

§ 3.2.2 Bidders and Sub-bidders requiring clarification or interpretation of the Bidding Documents shall make a written request which shall reach the Architect at least seven days prior to the date for receipt of Bids.

§ 3.2.3 Interpretations, corrections and changes of the Bidding Documents will be made by Addendum. Interpretations, corrections and changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon them.

§ 3.3 SUBSTITUTIONS

§ 3.3.1 The materials, products and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution.

§ 3.3.2 No substitution will be considered prior to receipt of Bids unless written request for approval has been received by the Architect at least ten days prior to the date for receipt of Bids. Such requests shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution including drawings, performance and test data, and other information necessary for an evaluation. A statement setting forth changes in other materials, equipment or other portions of the Work, including changes in the work of other contracts that incorporation of the proposed substitution would require, shall be included. The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

§ 3.3.3 If the Architect approves a proposed substitution prior to receipt of Bids, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

§ 3.3.4 No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

§ 3.4 ADDENDA

§ 3.4.1 Addenda will be transmitted to all who are known by the issuing office to have received a complete set of Bidding Documents.

§ 3.4.2 Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.

§ 3.4.3 Addenda will be issued no later than four days prior to the date for receipt of Bids except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

§ 3.4.4 Each Bidder shall ascertain prior to submitting a Bid that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

ARTICLE 4 BIDDING PROCEDURES

§ 4.1 PREPARATION OF BIDS

§ 4.1.1 Bids shall be submitted on the forms included with the Bidding Documents.

§ 4.1.2 All blanks on the bid form shall be legibly executed in a non-erasable medium.

§ 4.1.3 Sums shall be expressed in both words and figures. In case of discrepancy, the amount written in words shall govern.

§ 4.1.4 Interlineations, alterations and erasures must be initialed by the signer of the Bid.

§ 4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change."

§ 4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder's refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall make no additional stipulations on the bid form nor qualify the Bid in any other manner.

§ 4.1.7 Each copy of the Bid shall state the legal name of the Bidder and the nature of legal form of the Bidder. The Bidder shall provide evidence of legal authority to perform within the jurisdiction of the Work. Each copy shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further give the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached certifying the agent's authority to bind the Bidder.

§ 4.2 BID SECURITY

§ 4.2.1 Each Bid shall be accompanied by a bid security in the form and amount required if so stipulated in the Instructions to Bidders. The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and will, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty. The amount of the bid security shall not be forfeited to the Owner in the event the Owner fails to comply with Section 6.2.

§ 4.2.2 If a surety bond is required, it shall be written on AIA Document A310, Bid Bond, unless otherwise provided in the Bidding Documents, and the attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of the power of attorney.

§ 4.2.3 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until either (a) the Contract has been executed and bonds, if required, have been furnished, or (b) the specified time has elapsed so that Bids may be withdrawn or (c) all Bids have been rejected.

§ 4.3 SUBMISSION OF BIDS

§ 4.3.1 All copies of the Bid, the bid security, if any, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

§ 4.3.2 Bids shall be deposited at the designated location prior to the time and date for receipt of Bids. Bids received after the time and date for receipt of Bids will be returned unopened.

§ 4.3.3 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

§ 4.3.4 Oral, telephonic, telegraphic, facsimile or other electronically transmitted bids will not be considered.

§ 4.4 MODIFICATION OR WITHDRAWAL OF BID

§ 4.4.1 A Bid may not be modified, withdrawn or canceled by the Bidder during the stipulated time period following the time and date designated for the receipt of Bids, and each Bidder so agrees in submitting a Bid.

§ 4.4.2 Prior to the time and date designated for receipt of Bids, a Bid submitted may be modified or withdrawn by notice to the party receiving Bids at the place designated for receipt of Bids. Such notice shall be in writing over the signature of the Bidder. Written confirmation over the signature of the Bidder shall be received, and date- and time-stamped by the receiving party on or before the date and time set for receipt of Bids. A change shall be so worded as not to reveal the amount of the original Bid.

§ 4.4.3 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids provided that they are then fully in conformance with these Instructions to Bidders.

§ 4.4.4 Bid security, if required, shall be in an amount sufficient for the Bid as resubmitted.

ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 OPENING OF BIDS

At the discretion of the Owner, if stipulated in the Advertisement or Invitation to Bid, the properly identified Bids received on time will be publicly opened and will be read aloud. An abstract of the Bids may be made available to Bidders.

§ 5.2 REJECTION OF BIDS

The Owner shall have the right to reject any or all Bids. A Bid not accompanied by a required bid security or by other data required by the Bidding Documents, or a Bid which is in any way incomplete or irregular is subject to rejection.

§ 5.3 ACCEPTANCE OF BID (AWARD)

§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest qualified Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. The Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's own best interests.

§ 5.3.2 The Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the low Bidder on the basis of the sum of the Base Bid and Alternates accepted.

ARTICLE 6 POST-BID INFORMATION

§ 6.1 CONTRACTOR'S QUALIFICATION STATEMENT

Bidders to whom award of a Contract is under consideration shall submit to the Architect, upon request, a properly executed AIA Document A305, Contractor's Qualification Statement, unless such a Statement has been previously required and submitted as a prerequisite to the issuance of Bidding Documents.

§ 6.2 OWNER'S FINANCIAL CAPABILITY

The Owner shall, at the request of the Bidder to whom award of a Contract is under consideration and no later than seven days prior to the expiration of the time for withdrawal of Bids, furnish to the Bidder reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. Unless such reasonable evidence is furnished, the Bidder will not be required to execute the Agreement between the Owner and Contractor.

§ 6.3 SUBMITTALS

§ 6.3.1 The Bidder shall, as soon as practicable or as stipulated in the Bidding Documents, after notification of selection for the award of a Contract, furnish to the Owner through the Architect in writing:

- **.1** a designation of the Work to be performed with the Bidder's own forces;
- **.2** names of the manufacturers, products, and the suppliers of principal items or systems of materials and equipment proposed for the Work; and
- **.3** names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

§ 6.3.2 The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.

§ 6.3.3 Prior to the execution of the Contract, the Architect will notify the Bidder in writing if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, (1) withdraw the Bid or (2) submit an acceptable substitute person or entity with an adjustment in the Base Bid or Alternate Bid to cover the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited.

§ 6.3.4 Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

§ 7.1 BOND REQUIREMENTS

§ 7.1.1 If stipulated in the Bidding Documents, the Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Bonds may be secured through the Bidder's usual sources.

§ 7.1.2 If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid. If the furnishing of such bonds is required after receipt of bids and before execution of the Contract, the cost of such bonds shall be added to the Bid in determining the Contract Sum.

§ 7.1.3 If the Owner requires that bonds be secured from other than the Bidder's usual sources, changes in cost will be adjusted as provided in the Contract Documents.

§ 7.2 TIME OF DELIVERY AND FORM OF BONDS

§ 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than three days following the date of execution of the Contract. If the Work is to be commenced prior thereto in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section 7.2.1.

§ 7.2.2 Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond. Both bonds shall be written in the amount of the Contract Sum.

§ 7.2.3 The bonds shall be dated on or after the date of the Contract.

§ 7.2.4 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

ARTICLE 8 FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

Unless otherwise required in the Bidding Documents, the Agreement for the Work will be written on AIA Document A101, Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment Is a Stipulated Sum.

Additions and Deletions Report for
AIA® Document A701™ – 1997

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 15:04:59 on 03/23/2016.

PAGE 1

A New Development for: Anderson Co. High School Net Zero Energy Building, 130 Maverick Circle, Clinton, TN 37716

MBI Comm. No. 180042.01

...

Anderson County
100 N. Main Street
Clinton, TN 37716

...

(Name, legal status and address)
Michael Brady Inc.
299 N. Weisgarber Road
Knoxville, TN 37919

Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, , hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 15:04:59 on 03/23/2016 under Order No. 6605413564_1 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A701™ – 1997, Instructions to Bidders, as published by the AIA in its software, other than those additions and deletions shown in the associated Additions and Deletions Report.

_____

(Signed)

_____

(Title)

_____

(Dated)

SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

PART I GENERAL:

1.01 GENERAL:

A. The following amendments modify, change, delete from or add to the Instructions to Bidders (AIA Document A701, 1997 Edition). Where any part of the Instructions to Bidders is modified or voided by these amendments, the unaltered provisions of that part shall remain in effect.

1.02 BID SECURITY:

Bid security shall be in the form of a bid bond secured by a Surety Company or a Cashiers Check, and shall be in the amount of not less than five percent (5%) of the amount of the bid.

1.03 SUBMISSION OF BIDS:

In addition to the information listed in Subparagraph 4.3.1, the sealed envelope containing the bid shall be plainly marked on the outside with the bidding contractor's license number, date of expiration of the license, license limitation, and that part of license classification applying to the bid. If this information is not marked on the outside of the envelope, the Architect and the Owner are prohibited from opening and considering the bid by the requirements of The contractor's Licensing Act of 1976 enacted by the General Assembly of the State of Tennessee, as amended by Chapter 9 and Chapter 406 of the Public Acts of 1977. The names of the Mechanical and Electrical Subcontractors, License numbers and date of expiration of their licenses must be on the bid envelopes.

Notes: Bidders' attention is called to the provisions of the Contractor's Licensing Act that particular subcontractors (Electrical, Mechanical, HVAC, Masonry, Geothermal, etc.) must have a contractor's license if the aggregate amount of their subcontract is equal to or exceeds monetary limits enumerated in that Act for each subcontractor's trade.

1.04 CONTRACT FOR CONSTRUCTION:

The Contract for Construction of the Project will be executed on AIA Document A101, 2007 version.

1.05 PERFORMANCE AND LABOR AND MATERIALS PAYMENT BOND:

The successful bidder will be required to furnish a Performance Bond and a Labor and Materials Payment Bond in the amount of one hundred percent (100%) of the contract sum. Bonds shall be executed on AIA Document A311.

1.06 DEFINITIONS:

A All definitions set forth in the General Conditions of the Contract for Construction, AIA Document A-201 - 2007 Edition, are applicable to these Instructions to Bidders.

B Bidding documents include the Invitation to Bid, Instructions to Bidders, the Bid Forms, Agreement between Owner and Contractor and the proposed Contract Documents including any Addenda issued prior to receipt of Bids.

C Addenda are written or graphic instruments issued prior to the execution of the Contract which modify or interpret the bidding documents, including Drawings and Specifications, by additions, deletions, clarifications or corrections. Addenda will become part of the Contract Documents when the Construction Contract is executed.

D All correspondence concerning the bid process shall be addressed to the Architect.

E A Bid is a complete and properly signed proposal to do the Work or designated portion thereof for the sums stipulated therein, submitted in accordance with the Bidding Documents.

F The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base, to which work may be added or from which work may be deleted for sums stated in any Alternate Bids.

G A Bidder is a person or entity who submits a Bid.

H A Sub-Bidder is a person or entity who submits a bid to a Bidder for materials or labor for a portion of the Work.

1.07 EXAMINATION OF DOCUMENTS AND SITE:

A. Each Bidder, by making his Bid, represents that he has read and understands the Bidding Documents.

B. Each Bidder, by making his Bid, represents that he has visited the site and familiarized himself with the local conditions under which the Work is to be performed.

1. All Bidders are to comply with the visitation procedures at each location. Check in at the office to verify all conditions of visitation are met.

2. Bidders are encouraged to verify availability of building access prior to arrival.

3. School personnel and/or workers in the cafeteria are NOT authorized to change the scope of work. Any and all changes to the contract documents will be issued as addenda by the Architect or Engineer only.

C. Each Bidder, by making his Bid, represents that his Bid is based upon the materials, systems and equipment required by the Bidding Documents unless exceptions are noted on the Bid Form.

1.08 BIDDING PROCEDURES:

A. All Bids shall be prepared on the forms provided by the Owner and submitted in accordance with the Instructions to Bidders. The Owner will furnish Bidders with Bid Forms which will provide for the following Bid Items:

1. A single contract price for the Work as detailed and described in these Instructions.
2. Acknowledgment of Addenda.
3. Number of calendar days to complete project.
4. Subcontractors required to be listed by state law (See 1.03 above).
5. Completed Conflict of Interest Statement
6. Completed Background Check Compliance Form

B. A Bid is invalid if it has not been received at the designated location prior to the time and date for receipt of bids indicated in the Invitation to Bid, or prior to any extension thereof issued to the Bidders.

C. Unless otherwise provided in any supplement to these Instructions to Bidders, no bidder shall modify, withdraw or cancel his Bid or any part thereof for sixty (60) days after the time designated for the receipt of Bids in the Invitation to Bid.

D. Prior to the receipt of Bids, Addenda will be mailed or delivered to each person or firm recorded by the Architect and Engineer as having received the Bidding Documents. Addenda issued after receipt of Bids will be mailed or delivered only to the selected Bidder.

E. Bids shall not contain any recapitulation of the Work (except as noted on the Bid Form) to be done and no oral or telephone proposals or modifications will be considered.

F. The Bidder shall make no additional stipulations on the Bid Form or limit or qualify his Bid in any other manner. Bids so qualified will be subject to disqualification.

G. Only written instructions will be binding. The Architect or Engineer will not be responsible for any oral, telegraphic or telephonic instructions.

H. The names of all Subcontractors and material suppliers proposed to be employed shall be submitted for approval by the Owner before they are employed, and all such Subcontractors and material suppliers must be known to perform work of a high standard in their respective trades. If the Owner has reasonable objection to any such proposed person or entity, and notifies the Bidder in writing of such objection, the Bidder shall provide an acceptable substitute person or entity in accordance with Article 5.2 of the General Conditions.

1.09 DISCREPANCIES AND AMBIGUITIES:

A. Each Bidder shall examine the Bidding Documents carefully and, not later than ten (10) days prior to the date for receipt of Bids, shall make written request to the Architect or Engineer via email only, for interpretations or correction of any ambiguity, inconsistency or error therein which he may discover. The Architect or Engineer will issue any interpretation or correction as an Addendum. Only a written interpretation or correction by Addendum shall be binding. No Bidder shall rely upon any interpretation or correction given by any other method.

1.10 SUBSTITUTIONS:

A. Each Bidder represents that his Bid is based upon the materials and equipment described in the Bidding Documents.

B. Where products or systems are specified by naming only one manufacturer and no provisions for substitutions are listed, no substitutions are allowed. Where substitution provisions are listed, they will only be considered if approved by Addenda prior to Bidding.

1.11 QUALIFICATION OF BIDDERS:

A. Upon request, bidder shall submit a properly executed Contractor's Qualification Statement, AIA Document A-305 and properly documented experience record.

B. Bidders may be disqualified and their Bids not considered for any of the following specific reasons:

1. Failing to meet Bidder Qualifications and requirements contained herein (including submittal of required documentation prior to time and date indicated).
2. Reason for believing collusion exists among Bidders.
3. The Bidder being interested in any litigation against the Owner.
4. The Bidder being in arrears on any existing contract or having defaulted on a previous contract.
5. Lack of competency as revealed by the financial statement, experience and equipment, questionnaires, or qualification statement.
6. Uncompleted work which in the judgment of the Owner will prevent or hinder the prompt completion of additional work if awarded.

C. If required, a Bidder shall submit to the Owner a confidential Financial Statement in a sealed envelope.

End of Section

Bid Form - General Contract

TO: Anderson County Government
100 North Main Street
Clinton, TN 37716

DATED: _____, 2018

Having carefully examined the Invitation and Instructions to Bidders, the General Conditions of the Contract and Specifications entitled "A New Development For: Anderson Co. High School Net Zero Energy Building, 130 Maverick Circle, Clinton, TN 37716" and the drawings similarly entitled, as well as premises and conditions affecting the work, the Undersigned proposes to furnish all materials and labor called for by them for the work in accordance with said documents for the sum of:

_____Dollars ($_____).

hereinafter referred to as the Base Bid.

If written notice of the acceptance of this bid is mailed, emailed, or delivered to the Undersigned within sixty (60) days after the date of receipt of bids or at anytime thereafter before this bid is withdrawn, the Undersigned agrees that he will execute and deliver a Contract on the forms which will be provided him in accordance with bid as specified; and that he will give performance and payment bonds as specified with good and sufficient surety or sureties all within ten (10) days, unless a longer period is allowed after the prescribed forms are presented to him for signature.

The Bidder proposes to complete the work within _____ consecutive calendar days from the Notice to Proceed. The Bidder, by submitting this Bid, agrees to furnish labor, materials, plant, equipment, etc., necessary to complete the work by the above stated dates and to accept the conditions for liquidated damages in the amount of **One Hundred Dollars ($100.00)** per calendar day. The above stated dates for completion of this project are of utmost importance to the Owner.

The Undersigned hereby acknowledges receipt of all Contract Documents including all pages of the Specifications, all sheets of the Drawings, and the following Addenda:

Addendum No. ___ Date: _____ Addendum No. ___ Date: _____

Addendum No. ___ Date: _____ Addendum No. ___ Date: _____

Sincerely,

_____
Bidder Signature (If by a Corporation, this Bid must have the Signature required by its By-Laws)

_____
Printed Name

_____
Title

_____
Firm Name

_____
State of Incorporation

_____

_____
Official Address

End of Bid Form

BID ENVELOPE COVER

Anderson County Government,100 North Main Street, Rooms 214,Clinton, TN 37716

NAME OF PROJECT:
"A New Development For: Anderson Co. High School Net Zero Energy Building
130 Maverick Circle, Clinton, TN 37716"

BID OPENING DATE**:** _____

BIDDER/CONTRACTOR: _____

ADDRESS: _____

TENNESSEE CONTRACTOR'S LICENSE NUMBER: _____

LICENSE CLASSIFICATION: _____

DOLLAR LIMIT: _____

LICENSE EXPIRATION DATE: _____

SUBCONTRACTORS TO BE USED ON THIS PROJECT:

PLUMBING: _____ LICENSE #: _____

Address: _____

Classification: _____ Expiration Date: _____

HVAC: _____ LICENSE #: _____

Address: _____

Classification: _____ Expiration Date: _____

ELECTRICAL: _____ LICENSE #: _____

Address: _____

Classification: _____ Expiration Date: _____

MASONRY: _____ LICENSE #: _____

Address: _____

Classification: _____ Expiration Date: _____

GEOTHERMAL HEATING: _____ LICENSE #: _____

Address: _____

Classification: _____ Expiration Date: _____

Attachment 1
BID NUMBER: 4816, Net Zero Building for Anderson County High School

SECTION 1 - BID INFORMATION

Acknowledgment of Addenda:
(Write "Yes" if received)

Addenda 1_____ Addenda 2_____
Addenda 3_____ Addenda 4_____

Subcontractor Information (If applicable)

_____
Vendor Name

_____
Vendor Address

_____
City

_____
State Zip

Telephone Number_____

_____
Contact Person *(Please Print)*

_____
E-Mail Address

STATE OF TENNESSEE CONTRACTORS' LICENSE LAW (T.C.A. 62-6-119) b): Bids for which the total cost of the project is twenty-five thousand dollars ($25,000) or more, the outside of the sealed bid envelope/package containing the bid provides the following information: the Company Name, the Contractor's license number, license classification, the date of the license expiration and that part of each license classification applying to the bid. In addition, each heating ventilation or air conditioning, plumbing and electrical subcontractor's license number, date of the license expiration and that part of each classification applying to the bid if the value of the work is $25,000 or greater, must be notated. If the value of either the contractor or the subcontractor's work is less than $25,000, the bid envelope/package containing the bid is to be notated with the phrase "Contractor or Subcontractor's Bid is Less than $25,000" after each appropriate heading. In the case of joint ventures, each party submitting the bid must provide this information. If no subcontractors are being used, the outside of the envelope/package containing the bid must state, "No Subcontractors are being used on this project."

SECTION 2 - VENDOR INFORMATION

_____
Vendor Name

_____
Vendor Address

_____
City

_____
State Zip

Telephone Number_____

_____
Contact Person *(Please Print)*

_____
E-Mail Address

Taxpayer Identification Number, Social Security or Employer Identification Number:

_____

State of Tennessee Business License Number:
License # _____

I agree to abide by all Terms and Conditions of this Invitation to Bid and certify that I am authorized to sign this bid for the vendor. Failure to include any information mentioned in the bid or to comply with these bid instructions may result in rejection of your entire bid. Signing this form affirms that the original Invitation for Bid document has not been altered in any way.

Authorizing Signature:

_____
(**Please sign original in blue ink)**

Attachment 2

Non-Collusion Affidavit

- This Non-Collusion Affidavit is material to any contract awarded pursuant to this bid.
- This Non-Collusion Affidavit must be executed by the member, officer, or employee of the bidder who makes the final decision on prices and the amount quoted in the bid.
- Bid rigging and other efforts to restrain competition and the making of false sworn statements in connection with the submission of bids are unlawful and may be subject to criminal prosecution. The person who signs the affidavit should examine it carefully before signing and assure himself or herself that such statement is true and accurate, making diligent inquiry, as necessary, of all other persons employed by or associated with the bidder with responsibilities for the preparation, approval, or submission of the bid.
- In the case of a bid submitted by a joint venture, each party to the venture must be identified in the bid documents, and an affidavit must be submitted separately on behalf of each party.
- The term "complementary bid" as used in the affidavit has the meaning commonly associated with that term in the bidding process and includes the knowing submission of bids higher than the bid of another firm, an intentionally high or noncompetitive bid, and any other form of bid submitted for the purpose of giving a false appearance of competition.
- Failure to file an affidavit in compliance with these instructions may result in disqualification of the bid.

Non-Collusion Affidavit

STATE OF _____

COUNTY OF _____

I state that I am (Title) _____ of (Name of My Firm) _____ and that I am authorized to make this affidavit on behalf of my firm and its owners, directors, and officers. I am the person responsible in my firm to the price(s) and the amount of this bid.

I STATE THAT:

- The price(s) and amount of this bid have been arrived at independently and without consultation, communication, or agreement with any other contractor, bidder, or potential bidder.
- Neither the price(s) nor the amount of this bid and neither the approximate price(s) nor approximate amount of this bid, have been disclosed to any other firm or person who is a bidder or potential bidder, and they will not be disclosed before bid opening.
- No attempt has been made or will be made to induce any firm or person to refrain from bidding on this contract, or to submit a bid higher than this bid, or to submit any intentionally high or noncompetitive bid or other form of complementary bid.
- The bid of my firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive bid.
- (Name of My Firm) _____, its affiliates, subsidiaries, officers, directors, and employees are not currently under investigation by any governmental agency and have not in the last three years been convicted or found liable for any act prohibited by State of Federal law in any jurisdiction involving conspiracy or collusion with respect to bidding on any public contract, except as follows:
  _____
  _____

I state that (Name of My Firm) _____ understands and acknowledges that the above representation are material and important and will be relied on by Anderson County in awarding the contract(s) for which this bid is submitted. I understand and my firm understands that any misstatement in this affidavit is and shall be treated as fraudulent concealment from Anderson County of the true facts relating to submission of bids for this contract.

_____ _____
Representative's Signature Title

Sworn to and subscribed before me this _____ day of _____, _____.

_____ My commission expires: _____
Notary Public

Attachment 3

DIVERSITY BUSINESS INFORMATION

Definitions for Determining Minority, Women And Small-Owned Firms

The guidelines for determining minority, women and small-owned firms are defined as follows:

"MINORITY" means a person who is a citizen or lawful permanent resident of the United States and who is:

- Black (a person having origins in any of the black racial groups of Africa);
- Hispanic (a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);
- Asian American (a person having origins in any of the original peoples of the Far East, Southeast
- Asia, the Indian subcontinent, or the Pacific Islands); or
- American Indian and Alaskan Native (a person having origins in any of the original peoples of North America).

"MINORITY BUSINESS ENTERPRISE" shall mean a minority business:
A continuing, independent, for profit business which performs a commercially useful function, and is at least 51 percent owned and controlled by one or more minority individuals; or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned and controlled by one or more minorities. Whose management and daily business operations are controlled by one or more of minority individuals. "Control" as used in the above clause, means exercising the power to make policy decision. "Operate," as used in the above clause, means being actively involved in the day-to-day management of the business.

"WOMEN BUSINESS ENTERPRISE" shall mean women business:
A continuing, independent, for profit business which performs a commercially useful function, and which is at least 51 percent owned and controlled by one or more women; or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned and controlled by one or more women. Whose management and daily business operations are controlled by one or more of such individuals. "Control" as used in the above clause, means exercising the power to make policy decision. "Operate," as used in the above clause, means being actively involved in the day-to-day management of the business.

DIVERSITY BUSINESS INFORMATION
ANDERSON COUNTY GOVERNMENT

NOTE: This form is to be submitted only by those who qualify. Bidders do not have to be a minority business to be considered.

IMPORTANT! NOTARY AND COPY OF CERTIFICATION REQUIRED

SECTION 6 – DIVERSITY INFORMATION

VENDOR/CONTRACTOR NAME: _____

Type of Company: (Check One)

(_____) Corporation (_____) Partnership (_____) Limited Liability (_____) Sole Proprietor

Is your company 51% Owned or Operated by a Minority Group? Yes ___ No___

If yes, check the ethnic category and indicate % of ownership:

- ☐ American Indian/Alaskan Native _____%
- ☐ African American _____%
- ☐ Hispanic _____%
- ☐ Asian/Pacific Islander _____%
- ☐ Other ____% _____(please indicate)

Please name the entity of certification: _____

Please provide copy of certification letter or certificate

I, HEREBY CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

Signature:_____ OFFICER OF THE COMPANY

Name:_____ Title:_____

NOTARY ACKNOWLEDGEMENT:

STATE OF_____)

COUNTY OF_____)

ON_____,20____, BEFORE ME,_____,

PERSONALLY APPEARED_____, PERSONALLY KNOWN TO ME (OR PROVED TO ME ON THE BASIS OF SATISFACTORY EVIDENCE) TO BE THE PERSON(S)WHOSE NAME(S) IS/ARE SUBSCRIBED TO THE WITHIN INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE/SHE/ THEY EXECUTED THE SAME IN HIS/HER/THEIR AUTHORIZED CAPACITY(IES), AND THAT BY HIS/HER/THEIR SIGNATURE(S) ON THE INSTRUMENT THE PERSON(S), OR THE ENTITY UPON BEHALF OF WHICH THE PERSON (S) ACTED, EXECUTED THE INSTRUMENT.

WITNESS MY HAND AND OFFICIAL SEAL.

SIGNATURE OF NOTARY:_____

PRINTED FULL NAME OF NOTARY:_____

MY COMMISION EXPIRES:_____

Attachment 4
Insurance Requirement Acknowledgment

The bidder awarded this bid or contract will maintain, at their expense adequate insurance coverage to protect them from claims arising under the Worker's Compensation Act, any and all claims for bodily injury and property damage to the Bidder and to Anderson County Government while delivery and service are being done. A certificate of insurance *must* be on file in the Purchasing Department before work may begin and must be maintained until work is completed.

Only the items marked with an "X" are applicable to this bid and or contract.

1. ☒ **Workers Compensation** — Statutory limits
   Employers Liability — 100,000/100,000/500,000

2. ☒ **Commercial General Liability** — $500,000 per occurrence, $1,000,000 aggregate
   - ☒ Occurrence Form Only
   - ☒ Include Premises Liability
   - ☒ Include Contractual
   - ☒ Include XCU
   - ☒ Include Products and Completed Operations
   - ☒ Include Personal Injury
   - ☒ Include Independent Contractors
   - ☐ Include Vendors Liability
   - ☐ Include Professional or E&O Liability

3. ☐ **Business Auto**
   - ☐ Include Garage Liability
   - ☐ Include Garage Keepers Liability
   - ☐ Copy of Valid Driver's License
   - ☐ Copy of Current Motor Vehicle Record
   - ☐ Copy of Current Auto Liability Declarations Page

4. ☐ **Crime Coverages**
   - ☐ Employee Dishonesty
   - ☐ Employee Dishonesty Bond

5. ☐ **Property Coverages**
   - ☐ Builders Risk
   - ☐ Inland Marine
   - ☐ Transportation

6. ☐ Performance Bond Required – A One Hundred Percent (100%) performance or an irrevocable letter of credit in favor of Anderson County Government at a federally insured financial institution. This ***MUST*** be submitted before purchase order issued.

Certificate Holder Shall Be: Anderson County Government, Clinton, Tennessee, and shall show the bid number and title. Anderson County Government shall be named as an additional insured on all policies except worker's compensation and auto. Insurance carrier ratings shall have a Best's rating of A-VII or better, or its equivalent. Cancellation clause on certificate should strike out "endeavor to" and include a 30-day notice of cancellation where applicable. Any deviations from the above requirements ***must*** be disclosed to the Anderson County Purchasing Agent. Any liability deductibles or exclusions must also be disclosed. Exceptions can be granted if applicable.

Bidders Statement and Certification

I understand the insurance requirements of these specifications and will comply in full within **21 (twenty-one) calendar days** if awarded this bid and or contract. I agree to furnish the county with proof of insurance for the entire term of the bid and or contract.

_____ _____
Vendor Name **Authorized Signature**

_____ _____
Bid Representative Name (Please Print) **Date**

Attachment 5

Rev. December 6, 2007

BACKGROUND CHECK COMPLIANCE FORM

ANDERSON COUNTY GOVERNMENT
PURCHASING DEPARTMENT
100 N. MAIN STREET, ROOM 214 or 218
CLINTON, TN 37716
(865) 457-6251
(865) 457-6252 (Fax)

BID NUMBER _____	**CONTRACT NUMBER** _____

BACKGROUND CHECKS Contractors shall comply with Public Chapter 587 of 2007, as codified in Tennessee Code Annotated Section 49-5-413, which requires all contractors to facilitate a criminal history records check conducted by the Tennessee Bureau of Investigation and the Federal Bureau of Investigation for each employee prior to permitting the employee to have contact with students or enter school grounds when students are present.

Any person, corporation or other entity who enters or any employee of any person, corporation or entity who enters into or renews a contract with a local board of education or child care program on or after September 1, 2007, must:

(1) Provide a fingerprint sample
(2) Submit to a criminal history records check to be conducted by the Tennessee Bureau of Investigations and the Federal Bureau of Investigations.

Contact the Anderson County School's Human Resources Department at (865) 463-2800 ext. 2811 for fingerprint instructions.

Company or Individuals (Name)	Address
City, State, Zip Code	Telephone Number ( )
Contractor License Number (If Applicable)	

I agree to abide by Public Chapter 587 of 2007, as codified in Tennessee Code Annotated Section 49-5-413, and certify that I am authorized to sign. The undersigned further agrees if this bid or contract is accepted, to furnish any and all of the Background Check Information on himself and all of his employees as required by law, at the request of Anderson County Government. I hereby agree to release all criminal history and other required information to Anderson County Government, the Tennessee Bureau of Investigation and the Federal Bureau of Investigation in accordance with Tennessee law and I further certify that all information supplied by me regarding this inquiry is true and accurate. I agree to release and hold harmless the above-mentioned governmental entities for the use of this information related to the purposes mandated under Tennessee law. I further certify that I have obtained acceptable criminal history information on all current employees and will obtain said information on future employees associated with the performance of the work defined in this bid or contract, pursuant to Tennessee Code Annotated 49-5-413 and that neither I nor any employee of mine is prohibited from direct contact with school children for the reasons enumerated in Tennessee Code annotated Section §§ 49-5-401 et seq.

Signature _____ **Title**_____

Printed Name:_____ **Date** _____
(Please Print Clearly) (Month, Day, Year)

INTERNAL OFFICE USE ONLY

Notes _____

_____

Attachment 6

DRUG-FREE WORKPLACE AFFIDAVIT

STATE OF _____

COUNTY OF _____

The undersigned, principal officer of _____, an employer of five (5) or more employees contracting with _____ County Government to provide construction services, hereby states under oath as follows:

1. The undersigned is a principal officer of _____ (hereinafter referred to as the "Company"), and is duly authorized to execute this Affidavit on behalf of the Company.

2. The Company submits this Affidavit pursuant to T.C.A. 50-9-113, which requires each employer with no less than five (5) employees receiving pay who contracts with the state or any local government to provide construction services to submit an affidavit stating that such employer has a drug-free workplace program that complies with Title 50, Chapter 9 of the *Tennessee Code Annotated.*

3. The Company is compliance with T.C.A. 50-9-113

Further affiant saith not.

_____
Principal Officer

STATE OF_____

COUNTY OF_____

Before me personally appeared_____, with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence), and who acknowledged that such person executed the foregoing affidavit for the purpose therein contained.

Witness my hand and seal office this _____day of _____, 20_____.

_____
Notary Public

My commission expires: _____, 20_____.

SUBSTITUTION REQUEST

TO: _____

PROJECT: "A New Development For: Anderson Co. High School Net Zero Energy Building
130 Maverick Circle, Clinton, TN 37716"

SPECIFIED ITEM:

Section	Page	Paragraph	Description
_____	_____	_____	_____

The undersigned request consideration of the following:

PROPOSED SUBSTITUTION: _____

_____

Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The undersigned certifies that the following statements, unless modified by attachments, are correct:

1. The proposed substitution does not affect dimensions shown on Drawings.
2. The undersigned will pay for changes to the building design, including engineering design, detailing, and construction costs caused by the requested substitution.
3. The proposed substitution will have no adverse affect on other trades, the construction schedule, or specified warranty requirements.
4. Maintenance and service parts will be locally available for the proposed substitution.

The undersigned further states that the function, appearance, and quality of the proposed substitution are equivalent or superior to the specified item.

Submitted by: _____

Signature: _____

Firm: _____

Address: _____

_____

Date: _____

Telephone: _____

For use by the A/E: _____

_____

Approved _____ Approved as noted_____

Not Approved ____ Received too late_____

By: _____

Date: _____

Remarks: _____

_____

Attachments

_____

Contractor's Request for Information (RFI)

Project Name:	Contract No.:	Date:	RFI No.:
Contractor's Name:	To:		
Subject:			

References

Area(s):
Specification Section(s):
Drawing No.:
Other References:
Problem / Information Requested:

Information Requested by: Reply needed by:

Contractor's Interpretation and Proposed Resolution:

Architect's / Engineer's Evaluation and Response

Disposition:	Clarification Only	Sketch or Drawing	Other
Approval:	Project Manager	Owner	Contractor

Michael Brady Incorporated Electronic Release Form

At your request, Michael Brady Inc. (MBI) will provide electronic files for your convenience and use in the preparation of documents related to _____, subject to the following terms and conditions:

Electronic File(s) Transfer Fees are based on the following:

- ❑ **Adobe PDF format:** $60.00 for the first drawing/file and $30.00 for each additional drawing/file will be required. This fee is payable in advance and by credit card only.
- ❑ **Autodesk DWF format:** $60.00 for the first drawing/file and $30.00 for each additional drawing/file will be required. This fee is payable in advance and by credit card only.
- ❑ **Autodesk 2010 AutoCAD DWG format:** $80.00 per drawing/file. This fee is payable in advance and by credit card only.
- ❑ **Autodesk 2010 Revit RVT format (if available):** ❑$1500.00 Architectural model/file ❑$1000.00 Structural model/file ❑$1000.00 Mechanical model/file ❑$1000 Plumbing model/file ❑$1000.00 Electrical model/file ❑$1000.00 Fire protection model ❑ $4000.00 all model sets. This fee is payable in advance and by credit card only.
  Large requests will be evaluated for the effort required to bundle and transfer the information and will be assessed on a case by case basis.

_____

_____

_____

MBI makes no representation as to the compatibility of these files with your hardware or your software beyond the specified release of the referenced software.

Data contained on these electronic files is part of MBI's instruments of service and shall not be used by you or anyone else receiving this data through or from you for any purpose other than as a convenience in the preparation of documents pertaining to the referenced project. Any use by you or others, will be your sole risk and without liability or legal exposure to MBI. You agree to make no claim and hereby waive, to the fullest extent permitted by law, any claim or cause of action of any nature against MBI, its officers, directors, employees, agents or sub-consultants which may arise out of or in connection with your use of the electronic files.

Furthermore, you shall, to the fullest extent permitted by law, indemnify and hold harmless MBI from all claims, damages, losses and expenses, including attorney's fees arising out of or resulting from your use of these electronic files.

These electronic files are not Contract Documents. Significant differences may exist between these electronic files and corresponding hard copy Contract Documents due to addenda, change orders or other revisions. MBI makes no representation regarding the accuracy or completeness of the electronic files you receive. In the event that a conflict arises between the signed Contract Documents prepared by MBI and Electronic Files, signed Contract Documents shall govern. You are responsible for determining if any conflict exists. By your use of these electronic files, you are not relieved of your duty to fully comply with the Contract Documents, including and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate your work with that of other Contractors for the project.

The fees listed above are for costs to un-archive, gather and transmit files only, and under no circumstances shall delivery of the electronic files for use by you be deemed a sale of the file(s) by MBI and MBI makes no warranties, either express or implied, of merchantability and fitness for any particular purpose. In no event shall MBI be liable for any loss of profit or any consequential damages. Usage by any parties of the data contained in the electronic files released shall constitute agreement to these terms.

Any requests for updated electronic files shall incur additional charges.

Please return this completed form by facsimile at the following number (865) 584-5213. Once the fees have been paid, the file(s) will be transferred to the indicated e-mail address and a receipt will be returned by mail.

Transfer Fee Amount: _____

Email Address:_____ Phone Number: _____

Method of Payment: _____VISA _____MasterCard _____AMEX

Visa Code (Last 3 digits on back of card)_____ AMEX (4 digits on front of card)_____

Credit Card Number and Expiration Date: _____

Name & Address of Cardholder: _____

_____

_____

Cardholder Signature & Date _____

AIA® Document A201™ – 2007

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)
A New Development for: Anderson Co. High School Net Zero Energy Building, 130 Maverick Circle, Clinton, TN 37716

MBI Comm. No. 180042.01

THE OWNER:
(Name, legal status and address)
Anderson County
100 N. Main Street
Clinton, TN 37716

THE ARCHITECT:
(Name, legal status and address)
Michael Brady Inc.
299 N. Weisgarber Road
Knoxville, TN 37919

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

TABLE OF ARTICLES

INDEX
(Topics and numbers in bold are section headings.)

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 BASIC DEFINITIONS

§ 1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding requirements.

§ 1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by separate contractors.

§ 1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

§ 1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 INSTRUMENTS OF SERVICE

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 INITIAL DECISION MAKER

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2.

§ 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 CAPITALIZATION

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 INTERPRETATION

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

ARTICLE 2 OWNER

§ 2.1 GENERAL

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or

the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.2 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.2.3 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.4 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.2.5 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.3 OWNER'S RIGHT TO STOP THE WORK

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

§ 3.1 GENERAL

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall make Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required means, methods, techniques, sequences or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 LABOR AND MATERIALS

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other

facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 WARRANTY

The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.6 TAXES

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 PERMITS, FEES, NOTICES AND COMPLIANCE WITH LAWS

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may proceed as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume

the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 ALLOWANCES

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- **.1** Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- **.2** Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- **.3** Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 SUPERINTENDENT

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the name and qualifications of a proposed superintendent. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Architect requires additional time to review. Failure of the Architect to reply within the 14 day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be

required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.13 USE OF SITE

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 CUTTING AND PATCHING

§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

§ 3.15 CLEANING UP

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 ACCESS TO WORK

The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

§ 3.17 ROYALTIES, PATENTS AND COPYRIGHTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

§ 3.18 INDEMNIFICATION

§ 3.18.1 To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 GENERAL

§ 4.1.1 The Owner shall retain an architect lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 4.1.2 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

§ 4.1.3 If the employment of the Architect is terminated, the Owner shall employ a successor architect as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 4.2 ADMINISTRATION OF THE CONTRACT

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION
Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 DEFINITIONS

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect requires additional time for review. Failure of the Owner or Architect to reply within the 14 day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 SUBCONTRACTUAL RELATIONS

By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may

be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

§ 6.2 MUTUAL RESPONSIBILITY

§ 6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that

the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a separate contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a separate contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or separate contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 OWNER'S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 GENERAL

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

§ 7.2 CHANGE ORDERS

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect stating their agreement upon all of the following:

.1 The change in the Work;
.2 The amount of the adjustment, if any, in the Contract Sum; and
.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
.2 Unit prices stated in the Contract Documents or subsequently agreed upon;
.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

.4 As provided in Section 7.3.7.

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.6 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

.1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;

.2 Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;

.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and

.5 Additional costs of supervision and field office personnel directly attributable to the change.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 MINOR CHANGES IN THE WORK

The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.

ARTICLE 8 TIME

§ 8.1 DEFINITIONS

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 PROGRESS AND COMPLETION

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by delay authorized by the Owner pending mediation and arbitration; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.2 SCHEDULE OF VALUES

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Architect, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- **.1** defective Work not remedied;
- **.2** third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;

.3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;

.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;

.5 damage to the Owner or a separate contractor;

.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or

.7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.3 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Architect will reflect such payment on the next Certificate for Payment.

§ 9.6 PROGRESS PAYMENTS

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor no later than seven days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.7 FAILURE OF PAYMENT

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by binding

dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 SUBSTANTIAL COMPLETION

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 FINAL COMPLETION AND FINAL PAYMENT

§ 9.10.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- **.1** liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
- **.2** failure of the Work to comply with the requirements of the Contract Documents; or
- **.3** terms of special warranties required by the Contract Documents.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 SAFETY OF PERSONS AND PROPERTY

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

- **.1** employees on the Work and other persons who may be affected thereby;
- **.2** the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 INJURY OR DAMAGE TO PERSON OR PROPERTY

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 HAZARDOUS MATERIALS

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be

extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

§ 10.4 EMERGENCIES

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR'S LIABILITY INSURANCE

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- **.1** Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
- **.2** Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- **.3** Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- **.4** Claims for damages insured by usual personal injury liability coverage;
- **.5** Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- **.6** Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- **.7** Claims for bodily injury or property damage arising out of completed operations; and
- **.8** Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the

Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

§ 11.2 OWNER'S LIABILITY INSURANCE

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

§ 11.3 PROPERTY INSURANCE

§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.2 BOILER AND MACHINERY INSURANCE

The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.3.3 LOSS OF USE INSURANCE

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 11.3.7 WAIVERS OF SUBROGATION

The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 UNCOVERING OF WORK

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 AFTER SUBSTANTIAL COMPLETION

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct

nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 ACCEPTANCE OF NONCONFORMING WORK

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 SUCCESSORS AND ASSIGNS

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 13.3 WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

§ 13.4 RIGHTS AND REMEDIES

§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach there under, except as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses shall be at the Contractor's expense.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.6 INTEREST

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

§ 13.7 TIME LIMITS ON CLAIMS

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 TERMINATION BY THE CONTRACTOR

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;

.2 An act of government, such as a declaration of national emergency that requires all Work to be stopped;

.3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or

.4 The Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the Contractor

.1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;

.3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 Accept assignment of subcontracts pursuant to Section 5.4; and

.3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- **.1** that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
- **.2** that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- **.1** cease operations as directed by the Owner in the notice;
- **.2** take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- **.3** except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 CLAIMS

§ 15.1.1 DEFINITION

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 15.1.2 NOTICE OF CLAIMS

Claims by either the Owner or Contractor must be initiated by written notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

§ 15.1.4 CLAIMS FOR ADDITIONAL COST

If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 INITIAL DECISION

§ 15.2.1 Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 MEDIATION

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 ARBITRATION

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 CONSOLIDATION OR JOINDER

§ 15.4.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration

permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.

Additions and Deletions Report for
AIA® Document A201™ – 2007

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 15:03:43 on 03/23/2016.

PAGE 1

A New Development for: Anderson Co. High School Net Zero Energy Building, 130 Maverick Circle,
Clinton, TN 37716
MBI Comm. No. 180042.01

...

Anderson County
100 N. Main Street
Clinton, TN 37716

...

(Name, legal status and address)
Michael Brady Inc.
299 N. Weisgarber Road
Knoxville, TN 37919

PAGE 2

1.1.1, 3.113.11.1

...

8.3.1, 11.3.10, 13.1, 13.1.1, 15.3.2, **15.4**

...

2.4, 2.4.1, 3.12.7, 4.1, 4.2, 5.2, 6.3, 7.1.2, 7.3.7, 7.4, 9.2, 9.3.1, 9.4, 9.5, 9.6.3, 9.8, 9.10.1, 9.10.3, 12.1, 12.2.1, 13.5.1, 13.5.2, 14.2.2, 14.2.4, 15.1.3, 15.2.1

...

2.4, 2.4.1, 11.3.1.1, 12.2.1, 13.5.2, 13.5.3, 14.2.4

...

2.4, 2.4.1, 3.1.3, 3.5, 3.10.2, 4.2.7

...

9.7, 11.3.9, 11.3.10, 13.1, 13.1.1, 15.2.5, 15.2.6.1, 15.3.1, 15.3.2, 15.4.1

PAGE 3

1.1.1, ~~2.4,~~ 2.4.1, 3.4.2, 3.7.4, 3.8.2.3, ~~3.11,~~ 3.11.1, 3.12.8, 4.2.8, 5.2.3, 7.1.2, 7.1.3, **7.2**, 7.3.2, 7.3.6, 7.3.9, 7.3.10, 8.3.1, 9.3.1.1, 9.10.3, 10.3.2, 11.3.1.2, 11.3.4, 11.3.9, 12.1.2, 15.1.3

...

2.2.1, 3.11, 4.2.8, **7**, 7.2.1, 7.3.1, 7.4, 7.4.1, 8.3.1, 9.3.1.1, 11.3.9

...

3.2.4, ~~3.7.4, 6.1.1,~~ 3.7.46.1.1, 8.3.2, 10.3.2, **15.1.5**

...

~~1.6,~~ 1.6.1, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 4.1.1, 9.6.4, 10.2.2, 11.1, 11.3, 13.1, 13.4, 13.5.1, 13.5.2, 13.6, 14.1.1, 14.2.1.3, 15.2.8, 15.4.2, 15.4.3

PAGE 4

3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3, 11.1.1, 11.3.7, 14.1, ~~14.2.1.1~~14.2.1.1,

...

3.3.2, 3.18, ~~5.3,~~ 5.3.1, 6.1.3, 6.2, 9.5.1, 10.2.8

...

~~2.4,~~ 2.4.1, 3.2.4, 3.7.3, 3.8.2, 3.15.2, 5.4.2, 6.1.1, 6.2.3, 7.3.3.3, 7.3.7, 7.3.8, 7.3.9, 9.10.2, 10.3.2, 10.3.6, 11.3, 12.1.2, 12.2.1, 12.2.4, 13.5, 14

...

3.14.2, 9.9.1, 10.2.1.2, 10.2.5, ~~10.4,~~ 10.4.1, 11.3.1, 12.2.4

...

~~2.3, 2.4,~~ 2.3.1, 2.4.1, 3.5, 4.2.6, 6.2.5, 9.5.1, 9.5.2, 9.6.6, 9.8.2, 9.9.3, 9.10.4, 12.2.1

...

3.2, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, **8.3**, 9.5.1, 9.7, 10.3.2, ~~10.4,~~ 10.4.1, 14.3.2, 15.1.5, 15.2.5

PAGE 5

1.1.3, 1.1.6, 3.4, 3.5, 3.8.2, 3.8.3, 3.12, ~~3.13,~~ 3.13.1, 3.15.1, 4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.7, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2

...

3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3, 7.4, 9.5.1, 9.7, 10.3.2, ~~10.4,~~ 10.4.1, 14.3, 15.1.5, 15.2.5

...

4.2.1, 4.2.9, 9.8.2, **9.10**, 11.1.2, 11.1.3, 11.3.1, 11.3.5, ~~12.3,~~ 12.3.1, 14.2.4, 14.4.3

...

10.2.8, ~~10.4~~10.4.1

...

1.5, 3.2.3, 3.6, 3.7, 3.12.10, ~~3.13,~~ 3.13.1, 4.1.1, 9.6.4, 9.9.1, 10.2.2, 11.1.1, 11.3, ~~13.1,~~ 13.1.1, 13.4, 13.5.1, 13.5.2, ~~13.6,~~ 13.6.1, 14, 15.2.8, 15.4

...

~~2.3,~~ 2.3.1, 3.2.2, 3.5, 3.12.10, 3.17, 3.18.1, 4.2.6, 4.2.7, 4.2.12, 6.2.2, 9.4.2, 9.6.4, 9.6.7, 10.2.5, 10.3.3, 11.1.2, 11.2, 11.3.7, 12.2.5, 13.4.2

...

2.1.2, 2.2, 2.4, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2.7, 5.2, ~~5.3,~~ 5.3.1, 5.4.1, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3, 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 11.1.3, 11.3.1.5, 11.3.6, 11.3.10, 12.2, 13.5, 13.7, 14, 15

PAGE 6

1.1.3, 1.1.6, 1.5.1, 3.4.1, 3.5, 3.8.2, 3.8.3, 3.12, ~~3.13,~~ 3.13.1, 3.15.1, 4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.7, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1.2, 10.2.4, 14.2.1.1, 14.2.1.2

...

~~2.3, 2.4,~~ 2.3.1, 2.4.1, 3.5, 4.2.6, 6.2.4, 9.5.1, 9.8.2, 9.9.3, 9.10.4, 12.2.1

...

2.2.1, ~~2.3, 2.4,~~ 2.3.1, 2.4.1, 3.2.4, 3.3.1, 3.7.2, 3.12.9, 5.2.1, 9.7, 9.10, 10.2.2, 11.1.3, 12.2.2.1, 13.3, 13.5.1, 13.5.2, 14.1, 14.2, 15.2.8, 15.4.1

...

~~2.3, 2.4,~~ 2.3.1, 2.4.1, 3.3.1, 3.9.2, 3.12.9, 3.12.10, 5.2.1, 9.7, 9.10, 10.2.2, 10.3, 11.1.3, 11.3.6, 12.2.2.1, **13.3**, 14, 15.2.8, 15.4.1

...

1.5, 2.1.1, ~~2.3, 2.4,~~ 2.3.1, 2.4.1, 3.4.2, 3.8.1, 3.12.10, 3.14.2, 4.1.2, 4.1.3, 4.2.4, 4.2.9, 5.2.1, 5.2.4, 5.4.1, 6.1, 6.3, 7.2.1, 7.3.1, 8.2.2, 8.3.1, 9.3.1, 9.3.2, 9.5.1, 9.6.4, 9.9.1, 9.10.2, 10.3.2, 11.1.3, 11.3.3, 11.3.10, 12.2.2, ~~12.3,~~ 12.3.1, 13.2.2, 14.3, 14.4, 15.2.7

...

1.1.1, 1.1.6, 1.1.7, **1.5**, 2.2.5, 3.2.2, ~~3.11,~~ 3.11.1, 3.17, 4.2.12, ~~5.3~~5.3.1

...

4.2.1, 4.2.9, 9.8.2, 9.10, 11.1.2, 11.1.3, 11.4.1, ~~12.3,~~ 12.3.1, 13.7, 14.2.4, 14.4.3

PAGE 7

3.3.2, 3.18, 4.2.3, ~~5.3,~~ 5.3.1, 6.1.3, 6.2, 6.3, 9.5.1, 10

...

3.3.1, 4.2.2, 4.2.7, ~~5.3,~~ 5.3.1, **10.1**, 10.2, 10.4

PAGE 8

3.1.3, 3.3.3, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 10.3.2, ~~11.4.1,~~ 11.4.1.1, 12.2.1, **13.5**

...

3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, **8.3**, 9.5.1, 9.7, 10.3.2, ~~10.4,~~ 10.4.1, 14.3.2, 15.1.5, 15.2.5

...

3.5, 4.2.9, 9.3.3, 9.8.4, 9.9.1, 9.10.4, 12.2.2, ~~13.7~~13.7.1

PAGE 18

§ 3.18.1 To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity ~~that~~ which would otherwise exist as to a party or person described in this Section 3.18.

PAGE 20

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect requires additional time for review. Failure of the Owner or Architect to reply within the ~~14-day~~ 14 day period shall constitute notice of no reasonable objection.

Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, , hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 15:03:43 on 03/23/2016 under Order No. 6605413564_1 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A201™ – 2007, General Conditions of the Contract for Construction, as published by the AIA in its software, other than those additions and deletions shown in the associated Additions and Deletions Report.

_____

(Signed)

_____

(Title)

_____

(Dated)

SECTION 00 73 00 - SUPPLEMENTARY CONDITIONS

PART I GENERAL:

1.01 The following amendments modify, change, delete from or add to the General Conditions of the Contract for Construction (AIA Document A201, 2007 Edition), hereinafter referred to as the General Conditions. Where any part of the General Conditions is modified or voided by these amendments the unaltered provisions of that part shall remain in effect.

A Where apparent discrepancies exist between these or other requirements, herein or elsewhere specified, and those requirements enumerated in the Anderson County Terms & Conditions, Bidder Information and/or any attachment to be included with the Bid, the more stringent requirement shall prevail.

1.02 INTENT OF CONTRACT DOCUMENTS:

A Add the following Subparagraphs 1.2.4 and 1.2.5 at the end of Paragraph 1.2, Execution, Correlation, and Intent:

1.2.4 **If there is any conflict or discrepancy within or between any of the Contract Documents involving the quality or quantity of work required, it is the intention of the Contract that the work of highest quality or greatest quantity shown or specified shall be furnished**, unless such conflict or discrepancy shall have been brought to the Architect's attention and clarified by Addendum prior to the opening of bids.

1.2.5 Whether or not the word "ALL" is used in the specifications, coverage is intended to be complete, except where partial coverage is specifically and expressly noted. In all cases where an item is referred to in the singular number, it is intended that the reference shall apply to as many such items as are required to complete the work. **Words such as "Install", "Provide", "Furnish", and "Supply" shall be construed as meaning complete furnishing, installing, and constructing unless modified by additional information.**

1.03 DOCUMENTS FURNISHED TO THE CONTRACTOR:

A Revise Subparagraph 2.2.5 to read as follows: Copies of the Drawings and Specifications may be furnished to the General Contractor upon request at the cost of reproduction, paid by the Contractor, subject to the provisions of Paragraph 1.5, Ownership and use of Drawings, Specifications, and other Instruments of Service. All Drawings and Specifications furnished to the Contractor shall be subject to the provisions of Paragraph 1.5, Ownership and use of Drawings, Specifications, and other Instruments of Service.

B Add Subparagraph 2.2.6 at the end of Paragraph 2.2, Information and Services Required of the Owner:

2.2.6 Electronic data files produced by the Architect containing information about the project are instruments of service and shall be subject to the provisions of Paragraph 1.5, Ownership and use of Drawings, Specifications, and other Instruments of Service. Electronic data files are not Contract Documents and differences may exist between these electronic files and the hard copy documents issued as Contract Documents. These files may be made available to the Contractor for convenience in preparing documents relating to the project upon execution of an electronic files release and payment of transfer fees as stated in the electronic files release.

1.04 REVIEW OF CONTRACT DOCUMENTS:

A Add the following Subparagraph 3.2.5 at the end of Paragraph 3.2, Review of Contract Documents and Field Conditions by Contractor:

3.2.5 **Should discrepancies or conflicts in the requirements of the Drawings and Specifications be discovered after the work has started, the Contractor shall report such discrepancies or conflicts to the Architect immediately and no work affected thereby shall be started, of if started, shall be stopped immediately until the Contractor and the Architect agree upon clarification of the discrepancy or conflict.**

1.05 PERMITS, FEES AND NOTICES:

A Add the following Subparagraph 3.7.6 at the end of Paragraph 3.7, Permits, Fees, Notices, and Compliance with Laws:

3.7.6 The Contractor shall obtain a Certificate of Occupancy from the Building Inspection Department having jurisdiction for each phase of the project as it is completed and ready for occupancy and shall deliver such certificate to the Architect.

1.06 SUBMITTALS:

A Add the following Subparagraphs 3.12.11 and 3.12.12 at the end of Paragraph 3.12, Shop Drawings, Product Data and Samples:

B 3.12.11 Additional provisions pertaining to shop drawings and samples are included in Division 1, General Requirements.

C 3.12.12 Submittals that have not been marked as reviewed, signed and dated by the Contractor may be returned by the Architect without action.

1.07 SUBCONTRACTURAL RELATIONS:

A Add the following Subparagraphs 5.3.1 and 5.3.2 to Paragraph 5.3, Subcontractual Relations:

5.3.2 The Contractor shall be directly responsible for all of the work included in the Contract, whether performed by his own forces or by his subcontractors. Except in extreme emergencies, all instructions, clarifications, and approvals will be given by the Architect to subcontractors only through the Contractor and all shop drawings, samples, and correspondence from the subcontractor shall be submitted to the Architect through the Contractor.

5.3.3 Insofar as it does not affect the quality of workmanship or materials, the Contractor shall settle all questions of responsibility arising among his various subcontractors and shall determine the extent of work and responsibility of each of the subcontractors.

1.08 CHANGES IN THE WORK:

A Add the following Subparagraph 7.4.1 to Paragraph 7.4, Minor Changes in the Work:

7.4.1 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials, and subcontractors. **Where major cost items are subcontracts, they shall be itemized also. In no case will a change involving over $500.00 be approved without such itemization.**

B Change Sub-subparagraph .5 of Subparagraph 7.3.7 to the following:

.5 Overhead and profit of which the maximum amount of allowable given in this Subparagraph shall be considered to include, but is not limited to, job-site staff and office expense, incidental job burdens, small tools, and home office overhead allocation. The percentages for overhead and profit shall not exceed the following:

To Contractor on work performed by other than its own forces - 5% profit;

To first-tier Subcontractor on work performed by its Sub-subcontractors - 5% profit; and

To Contractor and/or Subcontractors for that portion of the work performed with their respective forces - 10% overhead and 5% profit.

1.09 APPLICATIONS FOR PAYMENT:

A Add the following Clauses 9.3.4 and 9.3.5, in Paragraph 9.3, Applications for Payment:

9.3.4 Until the work is fifty percent (50%) complete, the Owner will pay ninety percent (90%) of the amount due the Contractor on account of progress payments, provided, however, that the retainage amount may not exceed five percent (5%) of the amount of such Contract. At the time the work is fifty percent (50%) complete and thereafter, in the absence of other good and sufficient reasons, the Architect will, on presentation by the Contractor of Consent of Surety for each Application, authorize any remaining partial payments to be paid in full.

9.3.5 The Contractor is to use the 1992 Edition of AIA Document G702, Application and Certificate for Payment. **Beginning with the second Application for Payment, the Contractor shall verify that he has paid all subcontractors and major material suppliers those respective amounts representing all work and materials which have formed the basis of previous progress payments**. The application shall be submitted in three notarized copies.

1.10 PROGRESS PAYMENTS:

A Revise Subparagraph 9.6.1, to read as follows:

Unless otherwise provided in the agreement, the Owner will make progress payments to the Contractor on or about the fifteenth (15^{th}) day of each calendar month on the basis of a duly certified and approved estimate of the work performed during the preceding calendar month. In preparing estimates, materials delivered to and properly stored on the site shall be given consideration. **Materials stored off-site shall not be paid for by the Owner unless the Contractor furnishes a certificate of insurance for that material showing the Owner as the Owner of said material**.

1.11 Add Subparagraph 9.6.8 at the end of Subparagraph 9.6, Progress Payments.

9.6.8 Upon commencement of the work, an escrow account as provided by Tennessee Code Annotated, Section 4-15-102; Section 66-11-144 and Title 66, Chapter 34, shall be established in a financial institution chosen by the Contractor and approved by the Owner. The escrow agreement shall provide that the financial institution will act as escrow agent, will pay interest on funds deposited in such account in accordance with provisions of the escrow agreement and will disburse funds from the account upon the direction of the Owner as set forth below. Compensation to the escrow agent for establishing and maintaining the escrow account shall be paid from interest accrued to the escrow account.

1.12 FINAL PAYMENT:

A In Subparagraph 9.10.2, item (5), delete the words "if required by the Owner"; and replace the words “releases and waivers of liens, claims, secutiry interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner” with the following: "Contract Close Out Submittals as enumerated in Section 013300 Submittals and as reviewed and approved by the Architect**.**

1.13 COSTS FOR DELAYS IN COMPLETION:

A Add the following Subparagraph 9.8.6 at the end of Paragraph 9.8, Substantial Completion:

A 9.8.6 As actual damages for any delay in completion are impossible of determination, the Contractor and his sureties shall be liable for and shall pay to the Owner the sum of One Hundred Dollars ($100.00) as fixed, agreed, and liquidated damages for each calendar day of delay until a Certificate of Substantial Completion is executed by the Owner, Architect, and Contractor.

Add the following Subparagraph 9.10.6 at the end of Paragraph 9.10, Final Completion and Final Payment:

9.10.6 If after Substantial Completion of the work and issuance of the Punch List, Final Completion of the Work is delayed beyond the time allotted for completion of the Punch List through no fault of the Owner or the Architect, the Contractor shall be liable for such ongoing costs as the Architect shall incur on the Project. Such costs shall be computed and billed to the Contractor at the Architect's standard hourly rates in effect at the time the work is executed. Payment shall be required within thirty (30) days of invoice. Interest shall accrue at one percent (1%) per month on past due amounts. Contractor shall be liable for all legal fees if legal action is required for collection of unpaid amounts.

1.14 CONTRACTOR'S LIABILITY INSURANCE:

A In Subparagraph 11.1.1 in the second line, following the phrase "in which the Project is located", insert the following clause: ",and to which the Owner has no reasonable objections,".

1.15 LIMITS OF CONTRACTOR'S LIABILITY INSURANCE:

Add the following Clause 11.1.2.1 to Subparagraph 11.1.2:

1.16 OWNER'S LIABILITY INSURANCE:

A Replace Paragraph 11.2. with the following:

11.2. The Contractor shall take out and furnish to the Owner and maintain during the life of this Contract complete Owner's Protective Liability Insurance in amounts as specified in the limits of Contractor's Liability Insurance for Bodily Injury and Property Damage. This policy shall be made out in the name of the Owner and the Architect.

1.17 PROPERTY INSURANCE (BUILDER'S RISK)

A In Subparagraph 11.3.1, in the phrase: "Unless otherwise provided, the Owner", change the word "Owner" to "Contractor".

B Delete Subparagraph 11.3.1.2.

1.18 PROPERTY INSURANCE DEDUCTIBLES:

A Insurance requirements are to be as outlined in Attachment 4 herein.

1.19 PERFORMANCE BOND AND PAYMENT BOND

A. Change Subparagraph 11.4.1 to read as follows:

11.4.1 The Contractor shall execute a performance bond and a payment bond in an amount equal to one hundred percent (100%) of the Contract Sum and a payment bond covering and including labor and materials in an amount equal to one hundred percent (100%) of the Contract Sum. Such bond shall be from a surety Company authorized to transact business in the State of Tennessee and Company shall be registered in Federal Register, Department of the Treasury, Fiscal Service, Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies; Notice. Attorneys in Fact who sign any bonds must file with each instrument a certified and effective dated coy of their power of attorney.

B. Add the following Subparagraph 11.4.1.1 to the end of Subparagraph 11.4.1:

11.4.1.1 Mechanical, Plumbing and Electrical Subcontractors shall execute a performance bond in an amount equal to one hundred percent of the Contract Value of their portion of the work and a payment bond covering and including labor and materials in an amount equal to one hundred percent (100%) of the Contract Value of their portion of the work. bond shall be from a surety Company authorized to transact business in the State of Tennessee and Company shall be registered in Federal Register, Department of the Treasury, Fiscal Service, Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies; Notice. Attorneys in Fact who sign any bonds must file with each instrument a certified and effective dated coy of their power of attorney.

1.20 INSPECTIONS AND CORRESPONDENCE:

A Add the following Subparagraph 13.5.7 to the end of Paragraph 13.5, Tests and Inspections:

13.5.7 Inspections and or correspondence by the Architect required due to failure by the Contractor to obtain inspections and approval from the Public Authorities having jurisdiction are beyond the scope of Construction Contract Administration for the Architect. As additional services, the Contractor will be billed a minimum fee of Five Hundred Dollars ($500.00) per occurrence plus the Architect's time at the Architect's standard hourly rate for the personnel required to perform these functions.

1.21 INTEREST:

A Revise Paragraph 13.6 to read as follows:

"Payments due and unpaid for thirty (30) days under the Contract Documents shall bear interest from the date thirty (30) days after payment is due at the rate of 1/2% (0.5 percent) per month.

1.22 TIME:

A Time is an essential consideration of the Contract and work shall commence on the date to be specified in a written notice to the Contractor to proceed and shall progress with a proper and sufficient force of workmen and ample supply of materials and equipment to complete the Contract within the time limit agreed to in the Contract for Construction.

1.23 SUBSTITUTIONS:

A All requests shall be submitted to the Architect in writing with a fully executed substitution request form and shall clearly define and describe materials, methods or equipment for which approval is requested.

B Prior to Execution of a Contract for Construction:

1. If any Contractors desire to substitute any firms, materials, brands, methods, etc., other than specified, he may have the privilege at any time prior to ten days before bidding, of submitting these matters to the Architect for approval.

2. Requests shall be submitted by the General Contractor. Direct requests by manufacturer or material suppliers will not be considered.

3. If such submissions are approved by the Architect or if the Architect shall decide to enlarge the scope of the Specifications, such approvals or additional information will be made by Addendum to the Contractor.

C After Execution of a Contract for Construction:

1. Substitutions after execution of a Contract for Construction will, generally, not be considered, except under unusual circumstances, such as strikes, lockouts, bankruptcy, discontinuing of a product, etc.

2. Requests for substitutions shall be made in writing to the Architect within ten (10) days of the date that the Contractor ascertains that he cannot obtain the material or equipment specified.

3. Requests shall be accompanied by complete description of the material or apparatus to be submitted. On request from the Architect, samples of any of all such items shall be submitted and/or set up as directed for inspection and consideration. The amount of credit or extra cost to the Owner on account of the substitution shall be a part of this request.

    a. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

        i. Statement indicating why specified material or product cannot be provided.

        ii. The amount of credit or extra cost to the Owner on account of the substitution

        iii. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.

        iv. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.

        v. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

        vi. Samples, where applicable or requested.

        vii. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.

        viii. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.

        ix. Detailed comparison of Contractor’s Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer’s letterhead, stating lack of availability or delays in delivery.

        x. Contractor’s certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.

        xi. Contractor’s waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

D. "Or Approved Equal" or "Or Approved Substitution"

1. Where the phrase "or approved equal" or "approved substitution" occurs in the Contract Documents, do not assume that material, equipment, or methods will be approved as equal by the Architect unless the item has been specifically approved for this work by the Architect

    a. Color choices will be one of the determining factors for approval.

2. The decision of the Architect will be final.

1.02 STANDARDS:

A Any material or other work specified by reference to the number, symbol, or title of a specific standard, such as American National Standards Institute (ANSI) Standard, a Federal Specification, a trade association standard, or other similar standard, shall conform to the requirements in the latest revision thereof or any amendment or supplement thereto in effect on the date of the drawings and specifications, except as limited to type, class or grade, or as modified in such reference.

B The standards referred to, except as modified in the specification, shall have full force and effect as though recited for the reason that the manufacturers and trades involved are assumed to be familiar with their requirements. The Architect will furnish, upon request, information as to how copies of the standards referred to may be obtained.

C Where material or work is specified by reference to conform to standards such as listed in Paragraph A above, or to Codes, Laws, and Regulations, but specific provisions of the Contract Drawings or Contract Specifications exceed the requirements of such references, the Contract Drawings and Specifications shall govern.

1.03 MANUFACTURER'S DIRECTIONS:

A All manufactured articles, material and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the manufacturer's instructions and recommendations. Any conflicts between such manufacturer's instructions and recommendations and the specifications shall be brought to the attention of the Architect and the procedures reconciled before proceeding with the work.

1.04 GUARANTEE:

A All work under this Contract shall be guaranteed for a period of one (1) year after execution of Certificate of Substantial Completion against defects caused by the use of inferior materials or workmanship. Guarantee period of incomplete items at time of execution of Certificate of Substantial Completion shall commence on date of installation into building. Repair and/or replace all such defective materials or equipment and any work damaged thereby or make any other adjustment necessary without additional cost to the Owner.

1.05 LAYING OUT WORK:

A The Contractor shall, immediately upon entering the projects for the purpose of beginning work, locate all general reference points and be responsible for all lines, elevations, and measurements.

PART II PRODUCTS: NOT USED

PART III EXECUTION: NOT USED

End of Section

SECTION 01 10 00 - SUMMARY OF THE WORK

PART I GENERAL

1.01 WORK INCLUDED:

A. Furnish all labor, materials and equipment, and perform all work to construct, as specified herein and as shown on the accompanying drawings entitled “A New Development For: Anderson Co. High School Net Zero Energy Building, 130 Maverick Circle, Clinton, TN 37716.” The building shall be constructed complete and ready for occupancy except for the items specifically excluded in "Work Not Included".

B. Patch any existing work damaged by construction.

1.02 WORK NOT INCLUDED:

A. The following items of work will be provided by the Owner or by others under separate contracts:

1. Movable furniture unless specifically shown on the drawings and specifications.

2. Security System Equipment.

3. Telephone System Equipment.

4. Computer System Equipment.

5. Point of Sale Equipment.

6. Any other items noted on the drawings as "N.I.C." or "Not In Contract".

1.03 OCCUPANCY OF THE BUILDING DURING CONSTRUCTION:

A. The Contractor shall schedule and organize his work in such a manner and use such methods that will interfere as little as possible with other work in progress on the site and with the operation of adjacent buildings.

1.04 CONTRACTOR’S USE OF PREMISES:

A. Before construction is started the Contractor shall confer with the Architect and the Owner and arrange for available trucking and storage space for the delivery of materials, storage space for materials and equipment, and parking space for his workmen.

B. Construction operations and storage of materials and equipment shall be restricted to areas of the site mutually agreed upon and in such a manner as not to block access of fire fighting equipment to the building and facilities.

C. Construction vehicular traffic and the operation of construction equipment such as cranes, bulldozers, and other similar equipment shall be carefully supervised and controlled to avoid damage to existing structures and facilities which are to remain in place.

1.05 VERIFICATION OF DIMENSIONS:

A. Dimensions, elevations, and locations shown on the drawings in reference to existing structures and utilities are the best available data obtainable but are not guaranteed by the Architect or the Owner and the Architect and the Owner will not be responsible for their accuracy.

B. Before proceeding with any work dependent upon the data involved, the Contractor shall field check and verify all dimensions, grades, line levels, or other conditions of limitations at the site and building to avoid construction errors. If any work is performed by the Contractor or by his Subcontractors prior to adequate verification of applicable data, any resultant extra cost for adjustment of work to conform to existing limitations shall be borne by the Contractor without reimbursement or compensation by the Owner.

1.06 CONTROL POINTS AND LAYOUT:

A. The initial lines, grades, and dimensions necessary for the location and control of the work under the Contract are shown on the Contract Drawings.

B. The Contractor shall provide for himself all additional and supplementary lines and grades as may be necessary to layout the work and insure proper control of the work until completed. It shall be the Contractor's responsibility to satisfy himself as to the accuracy of all measurements before construction.

1.07 SUBSTANTIAL COMPLETION OF THE WORK:

A. Upon substantial completion of any phase of the work, the Owner shall assume complete responsibility for the maintenance and operation of the systems and service utilities.

B. The Owner shall also become responsible for all other maintenance and damage and ordinary wear and tear and, with the exception of items under guarantee, the cost of repairs or restoration during the period between substantial and final completion.

C. The Owner shall have the responsibility to have in effect all necessary insurance for protection against any losses not directly attributable to the Contractor's negligence.

D. Upon substantial completion, payments for work in the substantially complete portion of the work shall be released to the Contractor, except for the retainage and an amount to cover the cost of the incomplete or deficient items included in the punch list made at the inspection to determine substantial completion. This amount shall be approximately the value of the punch list items as estimated by the Architect.

E. The Contractor shall arrange a schedule so that punch list items are completed in the designated time by working during regular working hours. The Contractor shall be afforded access to the occupied portion of the building to perform this work during regular working hours.

1.08 ENVIRONMENTAL HAZARDOUS PRODUCTS, MATERIALS, WASTE:

A. Do not incorporate in the Work hazardous materials or products as currently defined in the Resource Conservation and Recovery Act of 1976 (RCRA), the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), or Environmental Protection Agency (EPA) regulations, rules, or requirements, as amended, unless the Contract Documents give no other option than to provide a material or product which contains a hazardous material, component, constituent, waste, or leachate. In studying the Contract Documents and carrying out the Work, report at once to the Designer the discovery of a product or material which contains hazardous materials, components, constituents, waste, or leachate.

B. Do not incorporate in the Work a product or material which contains concentrations of a constituent, component, or material above the threshold levels which would require adherence to hazardous waste disposal regulations as currently defined, or could cause a release or threat of release of a hazardous substance at a level that would require a remedial response or removal action as currently defined by RCRA, CERCLA, or the EPA.

C. Select materials and products meeting specified requirements which comply with EPA requirements as regards hazardous materials content. In making requests for substitutions, determine that materials and products proposed for substitution comply with RCRA, CERCLA, and EPA requirements.

1.09 BUILDING PRODUCTS USE:

A. It is the responsibility of the Contractor to inform himself concerning the application of the products he uses to follow the directions of the Architect and manufacturer.

B. In the event of disagreement between the Contract Documents and the manufacturer's directions, the Contractor will obtain written instructions from the Architect before proceeding with the installation.

C. If the Contractor has knowledge of or reason to believe the likelihood of failure, he will transmit such knowledge to the Architect, and ask for written instructions before proceeding with the work.

1.10 OWNERSHIP OF REMOVED MATERIALS AND EQUIPMENT:

A. All removed existing materials and equipment designated to be removed which are not to remain the property of the Owner or are not noted to be reused in the new work shall become the property of the Contractor and shall be removed from the premises and site and disposed of by him.

1.11 SEPARATE CONTRACTS:

A. The Owner may award separate contracts in connection with the project. The work in any such separate contracts may proceed simultaneously with the execution of this Contract. The Contractor shall coordinate operations with any separate contractors. The Contractor will be required in the arrangement for the storage of materials and in the detailed execution of the work. The Contractor, including his subcontractors, shall keep himself informed of the progress and the detailed work of separate contractors and shall notify the Architect immediately of the lack of progress or defective workmanship that will interfere with his own operations. Failure of the Contractor to keep informed of the work progressing on the site and failure to give notice of lack of progress or defective workmanship by separate contractors shall be construed as acceptance of him of the state of the work as being satisfactory for proper coordination with his own work.

B. The separate contractors will provide competent foremen or supervisors for the installation of their equipment and they are to confer with the Contractor and his subs and other separate contractors where required in regard to connections and installations.

1.12 DISCRETIONARY FUND:

A. The General Contractor shall include in the base bid an amount equal to **five percent (5%)** of the Base Bid amount which shall constitute a discretionary fund. This fund shall be used at the discretion of the Architect and the Owner. Upon completion of the work, the Contractor shall credit his final request for payment in the amount of all or any unused portion of this fund.

PART II PRODUCTS - NOT USED

PART III EXECUTION - NOT USED

End of Section

SECTION 01 16 00 - REGULATORY REQUIREMENTS

PART I GENERAL

1.01 GENERAL:

A. Where codes and standards are referenced in this and other sections of the specifications or on the drawings, whether or not a particular edition is referenced, it is the intention that these be the latest editions as adopted by the governing agency under whose jurisdiction the project is to be constructed. The latest edition shall be the edition in effect on the date approval is granted for construction to begin.

1.02 CODES:

A. Work shall conform to the requirements of the building code indicated on the drawings. If no code is listed, work shall conform to the requirements of the building code in effect for the jurisdiction having authority.

B. Work shall conform to the requirements of the life safety code indicated on the drawings. If no code is listed, work shall conform to the requirements of the life safety code in effect for the jurisdiction having authority.

C. Plumbing and gas piping work shall conform to the requirements of the plumbing and gas codes indicated on the drawings. If no code is listed, work shall conform to the requirements of the plumbing and gas codes in effect for the jurisdiction having authority.

D. Work shall conform to the requirements of the electrical code indicated on the drawings. If no code is listed, work shall conform to the requirements of the electrical code in effect for the jurisdiction having authority.

E. Work shall conform to the requirements of the latest edition of ICC/ANSI A117.1 Standard on Accessible and Usable Buildings and Facilities.

F. Work shall conform to the requirements of the latest edition of Americans with Disabilities Act (ADA).

G. Fire doors shall conform to requirements of NFPA No. 80, Standards for Fire Doors and Windows.

H. Heating, ventilating and air conditioning work shall conform to requirements of NFPA NO. 90A, Standard for the Installation of Air Conditioning and Ventilating Systems.

1.03 REGULATIONS:

G. Electrical work shall conform to applicable regulations of the State, Department of Insurance, Division of Fire Prevention and to applicable regulations of the Local Utility Company.

H. Work shall be performed in a manner approved by the Occupational Safety and Health Administration. The Contractor shall be responsible for job-site safety and training of workman as required by Occupational Safety and Health Administration.

I. Contractors performing work in schools constructed before 1978 or in any facilities where children under the age of 6 are present shall be certified and shall follow work practices to prevent lead contamination as mandated by the Environmental Protection Agency.

1.04 PERSONNEL BACKGROUND CHECKS:

A. Contractor shall comply with Public Chapter 587 of 2007, as codified in Tennessee Code Annotated Section 49-5-413 and amended in Public Chapter 1080, which requires all contractors

to facilitate a criminal history records check conducted by the Tennessee Bureau of Investigation and the Federal Bureau of Investigation for each employee prior to permitting the employee to have contact with students or enter school grounds when students are present.

1.05 MATERIAL AND TESTING STANDARDS:

G. Components of the work shall conform to requirements of American Society for Testing and Materials (ASTM) Standards, American National Standards Institute (ANSI) standards, and Trade Association Standards, as listed in the various other sections of the specifications.

1.06 MANUFACTURER'S RECOMMENDATIONS:

G. When work in accordance with manufacturer's recommendations is specified, a copy of those recommendations shall be kept in the job office.

1.07 STORM WATER DISCHARGE PERMIT:

G. If Construction Operations will disturb the ground, the Contractor must file a "Notice of Intent" for and obtain a National Pollutant Discharge Elimination System Permit from:

Stormwater NOI Processing
Division of Water Pollution Control
401 Church Street
Department of Environment and Conservation
Nashville, Tennessee 37243-1534

H. Any fines levied because of the Contractor's failure to obtain the necessary permit will be the responsibility of the Contractor.

PART II PRODUCTS - NOT USED

PART III EXECUTION - NOT USED

End of Section

SECTION 01 25 00 – SUBSTITUTION PROCEDURES

PART I GENERAL

1.01 GENERAL:

A This Section includes administrative and procedural requirements for submittal and approval of substitutions.

1.02 RELATED DOCUMENTS:

A Applicable provisions of the General Conditions, Supplementary Conditions, and other Division 1, General Requirements, apply to the work under this section.

1.03 DEFINITIONS:

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.

2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.04 SUBMITTALS:

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use facsimile of form provided in the Project Manual.

2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.

b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.

c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable specification section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

i. Operational efficiency and energy consumption for equipment and appliances.

e. Samples, where applicable or requested.

f. Certificates and qualification data, where applicable or requested.

g. List of similar installations if requested, for completed projects with project names and addresses and names and addresses of architects and owners.

h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.

i. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.

j. Cost information, including a proposal of change, if any, in the Contract Sum.

k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.

l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven (7) days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within fifteen (15) days of receipt of request, or seven (7) days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.

b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.05 QUALITY ASSURANCE:

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage qualified testing agency to perform compatibility tests recommended by manufacturers.

1.06 PROCEDURES:

A. Coordination: Modify or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 PRODUCTS

2.01 SUBSTITUTIONS:

A. Substitutions for Cause: Submit requests for substitution immediately upon discovery of need for change, but not later than fifteen (15) days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

    a. Requested substitution is consistent with the Contract Documents and will produce indicated results.

    b. Substitution request is fully documented and properly submitted.

    c. Requested substitution will not adversely affect Contractor's construction schedule.

    d. Requested substitution has received necessary approvals of authorities having jurisdiction.

    e. Requested substitution is compatible with other portions of the Work.

    f. Requested substitution has been coordinated with other portions of the Work.

    g. Requested substitution provides specified warranty.

    h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Architect will consider requests for substitution if received within 10 days prior to the date of the Bid. Requests received after that time may be considered or rejected at discretion of Architect.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

    a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.

    b. Requested substitution does not require extensive revisions to the Contract Documents.

    c. Requested substitution is consistent with the Contract Documents and will produce indicated results.

    d. Substitution request is fully documented and properly submitted.

    e. Requested substitution will not adversely affect Contractor's construction schedule.

    f. Requested substitution has received necessary approvals of authorities having jurisdiction if applicable.

    g. Requested substitution is compatible with other portions of the Work.

    h. Requested substitution has been coordinated with other portions of the Work.

    i. Requested substitution provides specified warranty.

j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 EXECUTION - NOT USED

End of Section

SECTION 01 31 00 – PROJECT MANAGEMENT AND COORDINATION:

PART I GENERAL

1.01 COORDINATION OF WORK OF SUBCONTRACTORS:

A. It is the responsibility of the Contractor to coordinate the work of his mechanical and electrical subcontractors. To this end the Contractor shall require that the mechanical and electrical subcontractors examine and familiarize themselves with the architectural and structural drawings as well as the mechanical and electrical drawings and that they frequently consult with each other and all other trades so that the work can be properly coordinated.

B. The Contractor shall carefully check the work of his subcontractor in order to deliver to the Owner the contract work complete and properly installed in conformance with the Contract requirements.

1.02 CUTTING AND PATCHING:

A. Cut and patch existing work that is to remain in place as necessary for the installation of new work.

B. **It is the intention of the Contract that conduit, sleeves, thimbles, and chases for the mechanical and electrical work be installed in new concrete, masonry or stud wall work as the work progresses.** The mechanical and electrical subcontractors shall respectively install the required conduit, sleeves and thimbles in concrete forms and in masonry work and shall inform the Contractor of the size and location of any required chases to be formed in the concrete and masonry work. If this procedure is not followed, the mechanical and electrical subcontractors shall do all cutting of new concrete and masonry work required to install their work.

C. Cutting of new work shall be held to the minimum necessary and shall be done neatly. The Contractor shall be responsible for the proper patching and finishing of all cut work whether or not cut by his own workmen or by subcontractors.

D. Furr out walls or ceilings where necessary for the new work. Thicken walls as required to accommodate wall-mounted equipment including but not limited to electrical panel boxes, fire extinguisher cabinets, communications, security system, and fire alarm panels. Consult with the Architect about any furr outs not shown on the drawings to keep furr outs to a minimum.

1.03 PROJECT COORDINATION:

A. Large Equipment: When possible, equipment which is to be installed in the building that may be too large to pass through doorways, shafts, or other restrictions shall be brought on the job and placed in the proper location before the enclosing structure is completed, otherwise, arrange with other Contractors to permit access at a later date, at no additional cost to the Owner.

PART II PRODUCTS

NOT USED

PART III EXECUTION

NOT USED

End of Section

SECTION 01 32 50 – WEATHER DELAYS

PART I GENERAL

1.01 DESCRIPTION:

A. Work Included: Prepare and submit request for extensions of Time based on weather conditions.

B. Related Work:

1. Documents affecting work of this Section include, but are not limited to General Conditions, Supplementary General Conditions and Sections in Division 1 of these Specifications.

2. Applications for Payment.

1.02 EXTENSIONS OF CONTRACT TIME:

A. If the basis exists for an extension of Time in accordance with the General Conditions and Supplementary General Conditions, an extension of time on the basis of weather may be granted only for the number of Weather Delay Days in excess of the number of days listed in the standard Baseline for that month.

1.03 STANDARD BASELINE FOR AVERAGE CLIMATIC RANGE:

A. The State of Tennessee has reviewed weather data available form the National Oceanic and Atmospheric Administration and determined a Standard Baseline of average climatic range for the State of Tennessee.

B. Standard Baseline shall be regarded as the normal and anticipatable number of calendar days for each month during which construction activity shall be expected to be prevented and suspended by cause of adverse weather. Suspension of construction activity for the number of days each month as listed in the Standard Baseline is included in the Work and is not eligible for extension of Contract Time.

C. Standard Baseline for each month of the year is as follows (the anticipatable delay days follow the month):

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12	11	8	7	7	6	7	5	4	5	6	11

1.04 ADVERSE WEATHER AND WEATHER DELAY DAYS:

A. Adverse Weather is defined as the occurrence of one or more of the following conditions, substantiated by NOAA data, which prevents exterior construction activity or access to the site within twenty four (24)hours:

1. Precipitation threshold (rain, snow, or ice) in excess of one-tenth inch (0.10”) liquid measure. Snow to liquid measure ration is 10:1.

2. Standing snow is excess of one inch (1.00”).

B. Additional extension of Time may be granted for drying days following periods of two or more consecutive days of precipitation for the following conditions:

1. At a rate of one day extension of Time for each period of two or more consecutive days of precipitation of 1.0 inch or more (liquid measure).

2. Only if there is a hindrance to site access or site work, such as excavation, backfill and footings and the like and then only when no such work is performed.

C. A Weather Delay Day may be counted only if adverse weather prevents work on the Project for fifty percent (50%) or more of the contractor's scheduled, critical path work, including a weekend day or holiday if Contractor has scheduled construction activity that day.

1.05 DOCUMENTATION AND SUBMITTALS:

A. Contractor shall submit on a monthly basis daily job site work logs (daily reports) showing which, and to what extent, construction activities have been adversely affected by weather.

B. Submit actual weather data, if requested by Architect to support claim for time extension, as obtained from NOAA weather reporting station nearest the project site.

C. Use Standard Baseline data provided in this Section when documenting actual delays due to weather in excess of the average climatic range.

D. Organize claim and documentation to facilitate evaluation of a basis of calendar month periods, and submit in accordance with the procedures for Claims established in the General Conditions.

E. Extensions of Time requested by the Contractor and approved by the Architect on the basis of conditions stated above shall be acknowledged and communicated in writing to the Contractor periodically.

F. For extensions of Contract Time granted, a modification shall be issued in accordance with the provisions of the General Conditions, and the applicable General requirements. Modifications for extensions of Time may be issued quarterly or held to the end of the Project as appropriate based on Architect's approval of such extensions as noted in E above.

G. Extensions of Time not requested in a timely manner by the Contractor will not be granted at a later time.

PART II PRODUCTS

NOT USED

PART III EXECUTION

NOT USED

End of Section

SECTION 01 33 00 – SUBMITTALS

PART 1 GENERAL

1.01 GENERAL:

A. Work Included:

1. Wherever possible, throughout the Contract Documents, the minimum acceptable quality of workmanship and materials has been defined either by manufacturer's name and catalog number or by reference to recognized industry standards.

2. To ensure that the specified products are furnished and installed in accordance with the design intent, procedures have been established for advance submittal of design data and for its review or rejection by the Architect.

3. Shop drawings, product data and samples will be required for items listed hereinafter in the various sections of the specifications. The Architect reserves the right to request samples of proposed substitutions for materials or equipment specified whether or not samples of the materials and equipment specified are called for.

1.02 RELATED DOCUMENTS:

A. Applicable provisions of the General Conditions, Supplementary Conditions, and Division 1, General Requirements, apply to the work under this section.

1.03 DESCRIPTION OF REQUIREMENTS:

A. The types of submittals controlled by these General Requirements include shop drawings, product data, samples and miscellaneous work-related submittals. The individual submittal requirements are specified in applicable section for each unit of Work.

B. Definitions: the work-related submittals of this section, in addition to the definitions of the General Conditions and elsewhere in the Contract Documents for the requirements of administrative submittals.

1. **Shop drawings** include custom-prepared data of all forms including drawings, diagrams, performance curves, data sheets, schedules, templates, patterns, reports, calculations, instructions, measurements, and similar information not in standard printed form applicable to other projects.

2. **Product data** includes standard printed information on materials, products and systems, not custom-prepared for this project, other than the designation of selections from available choices.

3. **Samples** include both fabricated and unfabricated physical samples of materials, products and Work; both as complete units and as smaller portions of units of Work; either for limited visual inspection or (where indicated) for more detailed testing and analysis.

4. **Miscellaneous submittals** related directly to the Work (non-administrative) include warranties, guarantees, maintenance agreements, workmanship bonds, quality testing and certifying reports, copies of industry standards, record drawings, operating and maintenance materials, overrun stock, security/protection/safety keys and similar information, devices and materials applicable to the Work and not defined as shop drawings, product data or samples.

1.04 GENERAL SUBMITTAL REQUIREMENTS:

A. Coordination and Sequencing: Coordinate the preparation and processing of submittals with the performance of the Work so that Work will not be delayed by submittals. Coordinate and sequence different categories of submittals for the same Work, and for interfacing units of Work, so that one will not be delayed for coordination with another. Do not proceed with purchasing, fabrication and delivery of work related to a submittal until submittal procedure has been successfully completed.

B. Preparation of Submittals: provide permanent marking on each submittal to identify it by project, date, Contractor, subcontractor, submittal name and similar information to distinguish it from other submittals. Show Contractor's approval marking prior to Architect's design intent review. Package each submittal appropriately for transmittal and handling. Submittals which are received directly from sources other than through the Contractor's office will be returned "without action".

C. The Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the Architect's approval of submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submission and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved from responsibility for error or omissions in the submittals by the Architect's approval thereof.

D. Verbal discussion between the Contractor and the Owner or the Architect of a proposed deviation and any subsequent agreements thereto shall not be considered valid unless confirmed in writing by the Owner or the Architect.

E. The Contractor shall direct specific attention, in writing or on resubmitted submittals, to revisions other than those requested by the Architect on previous submittals.

F. Delivery: All submittals shall be accompanied by a letter of transmittal containing an enumeration and description of the submittals and, unless otherwise specified, shall be delivered to the Architect. **The transmittal letter shall indicate whether the submittal is for a product as specified; is a pre-approved substitution; or is a request for substitution offered with supporting documentation in accordance with the Contract Documents.**

Unless directed otherwise, all submittals shall be delivered to:

Chuck Grant, AIA
Michael Brady Inc.
299 N. Weisgarber Road
Knoxville, Tennessee 37919-4013

1.05 SUBCONTRACTORS AND MAJOR MATERIAL SUPPLIERS LIST:

A. Within 30 days of receipt of a notice to proceed and prior to submitting any shop drawings or requests for payment, the Contractor shall submit a list of Subcontractors and Major Material Suppliers on the form provided in this Project Manual. The form shall list all Subcontractors and suppliers for the project providing material and or labor whose dollar value equals or exceeds Five Thousand dollars ($5,000).

1.06 SCHEDULE OF VALUES:

A. The schedule of values specified in Subparagraph 9.2.1 of the General Conditions shall be divided into not less than one line item for each section of the specifications (except Division 1 sections). Coordinate line items in the schedule of values with portions of the contract documents which identify units or subdivisions of work. Specifically, correlate with the project manual table of contents. Divide major subcontracts into individual cost items. Submit Schedule of Values within 20 days after execution of the Contract.

1. Where applications for payment are likely to include products purchased or fabricated but not yet installed, provide individual line items for material cost, installation cost, and other applicable phases of completion.
2. Provide separate line items for each allowance included in the Contract price.

1.07 APPLICATIONS FOR PAYMENTS:

A. Applications for payments shall be submitted on AIA Document G702, Application and Certificate for Payment, supported by AIA Document G702A, continuation sheet, and by separate lists of materials stored at the site and materials stored off the site. Three (3) original notarized copies of Applications for Payment shall be submitted.

1.08 CONTRACTORS PROGRESS SCHEDULE:

A. Prepare a fully developed, horizontal bar-chart type, contractor's progress schedule. Submit within twenty (20) days after the date established for Commencement of the Work.

B. 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.

C. As work progresses, place a contrasting mark in each bar to indicate Actual Completion.

D. Prepare the schedule on a sheet or series of sheets , of paper of sufficient width to show data for the entire construction period.

E. 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.

F. Coordinate the Contractor's Progress Schedule with the Schedule of Values, list of subcontracts, Submittal Schedule, progress reports, payment requests, and other schedules.

G. 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.

H. Revise the schedule monthly. Issue the updated schedule concurrently with the Application and Certification for Payment.

1.09 REVIEW OF DELEGATED ENGINEERING DOCUMENTS:

A. Delegated Engineer: A professional engineer who undertakes a specialty service and provides services or creative work regarding a portion of the engineering project such as a fabricator or contractor so long as the engineer acts as an independent consultant or through a duly qualified engineering corporation. The delegated engineer is the engineer of record for that portion of the project.

B. Documents prepared by a delegated engineer shall bear the name and business address of the delegated engineer on the engineering documents. When such documents are issued for preliminary or conceptual use, the engineer shall clearly note the intended purpose of such documents.

C. Documents prepared by the delegated engineer shall be submitted to the engineer of record for review for compliance with engineering requirements and to confirm the following:

1. That the delegated engineering documents have been prepared by an engineer licensed and registered in the state of project construction.

2. That the delegated engineering documents of the delegated engineer conform with the intent of the engineer of record and meet the written criteria.

3. That the effect of the delegated engineer's work on the overall project generally conforms with the intent of the engineer of record.

1.10 SHOP DRAWINGS:

A. General: See Paragraph 3.12 of the General Conditions for provisions pertaining to shop drawings.

B. Preparation of Shop Drawings: Submit newly prepared information drawn accurately to scale sufficiently large to show all pertinent features of the item and its method of connection to the Work. **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. **Provide a space approximately 4 inches by 5 inches on the label or beside the title block on Shop Drawings to record the Architect's approval markings and recording action taken. Do not allow shop drawing copies without appropriate final review markings by the Architect or Engineer to be used in connection with the Work.**

C. Identification: All submittals shall be clearly identified with the **name of the project, the supplier's name, the Contractor's name, and the location of material or equipment in the building. All shop drawings shall be dated and numbered.**

D. Contractor's Review: Shop drawings submitted without evidence that they have been reviewed by the Contractor, as specified in Paragraph 3.12 of the General Conditions, or without proper identification as specified herein, will be returned to the Contractor without action by the Architect and shall be properly resubmitted. **When the phrase "by others" appears on a shop drawing, the Contractor shall indicate on the shop drawing who is to furnish the material or operation so noted, before submitting the drawing. By approving and submitting submittals, the Contractor represents that he has determined and verified all materials, field measurements, and field construction criteria related thereto, or will do so, and that he has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.**

E. Coordination of Submittals: Prior to submittal for Architect's review, use all means necessary to fully coordinate all material, including, but not limited to, the following procedures:

1. Determine and verify all field dimensions and conditions, catalog numbers, and similar data.
2. Coordinate as required with all Trades and with all public agencies involved.
3. Secure all necessary approval from public agencies and others; signify by stamp or other means that all require approvals have been obtained.
4. Clearly indicate, in writing, all deviations from the Contract Documents.
   Additional copies of approved shop drawings shall be furnished as required for coordination of the work of the various trades.

F. Number of Shop Drawings Required:

1. One (1) hard-copy print and one electronic file copy of the entire submittal, shall be submitted of each submittal. The hard-copy shall be bound as a single entity for each submittal. ALL information present in the hard-copy, and no information absent from the hard-copy, shall be contained in a single electronic file as a single submittal.

2. After the submittal has been reviewed and stamped, a copy of the electronic file will be kept at the office of the Architect, a copy of the electronic file will be kept at the office of the Engineer.
3. One (1) reviewed copy of the electronic file will be returned to the Contractor, from which he shall make as many hard-copies as he feels is needed for the prosecution of the Work.
4. The Architect will not furnish additional copies to the Contractor.

G. Architect's Review of Submittals: The Architect/Engineer shall review and approve or take other appropriate action on the Contractor submittals, such as shop drawings, product data, samples and other data, which the Contractor is required to submit, but only for the limited purpose of checking for conformance with the design concept and the information shown in the Construction Documents. This review shall not include review of the accuracy or completeness of details, such as quantities, dimensions, weights or gauges, fabrication processes, construction means or methods, coordination of the work with other trades or construction safety precautions, all of which are the sole responsibility of the Contractor. The Architect/Engineer's review shall be conducted with reasonable promptness while allowing sufficient time in the Architect/Engineer's judgment to permit adequate review. Review of a specific item shall not indicate that the Architect/Engineer has reviewed the entire assembly of which the item is a component. The Architect/Engineer shall not be responsible for any deviations from the Construction Documents not brought to the attention of the Architect/Engineer in writing by the Contractor. The Architect/Engineer shall not be required to review partial submissions or those for which submissions of correlated items have not been received.

1. The Architect shall provide 2 reviews of submittals as part of the scope of work. Additional reviews required by failure of the Contractor to make indicated corrections or submit an acceptable product will be billed to the Contractor at the Architect's standard hourly rate.

H. Time Required for Architect's Review: Shop drawings shall be submitted in time to allow **not less than two weeks for processing by the Architect, plus an additional week for submittals requiring review by an engineer including mechanical, electrical, structural and civil engineering or those items requiring review by a consultant such as kitchen equipment, detention facility equipment and/or acoustical consultants.**

1.11 PRODUCT DATA:

A. General: See Paragraph 3.12 of the General Conditions for provisions pertaining to shop drawings.

B. Collect the required data into one submittal for each material, product or system; and mark each copy to show which choices and options are applicable to the project. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked, and special coordination requirements. Maintain one set of product data (for project site, available for reference by the Architect, Engineer or others).

C. The Architect will require a minimum of four (4) copies to be submitted of Product Data which has not been originally prepared on copyable material. The Architect will retain one copy, one copy will be retained by the Engineer and two copies will be returned to the Contractor. Therefore, if the Contractor desires more than two (2) copies with two copies returned to him, he must add to the minimum number of copies required to be submitted.

D. Information not exclusively pertinent to the Project shall be deleted so that there is no possible area of confusion as to what product, series or model is to be examined. The Architect or Owner will not take responsibility for having examined a product that was not intended by the Contractor to be judged.

1.12 SAMPLES AND MOCKUPS:

A. Samples and mockups shall faithfully represent the product or the assembly as it is proposed to be installed. This shall include, but not be limited to, materials, finishes, method of construction or assembly, relationship to adjacent construction, method of attachment to adjacent construction, plus any electrical or mechanical connection that are required for the product or assembly to function. Include “range” samples (not less than 3 units) where variations occur, and identify each unit of each set.

B. All samples shall have a label or tab containing the required information firmly affixed thereto.

C. Unless the precise color and pattern is specifically described in the Contract Documents, whenever a choice of color or pattern is available in specified product submit accurate color charts and pattern charts to the Architect for his review and selection. Provide full sets of optional samples where Architect’s selection is required. Prepare samples to match the Architect’s sample where so indicated. Include information with each sample to show generic description, source or product name and manufacturer, limitations, and compliance with standards.

D. Samples and color charts shall be physical specimens of materials or colors proposed to be provided. Selections and approval of samples will be made by the Architect from these submitted samples and color charts, without increase in costs to the Owner or Architects. Should be Contractor desire a sample returned, he shall submit a sufficient number in order for the Architect to retain one (1) sample and return the remainder to the Contractor.

E. In order for the Architect to make a color schedule as quickly as possible and to avoid delivery and pricing problems, the Contractor shall be required to submit all items that require a color selection within 40 days of the Notice to Proceed. Delivery and pricing problems that develop because an item was not submitted within the forty (40) day time limit, shall be the sole responsibility of the Contractor and not that of the Owner.

F. The color selection on any one item will not be made until after samples of all items that require a color selection have been submitted.

1.13 AS BUILT SURVEY:

A. Contractor shall provide an as-built topographic survey of the work as part of Close-out Documents.

1. Show size, location and depth of buried tanks or structures if possible.

2. Provide topographic survey at one (1) foot contours.

3. Locate all on-site utilities:

a. Top and invert of all sanitary and storm sewers installed on site. Showpipe size and materials, including pipes to daylight and/or detention ponds, on or off site (give direction of flow).

b. All gas, water, electric, sewage installed on site – indicate size, depth, pressure and materials.

4. Locate any and all fire hydrants installed on the site.

5. Give benchmark elevation and location and state the source of the vertical datum. Tie benchmark to survey provide as part of Construction Documents.

6. Provide topography 50 feet beyond extent of grading work performed on site.

7. Provide name, address and phone number for the following:

   a. Building Department officials approving installation and connection of utility lines to public utilities.

   b. Utility companies having jurisdiction over property

8. Provide progress print to Architect prior to supplying vellum.

9. Provide one (1) print of stamped and signed survey to Architect upon completion.

10. Provide a digital file of final survey in an AutoCAD .dwg or .dxf format.

11. Tie site to locally established horizontal and vertical datum in relation to state plain coordinates if within 200 feet of site and/or if site is within a designated flood hazard plain.

1.14 ARCHITECT'S ACTION:

A. The stamps of the Architect on returned shop drawings, product data and samples shall be interpreted as follows:

1. Received: Acknowledges receipt. No action taken.
2. Reviewed, No Exceptions Taken: No corrections. Proceed with the work.
3. Furnish as Noted: May proceed with work as noted; shop drawings bearing this stamp must submit revised and resubmitted for record.
4. Revise and Resubmit: No work shown shall be fabricated or furnished until shop drawings have been revised and resubmitted for further checking or approval.
5. Rejected: Work shown is not in accordance with Contract requirements and is rejected. Make new submittals.
6. Submit Specified Item: No substitutions permitted for this item. Make new submittals.

1.15 SUBMITTAL SCHEDULE:

A. After development and acceptance of the Contractor's Construction Schedule, prepare a complete schedule of submittals. Submit the schedule within 10 days of the date required for submittal of the Contractor's Construction Schedule.

B. Coordinate Submittal Schedule with the list of subcontracts, Schedule of Values, and the list of products as well as the Contractor's

C. Prepare the schedule in chronological order. Provide the following information for each submittal.

Scheduled date for the first submittal.
Related Section Number
Submittal category (Shop Drawing, Product Data, or Sample)
Name of the subcontractor
Description of the part of the Work covered
Scheduled date for Architect's final release or approval.

D. Following approval of initial submittal, print and distribute copies to the Architect, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.

E. Revise the schedule monthly and issue the updated schedule concurrently with each Application and Certificate for Payment.

1.16 SUBMITTAL SEQUENCE:

A. The right is reserved by the Architect to examine submittals and samples in a proper sequence that reflects the logical sequence of erection, installations, and proper assembly. Submittals of products or materials that are the responsibility of separate Trades yet must be assembled in conjunction one with another, shall be submitted at the same time so that they may be examined all together. Should these not be submitted simultaneously, the Architect reserves the right to hold one set while awaiting the arrival of other submittals.

B. All submittals within the responsibility of one Trade must be submitted at one time together (i.e. millwork). Numerous submittals of one product or item of construction over a period of time is not acceptable. In the event of this occurrence, the Architect will hold the submittal data arriving first until the last of the material has arrived. Then, and only then, will he make his examination.

1.17 TIMING OF SUBMITTALS:

A. Make all submittals far enough in advance of scheduled dates for installation to provide all required time for reviews, for securing necessary approvals, for possible revision and resubmittals, and for placing orders and securing delivery.

B. Costs of delays occasioned by tardiness of submittals may be back-charged as necessary and shall not be borne by the Owner.

1.18 RECORD DRAWINGS:

A. In addition to the record drawings specified in Paragraph 3.11 of the General Conditions, the Contractor shall assure that the record drawings for the mechanical, plumbing, fire protection and electrical work, as specified under Division 15 and 16 respectively, are properly maintained by his subcontractor and upon completion of the work shall deliver them to the Architect for the Owner.

1.19 CONTRACT CLOSE-OUT SUBMITTALS:

A. As a precedent to final acceptance of the work and issuance of Certificate of Final Payment, including the Release of Retainage, certain submittals shall be made as specified in the various sections of the specifications. All such submittals shall be delivered to the Architect, in the form and number of copies specified, prior to or with the Contractor's request for final payment. Submittals shall include but not be limited to:

1. General Contractor's Affidavit, Waiver and Release of Lien Statements and Consent of Surety, to final payment **as well as release of lien statements from all subcontractors and major material suppliers** as specified in Subparagraph 9.10.2 of the General Conditions. **These documents shall be addressed to the Owner, and shall be original signed documents and not reproduced copies. Two (2) sets of these drawings shall be submitted**.

2. Written guarantees and warranties as specified in the various other sections of the specifications.

3. Record drawings as specified in the General Conditions and in Divisions 15 and 16.

4. One copy of each final approved shop drawing submitted during the course of the project.

5. Three copies of operation and maintenance data for mechanical equipment and electrical equipment.

6. Letter stating that to the best of the Contractor's knowledge, no asbestos containing materials or other Work hazardous materials or products as currently defined in the Resource Conservation and Recovery Act of 1976 (RCRA), the Comprehensive

Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), or Environmental Protection Agency (EPA) regulations, rules, or requirements, as amended

7. Contract Close-Out Submittals, except for record drawings, shall be submitted in commercial quality three ring binders with durable plastic covers. Identify the project on the face and side of the binders. Provide a cover sheet giving complete Project Title, Contractor's and Architect's name, address, phone number, name of project superintendent, and related general information. Include a Table of Contents to identify material in the Project Data Binders and a complete listing of subcontractors and material suppliers. Provide copies of all Certificates, Warranties and related documents as well as Product Data, Maintenance and Operation Data and related information required by the Contract Documents or furnished with items included in the Project. Two (2) sets of these documents shall be submitted.

End of Section

Submittal Cover Sheet Submittal No.: _____

Contractor: _____
_____
_____
_____

Date: _____

Phone: _____

Fax: _____

Email: _____

Project Manager: _____

Project Title: _____ **Architect's Comm. No.:** _____

Spec Section Title: _____ **Section No.:** _____

Sub / Supplier: _____ **Phone:** _____

_____

YES ☐ NO ☐ **Product is as Specified**

Contractor's Review Stamp

If not as specified attach Substitution Request Form

Remarks: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

SECTION 01 35 00 – SPECIAL PROJECT PROCEDURES:

PART 1 GENERAL

1.01 PROGRESS SCHEDULE:

A. In addition to the progress schedule required by the General Conditions, the Contractor shall also submit his proposed scheme of work for approval, describing proposed methods and sequences of work from beginning to completion of the work and their correlation with the Owner's requirements.

B. When the Contractor's proposed sequence of work has been approved by the Owner, it shall become the time schedule for the work and shall be adhered to as closely as possible by both the Contractor and the Owner, except that mutually agreeable modifications may be made from time to time to meet unforeseen exigencies.

1.02 TIME OF PERFORMING WORK:

A. Generally, the Contractor will be permitted to conduct his work in the building and on the premises during his regular working hours.

B. The building must have the HVAC system operational and maintained at a constant temperature prior to installing any building finishes, except metal support systems.

1.03 OBSTRUCTIONS:

A. All obstructions encountered during the construction of the Contract work shall be overcome by the Contractor by removal or alteration of work in place, by adjustments in the new work, or by temporary removal and reinstallation of existing work.

1.04 CLEANING UP:

A. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

B. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

C. Exposed Surfaces in Finished Areas: Clean exposed surfaces

D. Upon completion of the work, remove spots, stains, dirt, and dust from finished surfaces, both new and existing, including the surfaces of all existing machinery, equipment, and exposed piping that have been soiled by the construction. Protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

E. Clean and mop hard surface flooring and resilient flooring and vacuum clean carpet flooring

F. Wash all glass and clean plumbing fixtures, lighting fixtures, and mechanical equipment.

G. Comply with all special cleaning instructions contained in the various other sections of the specifications.

H. Protect new and existing surfaces from the growth and spread of mold and mildew. If mold and mildew occur, notify Architect prior to proceeding. Retain qualified testing agency to document and direct remediation. Remediate or replace surfaces to stop the growth and spread of mold and mildew as deemed necessary by a qualified testing agency acceptable to the Contractor, Owner and Architect.

1. Pay for necessary testing and perform all abatement work required to remedy condition.

1.05 INSPECTION OF WORK IN PLACE:

A. The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities. The architect is to be given advanced notification for inspection of Structural, Mechanical, Plumbing, and Electrical work prior to said work being covered.

B. Contractor shall give architect advanced notification for final inspection punch list prior to Owner occupying space.

1.06 SMOKING AND FIRE PRECAUTIONS

A. No fire, or use of any fire, or explosion-producing tools or equipment will be permitted on the property

B. This facility is a designated non-smoking facility. Smoking will not be permitted in the facility or within 20 feet of any entrance.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

End of Section

SECTION 01 40 00 – QUALITY CONTROL

PART 1 GENERAL

1.01 Quality Control is defined as testing and inspection performed by/or under the direction of the Contractor to ensure materials and construction meet the requirements of the Contract Documents and Specifications.

1.02 QUALITY CONTROL:

A. Quality Control tests and inspections consist of items identified in the Contract Documents and Specifications.

1.03 TESTS:

A. Engage inspection and test service agencies, including independent testing laboratories, which comply with “Guidelines for Effective Practice for Materials Engineering Laboratories” by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.

B. Tests required to establish compliance with the Contract requirements for quality control shall be made by a testing agency acceptable to the Contractor, the Owner and the Architect with reports certified by the laboratory and furnished in duplicate to the Architect with a copy to the Contractor.

C. Representatives of the testing agency and monitoring shall have access to the work at all times. The Contractor shall provide facilities for such access and samples as necessary so that the testing agency may properly perform its function.

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

Name of testing agency or testing laboratory.
Dates and locations of samples and test or inspections.
Names of individuals making the inspection or test.
Complete inspection or test data.
Test results
Interpretations of test results.
Notation of significant ambient conditions at the time of sample taking and testing.
Comments or professional opinion as to whether inspected or tested work complies with requirements of the contract documents.
Recommendations on retesting, if applicable.

E. Non-Compliant Inspection/Test Results: Within 24 hours of inspection/test being performed, notify Architect/Engineer of-Record, and the Contractor of any non-conforming/non-compliant inspections/tests. Copies of successful retests of the originally non-conforming/non-compliant work shall be submitted to the Architect/Engineer-Of-Record and the Contractor.

F. Project Closeout: the Contractor shall certify to the Architect of Record that the required quality control services, as required by this section and the contract documents have been performed and that all results indicate compliance with requirements.

1.04 COST OF TESTS:

A. The cost of the services of the testing agency and monitoring shall be paid by the Contractor. When the tests indicate noncompliance with the Contract requirements, any subsequent and retesting occasioned by noncompliance shall be performed by the same testing agency and the costs shall be borne by the Contractor.

1.05 NOTIFICATIONS OF THE ARCHITECT:

A. Notify architect within 24 hours before any work is completed for areas as described herein. If the architect is not notified as stated above and the contractor proceeds with the work, the architect shall have authority to direct the contractor to remove part or all of the installed materials at the contractor's expense for a detailed observation.

B. The Architect shall be notified at the following points of work:

1. Footing bottoms and concrete reinforcement prior to pouring any concrete.

2. Waterproofing/Damp-proofing prior to any backfilling work.

3. Water drainage test on sloped concrete floors prior to finish floor materials installed.

4. Thru-wall flashing installation and mortar mix prior to installing any masonry.

5. Completed structural steel erection before floor slabs are poured.

6. Mechanical and Electrical systems above ceiling inspection prior to installation of finish ceiling material.

C. The respective contractor and/or subcontractor shall correct any deficiencies that may be observed. Construction work observations or lack there of by the architect does not relieve the contractor and/or subcontractor from any liability of faulty workmanship that may have occurred or may occur at a later date.

1.06 OTHER TESTS:

A. See provisions of the General Conditions regarding tests required by governing authorities.

B. The provisions of Divisions 22-23 and 26 for tests required for mechanical and electrical work.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 REPAIR AND PROTECTION:

A. Upon completion of inspection, testing, sample taking, and similar services, repair damaged work and restore substrates and finishes to eliminate all deficiencies. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

End of Section

SECTION 01 50 00 – CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.01 UTILITIES SERVICES FOR CONSTRUCTION PURPOSES:

A. The Contractor shall provide all necessary temporary utilities as required for construction purposes. The utility costs will be paid by the Contractor.

B. The Contractor shall furnish and install all temporary piping and wiring required for the use of these services during construction and upon completion of the work shall remove such temporary piping and wiring.

C. The use of existing services shall be in such a manner and by such methods that will not interrupt the services to any of the Owner's facilities that are to remain in operation during construction.

1.02 BARRICADES AND SPECIAL CONTROLS:

A. Provide temporary barriers, fences, and warning signs around the sites of new buildings to control access of unauthorized persons to work areas, and as required by law. Special care shall be taken to provide adequate barriers and warning signs to prevent access of unauthorized persons to work areas where hazardous work is being performed.

B. Provide temporary barriers and warning signs at excavations that might be left open during nonworking hours, including warning lights at night.

1.03 CONSTRUCTION AIDS:

A. Provide necessary staging, scaffolding, and hoisting equipment and temporary walkways and ladders required for installation of the work under the Contract.

1.04 TEMPORARY BUILDINGS:

A. Provide temporary field office and storage sheds as required to carry on the work. Adequate space shall be provided in the field office for convenient use and storage of Contract Drawings and Specifications, approved shop drawings, samples, and field records. Truck trailers may be used for temporary field office and storage enclosures.

B. Upon completion of the work, all temporary buildings shall be removed and the area of the site that they occupied shall be restored to its condition at the commencement of work under the Contract.

1.05 SANITARY FACILITIES:

A. Provide adequate temporary toilet facilities for the use of workmen, conforming to applicable laws, ordinances, and governmental regulations.

B. Upon completion of the work, temporary toilet facilities shall be removed from the site.

C. Provide temporary sanitary facilities for use of the Building Occupants during the course of construction during time existing sanitary facilities have been removed from service and before new facilities are available for use of building occupants.

1. Provide separate portable toilets for men and women.

a. Service portable toilets weekly at a minimum during the time they are in service.

1.06 TEMPORARY ENCLOSURES:

A. Provide temporary weathertight closures for all exterior openings after walls and roof of the new building are constructed when it is necessary to protect the work from the weather and to permit the use of temporary heat. Provide weathertight and security protection of the existing building until what time as the new construction is able to provide weathertightness and security. Provide safety barriers as required to protect the occupants of the building.

B. Water Protection: Provide at all items for protection of excavation, trenches, and building from damage by rain water, spring water, ground water, backing up of drains or sewers, and all other water. Provide all pumps, equipment, temporary drains or dams, and enclosures necessary to provide this protection.

1.07 TEMPORARY HEAT AND VENTILATION:

A. Provide temporary heat and ventilation as necessary for protection and drying out of the work and to allow work to be prosecuted in cold weather.

B. Heat shall be provided by means of approved temporary heating equipment which in installation and operation will not damage the work. Provide adequate and proper fuels and all services required to furnish heat as required. Salamanders shall not be used inside the building. Heaters used to dry out or protect freshly placed concrete shall be of a type and shall be so ventilated as to prevent carbon dioxide from damaging concrete.

C. Costs of providing temporary heat shall be borne by the Contractor.

1.08 BULLETIN BOARD AND JOB SIGN:

A. On or near the field office, the Contractor shall install a bulletin board upon which to post legally required notices. The bulletin board shall be of adequate size to contain all required notices and be so constructed as to protect the postings from obliteration by the weather.

B. The Architect shall provide one painted sign stating the Architect (Michael Brady Inc.). Location of sign shall be as directed by the Architect. The Contractor shall erect a substantial wood frame to support the sign provided by the Architect.

C. Maintain all bulletin boards and job signs in good condition from start to completion of the work.

1.09 RODENT AND VERMIN CONTROL:

A. Provide on the project site ample and suitable refuse containers with covers. The Contractor shall be responsible for containing and removing from the site all refuse from meals eaten on the site and other rodent or vermin attracting refuse.

B. During the construction period precaution shall be taken as necessary to control the entry and breeding of rodents and vermin in the new building.

C. If, within three months after occupancy of the building, the building is found to be infested by rodents or vermin, the Contractor shall bear the cost of extermination.

1.10 REMOVAL OF CONSTRUCTION DEBRIS:

A. Provide suitable containers for and maintain regular a regular schedule for the removal of debris and rubbish from the construction site and surrounding area.

B. Pay all container rental fees, hauling, and landfill costs associated with the removal of debris and rubbish from the site.

1.11 PROTECTION:

A. Weather Protection: Provide at all times protection against rain, wind, storms, frost, or heat so as to maintain all work, materials, equipment and fixtures free from injury or damage. At end of days work, all new work likely to be damaged by weather conditions shall be covered.

B. Water Protection: Provide at all times protection of excavation, trenches, and building from damage by rain water, spring water, ground water, backing up of drains or sewers, and all other water. Provide all pumps, equipment, temporary drains or dams, and enclosures necessary to provide this protection.

C. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

D. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Section 011000 "Summary."

E. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings, requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.

2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.

4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

1.12 TELEPHONE:

A. Install a single party telephone or a cellular phone and a facsimile machine or computer capable of sending and receiving email in the field office. The telephone shall be available for use by all persons concerned with the construction of the project and service shall be maintained from start to completion of the work. The cost of the telephone service shall be paid by the Contractor.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

End of Section

SECTION 01 60 00 – PRODUCT REQUIREMENTS:

PART 1 GENERAL

1.01 STORAGE OF MATERIALS AND EQUIPMENT:

A. Storage of materials and equipment, location of field office, space for truck deliveries and parking of workmen's cars shall be restricted to areas of the site mutually agreed upon by the Contractor and the Owner prior to commencement of construction.

B. Storage of materials and equipment and truck deliveries shall not interfere with normal pedestrian and vehicular traffic.

C. Upon completion of the work, all damage to existing ground cover, paving, site improvements, or existing structures resulting from the storage of materials and equipment, construction vehicular traffic, or other construction operations under the Contract shall be repaired by the Contractor to its condition at commencement of work under the Contract.

1.02 PROTECTION OF MATERIALS AND EQUIPMENT:

A. Material and equipment stored on the site that are to be incorporated in the work shall be adequately protected from damage by the weather or by construction operations.

B. Materials subject to damage by water shall be blocked off the ground and protected with waterproof coverings, stored in weathertight floored sheds or in the building after it is enclosed.

C. Material that is subject to damage by soiling or by exposure shall be stored as to prevent physical damage to the materials and equipment.

D. Materials and equipment shall be so transported, handled, and stored as to prevent physical damage to the materials and equipment.

1.03 SUBSTITUTIONS:

A. All materials and equipment incorporated in the work shall be new and as specified, except such substitutions that are approved as provided by the provisions for substitutions set forth in the Supplementary Conditions.

B. Where substitutions are implemented, the Contractor shall be responsible for insuring that:

1. The proposed substitution does not affect dimensions shown on Drawings.

2. He will pay for changes to the building design, including engineering design, detailing, and construction costs caused by the requested substitution.

3. The proposed substitution will have no adverse affect on other trades, the construction schedule, or specified warranty requirements.

4. Maintenance and service parts will be locally available for the proposed substitution.

PART II PRODUCTS

NOT USED

PART III EXECUTION

NOT USED

End of Section

SECTION 01 77 00 – CONTRACT CLOSEOUT:

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Closeout procedures.

B. Owner's Operating Instruction Session.

C. Adjusting.

D. Operation and Maintenance Data.

E. Project record documents.

F. Warranties

1.02 RELATED DOCUMENTS:

A. Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

1.03 SUBSTANTIAL COMPLETION:

A. Notify the owner not less than twenty-one (21) days prior to the date of substantial completion to allow notification of tenants.

B. Submit written certification to Architect that Project, or designated portion of Project, is substantially complete. Include a list of items to be completed or corrected as a result of his inspection of the work.

C. Submit the Certificate of Occupancy issued by the local building authority to the Architect for forwarding to the Owner.

D. The Architect will make an inspection within seven (7) days after receipt of certification, together with Owner's Representative.

E. Should the Architect consider the work substantially complete:

1. The Contractor shall prepare, and submit to the Architect, a list of items to be completed or corrected, as determined by the Architect's inspection.

2. The Architect will prepare and issue a certificate of substantial completion, AIA document G704, complete with signatures of Owner, Contractor, and Architect, accompanied by Contractor's list of items to be completed or corrected, as verified and amended by the Architect.

3. The Owner will occupy the project, under provisions stated in certificate of substantial completion.

4. The Contractor will complete work listed for completion or correction, within the designated time.

5. Refer to Supplementary Conditions Article 9.10.6 for failure to complete in a timely manner.

F. Should the Architect consider that the Work is not Substantially Complete:

1. He shall immediately notify Contractor, in writing stating reasons.

2. The Contractor shall complete the Work, and send second written notice to the Architect, certifying that the project or designated portion of project, is substantially complete.

3. The Architect will reinspect the work at the Contractor's expense.

1.04 OWNER'S OPERATING INSTRUCTION SESSION:

A. Conduct training session for Owner's designated personnel covering various mechanical, electrical, and other operating features for familiarization with the physical plant equipment and operation. One copy of the required (see various technical sections on project closeout) mechanical operations manual shall be on hand during this session along with the mechanics familiar with all equipment. These mechanics shall have on hand such tools and/or equipment to reveal controls and mechanic access areas. The instruction session shall be scheduled for a full day but in no case less than the minimum time required to review each type of equipment/operation. The minimum areas of instruction shall be:

1. Location and operation of project site water valves, meters and other operational equipment.

2. Location and operation of project electrical disconnects.

3. Operation of sewage handling facilities.

4. Sprinkler valves, alarms, test and operation.

5. Project landscape irrigation operation.

6. Project Site lighting operation/maintenance.

7. Storm sewer operation/configuration.

8. Refuse containment areas.

9. Roof maintenance/warrantee considerations. Traffic cautions.

10. HVAC unit operations/maintenance (filters and thermostats, boiler and/or cooling tower maintenance).

11. Interior lighting, lamp and ballast replacement.

12. Keying and lock operations.

13. Locations and use of required replacement finish materials such as floor and ceiling tiles and panels.

14. Notification procedures for Contractor warranty work.

B. Video Tape Owner's Instruction Session and provide two (2) copies on DVD to Owner as part of Close Out Documentation.

1.05 CLOSEOUT PROCEDURES AT FINAL COMPLETION:

A. As a precedent to final acceptance of the work and issuance of Certificate of Final Payment, including the Release of Retainage, certain submittals shall be made as specified in the various sections of the specifications. All such submittals shall be delivered to the Architect, in the form and number of copies specified, prior to or with the Contractor's request for final payment. Submittals shall include but not be limited to:

1. General Contractor's Affidavit, Waiver and Release of Lien Statements and Consent of Surety, to final payment as well as release of lien statements from all subcontractors and major material suppliers as specified in Subparagraph 9.10.2 of the General Conditions. These documents shall be addressed to the Owner, and shall be original signed documents and not reproduced copies. Two (2) sets of these drawings shall be submitted.

2. Written guarantees and warranties as specified in the various other sections of the specifications.

3. Record drawings as specified in the General Conditions and in Divisions 15 and 16.

4. One copy of each final approved shop drawing submitted during the course of the project.

5. Three copies of operation and maintenance data for mechanical equipment and electrical equipment.

6. Letter stating that to the best of the Contractor's knowledge, no asbestos containing materials or other Work hazardous materials or products as currently defined in the Resource Conservation and Recovery Act of 1976 (RCRA), the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), or Environmental Protection Agency (EPA) regulations, rules, or requirements, as amended

7. Contract Close-Out Submittals, except for record drawings, shall be submitted in commercial quality three ring binders with durable plastic covers. Identify the project on the face and side of the binders. Provide a cover sheet giving complete Project Title, Contractor's and Architect's name, address, phone number, name of project superintendent, and related general information. Include a Table of Contents to identify material in the Project Data Binders and a complete listing of subcontractors and material suppliers. Provide copies of all Certificates, Warranties and related documents as well as Product Data, Maintenance and Operation Data and related information required by the Contract Documents or furnished with items included in the Project. Two (2) sets of these documents shall be submitted.

B. Submit written certification that the Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for final inspection by Owner and Architect.

C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments and sum remaining due.

1.06 WARRANTIES:

A. Provide notarized copies.

B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.

C. Provide Table of Contents and assemble in three D side ring binders with durable plastic covers. Note: This is in addition to copies of warranties provided with operation and maintenance binders.

D. Submit prior to final Application for Payment.

E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten (10) days after acceptance, listing date of acceptance as warranty period.

1.07 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification sections.

B. Deliver to Project site and place in location as directed, obtain receipt prior to final payment.

End of Section

SECTION 01 77 10 – CLEANING

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included: Throughout the construction period, maintain the roof buildings and site in a standard of cleanliness as described in this section.

B. Related Work Described Elsewhere: In addition to standards described in this section, comply with all requirements for cleaning up as described in various other sections of these specifications.

1.02 QUALITY ASSURANCE

A. Inspection: Conduct inspection daily, and more often if necessary, to verify that requirements for cleanliness are being met.

PART 2 PRODUCTS

2.01 CLEANING MATERIALS AND EQUIPMENT

A. Provide all required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

2.02 COMPATIBILITY

A. Use only cleaning materials and equipment that are compatible with the surface being cleaned, as recommended by the manufacturer of the material or as approved by the A/E.

PART 3 EXECUTION

3.01 PROGRESS CLEANING

A. General:

1. Retain all stored items in an orderly arrangement allowing maximum access, not impeding drainage or traffic, and providing the required protection of materials.
2. Do not allow the accumulation of scrap, debris, waste material, and other items not required for the construction of this work.
3. At least once a day and more often if necessary, completely remove all scrap, debris, and waste material from the job site.
4. Provide adequate storage for all items awaiting removal from the job site, observing all requirements for fire protection and protection of the ecology.

B. Site:

1. Daily and more often if necessary, inspect the site and pick up all scrap, debris, and waste material. Remove all such items to the place designated for their storage.
2. Weekly, and more often if necessary, inspect all arrangements of materials stored on the site. Restock, tidy, or otherwise service all arrangements to meet the requirements of 3.01.A.l, above.
3. Maintain the site in a neat and orderly condition at all times. Use a magnet to remove small metal objects such as nails, fasteners, etc.

C. Structures:

1. The Contractor will be responsible for maintaining the existing level of cleanliness on any interior areas used by subcontractors or employees.

End of Section

SECTION 01 77 23 – FINAL CLEANING

PART 1 GENERAL

1.01 GENERAL:

A. General cleaning of construction debris is required by General Conditions and included in Section 01 77 10 Cleaning.

1.02 CLEANING:

A. 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.

B. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.

1. Remove labels that are not permanent labels.

2. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.

3. 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 reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces. Mop and polish resilient flooring.

4. 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.

5. Not more than 4 days before date scheduled for final inspection, clean flooring according to manufacturer's recommendations. Strip protective floor polish that was applied after completing installation only if required to restore polish finish and if recommended by flooring manufacturer. After cleaning, reapply polish to floor surfaces to restore protective floor finish and buff according to flooring manufacturer's written recommendations. Coordinate with Owner's custodial personnel and use Owner's selected materials for sealing and polishing floors.

6. 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.

1.03 REMOVAL OF PROTECTION:

A. Remove temporary protection and facilities installed for protection of the Work during construction.

1.04 COMPLIANCE:

A. 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 in a lawful manner.

B. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

End of Section

SECTION 03 30 00 – CONCRETE WORK

PART I GENERAL

1.01 SCOPE:

A. The extent of concrete work is shown on the drawings.

1.02 SUBMITTALS:

A. Submit manufacturer's product data with application and installation instructions for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing and sealing compounds, and others requested by the Architect.

B. Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with the ACI 315, Details and Detailing of Concrete Reinforcement, showing bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of concrete reinforcement. Show on the shop drawings special reinforcement required and openings through concrete structures.

C. Submit two (2) copies of laboratory test reports with standard deviation analysis or trial batch data. All concrete materials shall be listed.

1.03 QUALITY ASSURANCE:

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

1. ACI 301, Specifications for Structural Concrete for Buildings
2. ACI 302, Guide for Concrete Floor and Slab Placement
3. ACI 304, Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete
4. ACI 305, Hot Weather Concreting
5. ACI 306, Cold Weather Concreting
6. ACI 315, Detailing Manual
7. ACI 318, Building Code Requirements for Reinforced Concrete
8. ACI 347, Recommended Practice for Concrete Formwork
9. CRSI Manual of Standard Practice
10. ACI 211.1 Standard Practice for Selecting proportions for Normal, Heavyweight, and Mass Concrete.
11. ACI 211.2 - Standard Practice for Selecting Proportions for Structural Lightweight Concrete.

B. The Contractor is responsible for correcting concrete work that does not conform to the specified requirements, including requirements for strength, tolerances, and finishes.

1.04 QUALITY CONTROL AND TESTING:

A. Materials and operations shall be inspected and tested as work progresses. Failure to detect defective work shall not prevent rejection when defect is discovered, nor shall it obligate the Owner for final acceptance.

B. Testing agencies shall meet the requirements of "Standard Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction," ASTM E 329.

C. The following testing service shall be performed by the designated party identified in Sections 01 40 00.

1. Secure composite samples in accordance with "Standard Method of Sampling Fresh Concrete," ASTM C 172.

2. Mold and cure three specimens from each test required in accordance with "Standard Method of Making and Curing Concrete Test Specimens in the Field," ASTM C 31.
3. Test specimens in accordance with "Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens," ASTM C 39. Two specimens shall be tested at 28 days for acceptance and one shall be tested at 7 days for information.
4. Make one strength test for each 100 cu. yd. (76.5 m3) or fraction thereof, of each mix design of concrete placed in any one day.
5. Determine slump of normal-weight concrete sample for each strength test in accordance with "Standard Test Method for Slump of Portland Cement Concrete," ASTM C 143.
6. Determine total air content of normal-weight concrete sample for each strength test in accordance with "Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method," ASTM C 231 or "Standard Test Method for air content of freshly mixed concrete by the Volumetric Method," C-173.
7. Determine temperature, unit weight, yield and air content (gravimetric) of concrete sample for each strength test in compliance with ASTM C 138, "Standard Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete."
8. If water is added at the site, the designated agency shall retest the concrete in accordance with "Standard Test Method for Slump of Portland Cement Concrete" plus whatever other tests the designated agency feels are necessary. No water will be added at the site without the approval of the designated agency.
9. Qualification of proposed materials and the establishment of mix designs in accordance with "Building Code Requirements for Reinforced Concrete," ACI 318.
10. Non-Compliant Test Reports: All test reports indicating non-compliance should be faxed immediately to all parties on the test report distribution list. Copies shall be on different colored paper.
11. Test results will be reported to the Architect and Contractor in writing on the same day that the test is made. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in the structure, design compressive strength at 28 days, concrete mix proportions and materials, and compressive breaking strength and type of break for both 7 day tests and 28 day tests.
12. Perform additional tests of in-place concrete when test results indicate required strength level has not been achieved and/or other characteristics have not been attained in the structure, as directed by the Architect. The testing service may conduct tests to determine the adequacy of concrete by cored cylinders that comply with ASTM C42 or by such other methods as are directed by the Architect. Contractor shall pay for such tests and any additional testing that may be required when concrete is verified to be unacceptable.

13. Employ, at the Contractor's expense, a testing laboratory to perform Flatness/Levelness Testing. Comply with ASTM E-1155-96, but provide a minimum of one line of sampling in two perpendicular directions through each structural bay.

    a. Perform testing using a "Dipstick Profiler" within 72 hours of concrete placement.
    b. Supplement Dipstick testing with use of 10 foot certified straight edge placed randomly on the floor. Floor surface shall not exceed 3/8" below edge of straight edge anywhere along its surface when ends are placed on adjacent high spots.

D. To facilitate testing and inspection, the Contractor shall:

1. Furnish labor to assist testing agency in obtaining and handling samples at the job site.
2. Advise testing agency in advance of operations to allow for the assignment of testing personnel and testing.
3. Provide and maintain for the use of the testing agency adequate facilities for proper curing of concrete test specimens on the project site in accordance with ASTM C 31.

PART II PRODUCTS

2.01 FORM MATERIALS:

A. Forms for Exposed Finish Concrete: Unless otherwise specified or shown on the drawings, construct formwork for exposed concrete surfaces with plywood, metal, metal framed plywood, or other panel type materials acceptable to the Architect in order to provide exposed surfaces that are continuous, straight, and smooth. To minimize the number of joints and to conform to the joint system shown on the drawings, furnish panels in the largest practicable sizes. Provide form material that is thick enough to withstand pressure of newly placed concrete without bowing or deflection.

B. Forms for Unexposed Finish Concrete: For surfaces that will be unexposed in the finished structure, form concrete with plywood, lumber, metal, or other material acceptable to the Architect. If lumber is used, it shall be dressed on at least two edges and one side for tight fit.

C. Automatic machine placement shall be used for curb placement. Submit revised mix design and laboratory test results that meet or exceed requirements for outdoor concrete. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete.

2.02 REINFORCING MATERIALS:

A. Reinforcing Bar: ASTM A615, Grade 60.

B. Welded Wire Fabric: ASTM A185, welded steel wire fabric.

C. Supports for Reinforcement: Provide supports for reinforcement, including bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Unless otherwise indicated on the drawings, use wire type bar supports complying with CRSI recommendations. Concrete brick, wood, construction debris and other organic material will not be acceptable. Comply with the following:

1. For slabs on grade, where wetted base material will not support chair legs, use supports with sand plates or horizontal runners.
2. Use Mesh-Ups plastic wire mesh supports as manufactured by Lotel, Baton Rouge, 800-535-8375 or equal product as manufactured by Grip Rite/PROLOK or Dayton Superior/Aztec.
3. For concrete surfaces exposed to view, where leg supports are in contact with forms, provide supports with legs that are hot dip galvanized or protected by either plastic or stainless steel.

2.03 CONCRETE MATERIALS:

A. Portland Cement: ASTM C150, Type I. Use only one brand of cement throughout the project, unless otherwise acceptable to the Architect.

B. Normal Weight Aggregates: ASTM C33, or local aggregates that do not comply with ASTM C33, but that have been shown by special test or actual service to produce concrete of adequate strength and durability may be used when acceptable to the Architect.

C. Fine aggregate: Clean, sharp, natural sand or crushed gravel when used for vehicular wearing surfaces. Manufactured sand may be used elsewhere provided the percentage passing a No. 200 sieve is less than 3%.

D. Coarse Aggregate: Crushed stone conforming to ASTM C 33 standard specification for concrete aggregates that is clean, uncoated, and processed from natural rock or stone and that contains no clay, mud, loam, or foreign matter.

E. Combined aggregate gradation for slabs and other designated concrete shall be 8% - 18% for large top size aggregates (1½ in.) or 8% - 22% for smaller top size aggregates (1 in. or ¾ in.) retained on each sieve below the top size and above the No. 100.

F. Vapor Barrier: The vapor barrier shall be placed over prepared base material where indicated below slabs on grade. Vapor Barrier shall conform to ASTM E 1745, Class A. The membrane shall have a water vapor permeance rate on no greater than 0.01 perms when tested in accordance with ASTM E 154 Section 7, a minimum tensile strength of 45 lb./in. and a Resistance to Puncture of 2200 grams in accordance with ASTM E 154, Section 10. Vapor barrier shall be no less than 20 mil thick in accordance with ACI 302.1R.

G. Water: clean, fresh, drinkable.

H. Admixtures:

1. Water Reducing Admixture: Conforming to ASTM C494, Type A, Eucon WR-75, WR-91 or MR by the Euclid Chemical Company, Pozzolith 322N or Polyheed 997 by Master Builders, or Plastocrete 161 by Sika Chemical Corporation.
2. Water Reducing, Retarding Admixture: Conforming to ASTM C494, Type D, Eucon Retarder-75 by the Euclid Chemical Co., Pozzolith 100XR by Master Builders, Plastiment by Sika Corp. or Daratard - 17 by WR Grace and Co.
3. High Range Water Reducing Admixture: Conforming to ASTM C494, Type F or G, (Superplasticizer): Eucon 37, 1037 or Plastol 5000 by the Euclid Chemical Co. or Rheobuild 1000 or 716 by Master Builders or Sikament 686 by Sika Corp.
4. Non-chloride Accelerator: Accelguard 80 by the Euclid Chemical Co. or Darex Set Accelerator by W.R. Grace or SikaSet NC by Sika Corp.
5. Air Entraining Admixture: ASTM C260.
6. Pozzolanic Admixtures: ASTM C618.
7. Prohibited Admixtures: Calcium Chloride or admixtures containing more than 0.05% Chloride Ions are not permitted. Admixtures indicated as prohibited on drawings shall not be used whether or not they appear in the list above.

I. Supplementary Cementitious Materials:

1. Fly Ash: ASTM C618, Type F: Ignition loss shall not exceed three (3) percent. Only one source of fly ash shall be used.
2. Ground Granulated Blast-Furnace Slag: ASTM C989, Grade 100 or 120.
3. Fly ash shall be used at a maximum percentage rate of 25% of Portland Cement by weight and blast furnace slag at a maximum percentage rate of 40% of Portland Cement by weight. Do not use fly ash for concrete to receive hardeners. The exact amount selected shall be based on a successful test placement.

2.04 RELATED MATERIALS:

A. Mineral Aggregate Base: Open graded stone conforming to ASTM No. 57

Sieve Size , **Grading D**	**Total Percent by Weight, Passing Sieves**
1-1/2 in. (37.5 mm)	100
1 in. (25 mm)	95-100
1/2 in. (12.5 mm)	50-80
No. 4 (4.75 mm)	0-10
No. 8 (2.36 mm)	0-5

B. Waterstops shall be Vinylex RB6316H preformed PVC ribbed waterstop by Vinylex Corporation, Knoxville, Tennessee or equal by Greenstreak or Paul Murphy Plastics Co.

C. Joint Filler: Provide preformed joint filler at slab expansion joints, joints between floor slabs and walls and other isolation joints. Provide one of the following:

1. Precompressed, impregnated open cell foam.
2. Asphalt saturated fiberboard complying with ASTM D 1751

3. Granulated cork between saturated felt or glass fiber felt complying with ASTM D1752 Type H.

D. Curing Compounds:

1. Clear Curing and Sealing Compound (VOC Compliant, 350 g/l): Liquid type membrane-forming curing compound, clear styrene acrylate type, complying with ASTM C1315, Type I, Class A, 25% solids content minimum. Moisture loss shall be not more than 0.40 Kg/m2 when applied at 300 sf/gal. Manufacturer's certification is required. Subject to project requirements provide one of the following products: Super Diamond Clear VOX or Super Rez Seal VOX by The Euclid Chemical Co. or Vocomp-30 by W.R. Meadows or Lumiseal WB Plus by L&M Construction Chemicals Inc.

2. Curing Compound (Strippable for use on slabs to receive direct applied finishes): The curing compound shall conform to ASTM C309. Provide Kurez DR VOX by The Euclid Chemical Co. or 1100 Clear Series by W. R. Meadows or L&M Cure R by L&M Construction Chemicals Inc.

3. For concrete to receive a special concrete finish (i.e., staining, polishing, etc.), curing compounds called for in those specification sections, if any, shall take precedence over curing compounds specified herein solely for those areas to receive such finish.

E. Bonding Compound: Provide polyvinyl acetate, rewettable type compound. Do not use in areas subject to moisture. Euco Weld by Euclid Chemical Co. or Weldcrete by Larsen or LiquidWeld by Sika Corp.

F. Epoxy Adhesive: Where called for, compound shall be a 2 component, 100% solids, 100% reactive compound suitable for use on dry or damp surfaces.

G. Non-shrink Grout: The grout shall conform to CRD-C621-80, "Corps of Engineers Specification for Non-shrink Grout". Euco NS by the Euclid Chemical Co. or Masterflow 713 by Master Builders or SikaGrout 212 by Sika Corp.

H. High Flow Grout: Where high fluidity and/or increased placing time is required, use high flow grout. The factory pre-mixed grout shall conform to ASTM C1107, "Standard Specification for Packages Dry, Hydraulic-Cement Grout (Non-Shrink)." In addition, the grout manufacturer shall furnish test data from an independent laboratory indicating that the grout when placed at a fluid consistency shall achieve 95% bearing under a 18" x 36" base plate. Provide Hi-Flow Grout by The Euclid Chemical Co. or SikaGrout 328 by Sika Corp or MasterFlow 928 by Master Builders.

I. Liquid Densifier/Sealer: The liquid densifier compound shall be a siliconate based sealer which penetrates concrete surfaces, increases abrasion resistance and provides a "low-sheen" surface that is easy to clean and eases the problem of tire mark removal. Product shall have a minimum solids content of 20% of which 50% must be siliconate. Provide Diamond Hard by The Euclid Chemical Company or Liqui-Hard by W.R. Meadows or Seal Hard by L&M Construction Chemicals Inc. or SikaFloor 3S by Sika Corp.

1. For concrete to receive a special concrete finish (i.e., staining, polishing, etc.), densifiers/sealers called for in those specification sections shall take precedence over densifiers/sealers specified herein solely for those areas to receive such finish.

J. One Part Repair Topping: Latex and microsilica modified cementitious mortar designed for use as a floor or deck topping at thicknesses of 1/16" to 3/8". Product shall be Thin-Top Supreme by Euclid Chemical Co. or SikaTop 122 Plus by Sika Corp. for thicknesses up to 2". Product shall be Concrete-Top Supreme by Euclid Chemical Co. or SikaTop 121 Plus by Sika Corp.

K. Underlayment Compound: Free-flowing, self-leveling, pumpable cementitious base compound, "Super Flo-Top" by The Euclid Chemical Co. or SikaLevel 315 by Sika Corp or Level Set 300 by TEC. The compound shall exhibit the following properties:

Compressive Strength (ASTM C109)	- 4400 PSI @ 7 days - 5000 PSI @ 28 days
Bond Strength (ASTM C1042)	- 700 PSI @ 7 days - 1000 PSI @ 28 days

2.05 MISCELLANEOUS MATERIALS:

A. Fill concrete spandrel blocks with concrete and reinforce with two (2) No. 4 bars to form cap beams at top of all masonry walls unless noted otherwise.

B. Fill steel pan stair risers and landings with non-slip concrete, poured in place and reinforced with 2" diamond mesh lath or fiber mesh. The fill shall consist by volume of 1 part Portland cement, 1-1/2 parts sand and 3 parts pea gravel. Fill shall have a smooth steel trowel finish.

C. Provide 2'-6" x 2'-6" corner bars of same size and number as footing reinforcing in all foundation corners unless noted otherwise.

D. Concrete slabs on grade at dumpster pads and equipment pads shall be 6 inch concrete reinforced with WWF 6 x 6 – W2.9 x W2.9 over 4 inches of crushed stone unless noted otherwise on the drawings.

2.06 MIX DESIGN:

A. Preparation

1. Prepare design mixes for each type and strength of concrete in accordance with ACI 318, "Building Code Requirements for Structural Concrete," Section 5.3 and with applicable provisions of ASTM C94. Submit written reports of each proposed mix for each class of concrete on the Mix Design Submittal Form included at the end of this specification at least 15 days before the start of work.
2. Provide special mix design for use with automatic machine placement of curbs.
3. The design mix shall provide normal weight concrete with 28 day compressive strength as indicated on the drawings or as shown below if not otherwise indicated.

B. Admixtures

1. All concrete shall contain the specified water reducing admixture or high-range water-reducing admixture. All concrete slabs placed at air temperatures below 50° F shall contain the specified non-chloride accelerator. All concrete required to be air entrained shall contain an approved air entraining mixture. All pumped concrete and concrete with a W/cm of less than 0.50 shall contain the specified high-range water-reducing admixture.

   a. Use an air entraining admixture in all concrete structures and slabs exposed to freezing and thawing or subjected to hydrostatic pressure:

      2.5% to 5.5% for maximum 2 inches aggregate
      4.5% to 7.5% for maximum 3/4 inch aggregate
      5.5% to 8.5% for maximum 1/2 inch aggregate

   b. All trowel finished interior slabs: Maximum air content of 3% (do not add air entraining admixture).

2. Water/Cement Ratio:

a.	Concrete exposed to freezing and thawing:	0.50
b.	Concrete subject to deicers and/or required to be watertight:	0.45
c.	Concrete subject to brackish water or salt spray:	0.40
d.	Interior trowel finished slabs subject to vehicular traffic:	0.53

e. All other concrete: 0.58

3. Use the amounts of admixtures recommended by the manufacturer for climatic conditions prevailing at the time of placing. Adjust quantities and types of admixtures as required to maintain quality control.

2.07 SELECTION OF PROPORTIONS:

A. General:

Concrete shall be composed of Portland cement, fine aggregate, coarse aggregate, water, admixtures, and as specified, Air Entraining Admixture. Proportions of ingredients shall produce concrete that will work readily into corners and angles of forms, bond to reinforcement, without segregation or excessive bleed water forming on the surface. Proportions of materials shall be in accordance with ACI 211.1, "Recommended Practice for Selecting Proportions for Normal, Heavy and Mass Weight Concrete."

1. Proportions of ingredients shall be selected by past field experience or, in lieu of past performance, laboratory trial mixes to produce placeability, durability, specified strength and properties specified.

B. Required Average Strength Above Specified Strength:

Determinations of required average strength (f 'c) shall be in accordance with ACI 318, "Building Code Requirements for Reinforced Concrete," and evaluations of compressive strength results of field concrete shall be in accordance with ACI 214, "Recommended Practice for Evaluation of Strength Test Results of Concrete."

1. Past Field Experience - Proportions shall be established on the actual field experience of the ready-mix producer with the materials proposed to be employed. Standard deviations shall be determined by 30 consecutive tests (or two groups of tests totaling 30 or more).

a. Average strength (f 'c) shall exceed specified strength (f 'c) by at least:

400 psi (2.8 MPa)	-	standard deviation is less than 300
550 psi (3.8 MPa)	-	standard deviation is 300 to 400
700 psi (4.8 MPa)	-	standard deviation is 400 to 500
900 psi (6.2 MPa)	-	standard deviation is 500 to 600
1200 psi (8.3 MPa)	-	standard deviation is above 600 or unknown

2. Trial Mixes - When the ready-mix producer does not have a record of past performance, the combination of materials and the proportions selected shall be selected from trial mixes having proportions and consistencies suitable for the work based on ACI 211.1-91, using at least three different water-cement ratios which will produce a range of strengths encompassing those required.

a. Average strength (f 'c) required shall be:

Specified compressive strength	--	Required average compressive strength
Less than 3000 (f 'c psi)	--	f 'c + 1000 (f 'c psi)
3000 to 5000 (f 'c psi)	--	f 'c + 1200 (f 'c psi)
Over 5000 (f 'c psi)	--	f 'c + 1400 (f 'c psi)

2.08 CONCRETE QUALITIES REQUIRED:

A. Specified Compressive Strength:

Specified Compressive (f 'c) Strength @ 28 days, unless noted higher on the drawings, shall be:

3000 psi (21 MPa) – Interior floor slabs (< 6" thick) with applied finishes and footings.
4000 psi (28 MPa) – Interior floor slabs (> or equal to 6" thick)
4000 psi (28 MPa) – Walks, curbs, columns, beams and other concrete exposed to the weather.

B. Slump:

1. Consolidation by vibration: 3 in. (76 mm) not to exceed 4 in. (102 mm).

2. Consolidation by other methods: 4 in. (102 mm) not to exceed 5 in. (127 mm).

3. Placement and consolidation by automatic machine: Slump as required by mix design.

a. Any concrete containing high-range water-reducing admixture (superplasticizer) shall have a maximum slump of 9" unless otherwise approved by the Architect. The concrete shall arrive at job site at a slump of 2" to 3", (3" to 4" for concrete receiving a "shake-on" hardener or lightweight concrete), be verified, then high-range water-reducing admixture added to increase slump to approved level. All other concrete shall have a maximum slump of 4."

b. Slump shall be determined by ASTM C 143-78, "Standard Test Method for Slump of Portland Cement Concrete."

C. "Quick Dry" Concrete: Maximum W/cm – 0.40, superplasticized, 3% maximum air content. The floor finish shall be as required by the manufacturer of the specified floor coating or covering.

D. Aggregate Size: Maximum size of coarse aggregate shall not exceed:

1. One-fifth narrowest dimension between forms.
2. Three-fourths minimum clear spacing between reinforcing bars.
3. One-third the thickness of slabs.
4. Use 1½" top size in all trowel finished interior slabs-on-grade subject to vehicular traffic.

2.09 CONCRETE CLEANERS:

A. Citrus based industrial degreaser and detergent. Acceptable products include:

1. AC-4450 ORANGE NATURAL 20 CONCENTRATE as distributed by Interstate Products Inc. 800-474-7294
2. Commercial Strength Contractor's Solvent as manufactured by Orange-Sol Industrial Products Inc. 800-279-8822
3. De-Solv-It Heavy Duty 24 as manufactured by Orange-Sol Industrial Products Inc. 800-279-8822

PART III EXECUTION

3.01 PRE-CONCRETE CONFERENCE:

A. At least 35 days prior to start of the concrete construction schedule, the contractor shall conduct a meeting to review the proposed mix designs and to discuss the required methods and procedures necessary to achieve the required concrete quality. Contractor shall send a pre-concrete conference agenda to all attendees 20 days prior to the scheduled date of the conference.

3.02 PREPARATION FOR SLABS ON GRADE:

A. Subgrade: Before any base material is installed, compact the subgrade of the area to be paved to 100% of optimum density as determined by ASTM D698 (Standard Proctor).

B. Base: Install a mineral aggregate base of the type specified above in accordance with Section 303 of the TDOT specifications.

C. The base must not depress more than 1/2” under a fully loaded ready-mix concrete truck.

3.03 FORMWORK:

A. Design, construct, erect, brace, and maintain formwork according to ACI 301.

B. Use metal form ties that are factory made, adjustable in length, designed to prevent form deflection, and either removable or snap-off and that will prevent the concrete surface’s being spalled when the ties are removed. If snap-off ties are used, the portion remaining within the concrete after removal must be at least 1-1/2 inches inside the concrete unless the drawings indicate otherwise.

C. Provide openings in concrete formwork to accommodate the work of other trades. Determine the size and location of openings, recesses, and chases from the trades providing such work. Accurately place and securely support items built into forms.

D. Clean thoroughly forms and adjacent surfaces that are to receive concrete. Remove chips, wood, sawdust, dirt, and any other debris just before the concrete is placed. After concrete placement, retighten forms if necessary to eliminate mortar leaks.

3.04 PLACING VAPOR BARRIER:

A. Arrange layout of vapor barrier to minimize seams and penetrations.

B. Unroll vapor barrier over compacted aggregate base.

C. Overlap all seams a minimum of six inches and seal with tape.

D. All penetrations must be sealed using a combination of seam tape and mastic in accordance with manufacturer’s latest printed instructions.

E. Turn vapor barrier up at edge of slab to masonry wall juncture to provide bond break.

3.05 PLACING REINFORCEMENT:

A. For details and methods of placing reinforcement and supports, comply with the specified codes and standards, the recommended practice of the CRSI as outlined in “Placing Reinforcing Bars,” and these specifications.

3.06 INSTALLATION OF WATERSTOPS:

A. Provide continuous waterstops and install waterstops in concrete joints where indicated.

B. Carry waterstops in walls into lower slabs and join to waterstops in slabs with appropriate fittings.

C. In water bearing structures, provide waterstops in all joints, whether or not indicated on drawings.

D. Secure waterstops accurately to position and line as indicated on the drawings using factory installed hog rings or factory pre-punched holes in the outermost rib with tie wire. Do not drive nails, screws, or other fastners through the waterstop at any time at any location.

E. Secure at intervals of not more than 15 inches to prevent movement during the pour of concrete.

F. Terminate waterstops 3 inches from the top of finished surfaces of walls and slabs, unless otherwise specified on the drawings.

3.07 CONCRETE PLACEMENT:

A. Before placing concrete, inspect and complete the formwork installation, reinforcing steel, and items to be embedded or cast in.

B. Use mechanical vibrating equipment, including a laser screed, supplemented by hand spading, rodding, or tamping to consolidate placed concrete. The equipment and procedures used to consolidate the concrete shall comply with the recommended practices of ACI 309 and suit both the type of concrete and project conditions.

C. Until the placing of a panel or section is completed, deposit and consolidate concrete slabs in a continuous operation within construction joints.

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

E. Bring slab surfaces to the correct level with a straightedge and strike off. Use appropriate bull floats or straightedges to smooth the surface, leaving it free from humps and hollows. Do not sprinkle water on the plastic surface. Do not disturb the slab surfaces before starting finishing operations.

F. Maintain reinforcement in the proper position during placement operations.

G. Cold Weather Placement: Comply with ACI 306 and the requirements therein specified to protect concrete work from physical damage or reduced strength due to frost, freezing, or low temperatures.

H. Hot Weather Placement: When the weather is hot enough to impair the concrete's quality and strength, place the concrete as specified herein and in ACI 305.

3.08 JOINTS:

A. Locate and install construction joints (which are not shown on the drawings) as approved by the Architect so that the strength and appearance of the structure will not be impaired.

B. Provide keyways at least 1-1/2 inches deep in construction joints that are in walls and slabs or between walls and footings. Bulkheads designed for this purpose may be used if accepted by the Architect. Construction joints, in slabs subjected to vehicular traffic, shall have round, square or diamond dowels as indicated on the drawings.

C. Place construction joints perpendicular to the main reinforcement. Continue all reinforcement across construction joints of structural members.

D. Construct isolation joints in slabs on the ground wherever there is contact between slabs on the ground and vertical surfaces and wherever else indicated on the Drawings.

E. Contraction (control) joints in slabs on ground as shown on the Drawings shall have a maximum spacing of 30 times slab thickness (up to a maximum of fifteen (15) feet) each way if not shown otherwise.

F. Saw-Cut Control Joints:

1. Primary Method: Soff-Cut System method, by Soff-Cut International, Corona, CA, 800-776-3328. Finisher must have documented successful experience in the use of this method prior to this project. Install cuts within 2 hours after final finish at each saw cut location. Use 1/8 inch thick blade, cutting 1-1/4 inch into slab.

2. Optional Method (Where Equipment is Not Available for Primary Method): Properly time cutting with the set of the concrete. Saw-cut control joints within 12 hours after finishing. Start cutting as soon as the concrete has hardened sufficiently to prevent aggregates being dislodged by the saw. Complete cutting before shrinkage stresses become sufficient to produce cracking. Use 1/4 inch thick blade, cutting 1/4 slab depth.

3.09 FINISH OF FORMED SURFACES:

A. Finishes to be in accordance with ACI 301.

B. Trowel Finish: Apply a trowel finish to all interior slab surfaces unless otherwise noted on drawings. Concrete shall be placed, consolidated, struck-off and leveled to proper elevation using a laser screed, or vibratory screed. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Cut down high spots and fill low spots with highway straightedge. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture. Surface shall achieve an F(F) 20 – F(L) 17 tolerance. Surface shall then be troweled, at least twice, to a smooth dense finish, free of trowel marks, uniform in texture and appearance, and achieve a tolerance of F(F) 25 and F(L) 20 minimum overall composite and F(F) 17 and F(L) 15 minimum at any individual section measured according to ASTM E 1155. For floors to receive an applied floor covering, grind smooth any surface defects that could telegraph through applied floor covering or repair as necessary with specified repair compound or underlayment to achieve specified tolerance. For finishes in which the concrete surface is exposed to view, grinding or reparations involving compounds or underlayments are not acceptable and shall not be used to achieve specified floor tolerances.

C. Non-slip Broom Finish: Apply non-slip broom finish to exterior concrete platforms, steps, and ramps and elsewhere as indicated by the drawings or schedules. Texture shall be as approved by Architect from sample panels.

D. Liquid Densifier/Sealer Finish: Apply this compound on exposed interior floors subjected to vehicular abrasion and shake on hardener slabs as indicated on the drawings. Application shall be made in strict accordance with directions of the manufacturer and just prior to completion of construction. Spray, squeegee or roll on liquid densifier to clean, dry concrete surface. Liquid should be scrubbed into surface with mechanical scrubber. Keep the surface wet with the densifier during the application process. When product thickens, but not more than 60 minutes after initial application, surface shall be squeegeed or vacuumed to remove all excess liquid

E. Sealer/Dustproofer Finish: Apply a second coat of the specified curing and sealing compound to interior concrete floors where shown on the drawings or in schedules to be sealed concrete. The compound shall be applied in strict accordance with the directions of the manufacturers and just prior to completion of construction.

3.10 CURING:

A. After placing and finishing the concrete, start initial curing as soon as free water has disappeared from concrete surface. Keep continuously moist for not less than 7 days and above 50° F. When high early strength concrete is used, the temperature requirement may be reduced to three days.

B. Begin final curing immediately after initial curing and before the concrete has dried. Continue final curing in accordance with ACI 301. Avoid rapid drying at the end of the final curing period.

C. All exposed interior slabs, not receiving a liquid densifier, and troweled slabs receiving mastic applied adhesives or “shake-on” hardeners shall be cured with the specified curing and sealing compound. Exterior slabs, sidewalks, curbs, and architectural concrete, not receiving a penetrating sealer, shall be cured with the specified clear, non-yellowing curing and sealing compound. Maximum coverage shall be 400 ft^2/gallon on steel troweled surfaces and 300 ft^2/gallon on floated or broomed surfaces for the curing/sealing compound.

D. Curing Compound (Strippable): Use the specified strippable curing compound on surfaces to be covered with finish or coating material applied directly to concrete, such as liquid densifier/sealer, waterproofing, dampproofing, membrane roofing, flooring, painting, and other coatings and finish materials. Apply in accordance with manufacturer’s instructions.

3.11 MISCELLANEOUS CONCRETE ITEMS:

A. Filling In: Unless the drawings show otherwise or the Architect directs, fill in holes and openings left in concrete structures for the work of other trades once that work is in place. Mix, place, and cure concrete as specified herein to blend with in-place construction. Provide other miscellaneous concrete filling shown on the drawings or necessary to complete the work.

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

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

1. Where high fluidity and/or increased placing time is required use the specified high flow grout. This grout shall be used for all base plates larger than 10 square feet.

3.12 EVALUATION AND ACCEPTANCE:

A. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive strength by more than 500 psi.

B. **No cracks which affect structural integrity will be accepted.** Affected areas to be removed and replaced. Submit repair plan to structural engineer for approval before beginning repairs

C. Cracks which do not affect structural integrity:

1. Cracks consistently greater than ¼" in width will not be accepted, remove and replace section to nearest existing joint.
2. Cracks showing vertical separation of plane will not be accepted remove and replace section to nearest existing joint.
3. Cracks less than ¼" in width, occurring in appearance sensitive areas (i.e. front entry, front sidewalk, etc.), may require replacement. Final decision resides with the Owner.
4. Cracks less than a ¼" in width in non-appearance sensitive areas will be filled with Bonsal vinyl concrete repair compound, or approved equal, following manufacturer's recommended application procedures.

3.13 WALKS AND CURBS:

A. Walks and sidewalks shall be not less than 4" thick, placed over a 4" layer of porous fill as specified, and marked off with surface joints at 6'-0" o.c. as shown. Install expansion joints between walks and building, at changes in walk direction, at 30'-0" o.c., and elsewhere as shown. Expansion joints shall be formed with 1/2" thick preformed filler.

B. Curbs shall be constructed to size and profile shown, placed over binder course of paving. Provide expansion joints at 50 feet on center maximum.

C. All edges, joints and margins shall be straight and true and rounded with jointing and edging tools.

D. Walks shall be sloped 1/4" per foot.

3.14 REPAIR OF DEFECTIVE AREAS

A. With prior approval of method and procedure by the Engineer, all repairs of defective areas shall conform to ACI 301, Section 5.3.7, except that the specified bonding compound must be used.

B. Leveling of floors for subsequent finishes shall be achieved by use of the specified underlayment material.

C. All exposed floors shall be leveled, where required, with the specified self-leveling repair topping.

D. Repair methods not specified above may be used, subject to acceptance of Engineer.

3.15 CLEANING AND PROTECTION:

A. Protect corners, edges, and surfaces of cast-in-place architectural concrete from damage; use guards and barricades.

B. Protect cast-in-place architectural concrete from staining, laitance, and contamination during remainder of construction period.

C. Clean cast-in-place architectural concrete surfaces after finish treatment to remove stains, markings, dust, and debris. Use power washer set to low pressure (800 psi maximum) with orange cleaner/degreaser to clean all exposed exterior concrete.

D. Wash and rinse surfaces according to concrete finish applicator's recommendations and cleaning solutions written instructions. Protect other Work from staining or damage due to cleaning operations.

E. Do not use cleaning materials or processes that could change the appearance of cast-in-place architectural concrete finishes.

End of Section

SECTION 03 35 10– POLISHED CONCRETE FINISHING:

PART 1 - GENERAL

1.01 SCOPE:

A. Furnish all labor, materials, equipment and supervision to provide and install polished concrete in areas indicated on the drawings.

1.02 REFERENCES:

A. American Concrete Institute (ACI):

1. ACI 302.1R Guide for Concrete Floor and Slab Construction

B. ASTM International:

1. ASTM C309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
2. ASTM C171 Standard Specification for Sheet Materials for Curing Concrete.
3. ASTM C779 Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.

C. Reunion Internationale des Laboratoires D'Essais et de Recherches sur les Materiaux et les Constructions (RILEM):

1. Rilem Test Method 11.4 Standard Measurement of Reduction of Moisture Penetration Through Horizontal Concrete

D. National Floor Safety Institute (NFSI):

1. NFSI Test Method 101-A Standard for Evaluating High-Traction Flooring Materials, Coatings, and Finishes.

1.03 PERFORMANCE REQUIREMENTS:

A. Provide polished flooring that has been selected, manufactured and installed to achieve the following:

1. Abrasion Resistance: ASTM C779, Method A, high resistance, no more than 0.008 inch wear in 30 minutes.
2. Reflectivity: Increase of 35% as determined by standard gloss meter.
3. Waterproof Properties: Rilem Test Method 11.4, 70% or greater reduction in absorption.
4. High Traction Rating: NFSI 101-A, non-slip properties.

B. Design Requirements:

1. Hardened Concrete Properties:

a. Minimum Concrete Compressive Strength: 3500 psi (24 MPa).
b. Normal Weight Concrete: No lightweight aggregate.
c. Non-air entrained.

2. Placement Properties:

a. Natural concrete slump of 4 1/2 inches - 5 inches. Admixtures may be used.

b. Flatness Requirements:

i. Overall FF 40.
ii. Local FF 20.

3. Hard-Steel Troweled (3 passes) Concrete: No burn marks. Finish to ACI 302.1R, Class 5 floor.

1.04 ACTION SUBMITTALS:

A. General: Submit listed action submittals in accordance with Division 01.

B. Shop Drawings: Indicate information on shop drawings as follows:

1. Typical layout including dimensions and floor grinding schedule.
2. Plan view of floor and joint pattern layout.
3. Areas to receive colored surface treatment.
4. Hardener, sealer, densifier in notes.

C. Product Data: Submit product data, including manufacturer's SPEC-DATA® product sheet, for specified products.

1. Material Safety Data Sheets (MSDS).
2. Preparation and concrete grinding procedures.
3. Colored Concrete Surface, Dye Selection Guides.

1.05 INFORMATIONAL SUBMITTALS:

A. Quality Assurance:

1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties as cited in 1.03 Performance Requirements.

2. Certificates:

a. Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
b. Letter of certification from the National Floor Safety Institute confirming the system has been tested and passed phase Two Level of certification when tested by Method 101-A.
c. Current contractor's certificate signed by manufacturer declaring contractor as an approved installer of polishing system.

3. Manufacturer's Instructions: Manufacturer's installation instructions.

1.06 CLOSEOUT SUBMITTALS:

A. Warranty: Submit warranty documents specified.

B. Operation and Maintenance Data: Submit operation and maintenance data for installed products.

1. Include:

a. Manufacturer's instructions on maintenance renewal of applied treatments.
b. Protocols and product specifications for joint filing, crack repair and/or surface repair.

1.07 QUALITY ASSURANCE:

A. Qualifications:

1. Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.
2. Installer trained and holding current certification for installation by manufacturer.
3. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction and approving application method.

B. Regulatory Requirements.

1. NFSI Test Method 101-A Phase Two Level High Traction Material.
2. Applicable Building Codes

C. Mock-Ups:

1. Mock-Up Size: 100 s.f. sample panel at jobsite at location as directed under conditions similar to those which will exist during actual placement.
2. Mock-up will be used to judge workmanship, concrete substrate preparation, operation of equipment, material application, color selection and shine.
3. Allow adequate time for inspection of mock-up before proceeding with work.
4. When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.

1.08 PRE-INSTALLATION MEETING:

A. Pre-installation meeting: To be attended by the Architect, General Contractor, Concrete Sub-Contractor, and Polished Concrete Sub-Contractor.

B. Issue a proposed agenda to all parties requested to attend not less than 5 working days prior to the meeting. Include:

1. Environmental requirements
2. Scheduling and phasing of work
3. Coordinating with other work and personnel
4. Protection of adjacent surfaces.
5. Surface preparation
6. Repair of defects and defective work prior to installation
7. Cleaning
8. Installation of polished floor finishes.
9. Application of liquid hardener, densifier.
10. Protection of finished surfaces after installation.

C. Convene a minimum of two weeks before starting work of this section.

1.09 WARRANTY:

A. Time Period: Warrant that the Polished Concrete Floor will maintain its luster and overall appearance with reasonable cleaning for (36) months from date of Final Acceptance.

B. Repairs:

1. Repair unsatisfactory conditions promptly at no additional cost to the Owner.
2. Emergency repairs may be made by the Owner without relieving the Contractor of his warranty obligations.
3. Delays of more than 30 days for repair work will allow the Owner to proceed with such repairs at the Contractor’s expense.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Ensure manufacturer has minimum 5 years experience in manufacturing components similar to or exceeding requirements of project.

2.02 PRODUCTS/SYSTEM

A. Manufacturer: L & M Construction Chemicals, Inc., 14851 Calhoun Rd., Omaha, NE 68152-1140; Telephone: (800) 362-3331, (402) 453-6600; Fax: (402) 453-0244; website: www.LMCC.com or alternate manufacturer approved by Architect prior to bidding:

B. Products/Systems:

1. Hardener, Sealer, Densifier: Proprietary, water based, odorless liquid, VOC compliant, environmentally safe chemical hardening solution leaving no surface film.

a. Basis of Design: L & M Construction Chemicals, Inc., FGS Hardener Plus.

2. Joint Filler: Semi-rigid, 2-component, self-leveling, 100% solids, rapid curing, polyurea control joint and crack filler with Shore A 80 or higher hardness.

a. Basis of Design: L & M Construction Chemicals, Inc., Joint Tite 750.

3. Oil Repellent Sealer: Ready to use, silane, siloxane and fluoropolymers blended water-based solution sealer, quick drying, low-odor, oil and water repellent, VOC-compliant and compatible with chemically hardened floors.

a. Basis of Design: L & M Construction Chemicals, Inc., Petrotex.

4. Concrete Dyes: Fast-drying dye, packaged in premeasured units ready for mixing with VOC exempt solvent; formulated for application to polished cementitious surfaces.

a. Basis of Design: L & M Construction Chemicals, Inc., Vivid Concrete Dyes.
b. Color: As selected by Architect.

5. Cleaning Solution: Mild liquid concrete cleaner and conditioner containing wetting and emulsifying agents; biodegradable, environmentally safe and certified High Traction by National Floor Safety Institute (NFSI).

a. Basis of Design: L & M Construction Chemicals, Inc., FGS Concrete Conditioner.

6. Finish: Standard Medium gloss (MG-2), 800 grit.

2.03 SOURCE QUALITY CONTROL

A. Ensure concrete finishing components and materials are from single manufacturer.

PART III - EXECUTION

3.01 MANUFACTURERS INSTRUCTIONS

A. Compliance: Comply with manufacturer’s written data, including product technical bulletins, product catalog installation instructions, product carton installation instructions.

B. Use installers certified by the manufacturer.

3.02 EXAMINATION

A. Site Verification of Conditions:

1. Verify that concrete substrate conditions, which have been previously installed under other sections or contracts, are acceptable for product installation in accordance with manufacturer's instructions prior to installation of concrete finishing materials.

B. Verify Concrete Slab Performance Requirements.

1. Verify concrete is cured to 3500 psi strength.
2. Verify concrete surfaces received a hard steel-trowel finish (3 passes) during placement.

3.03 PREPARATION

A. Ensure that manufacturer's requirements for environmental conditions have been satisfied prior to installation. Verify that concrete has cured under appropriate conditions for the required amount of time and that slab has been exposed to climate-controlled conditions for the required length of time prior to installation.

B. Ensure surfaces are clean and free of dirt and other foreign matter harmful to performance of concrete finishing materials.

C. Examine surface to determine soundness of concrete for polishing.

D. General Contractor to remove surface contamination.

3.04 INSTALLATION

A. Floor Surface Polishing and Treatment:

1. Provide polished concrete floor treatment in entirety of slab indicated by drawings. Provide consistent finish in all contiguous areas.

2. Apply floor finish prior to installation of fixtures and accessories.

3. Diamond polish concrete floor surfaces with power disc machine recommended by floor finish manufacturer. Sequence with coarse to fine grit using dry method.

   a. Comply with manufacturer's recommended polishing grits for each sequence to achieve desired finish level. Level of sheen shall match that of approved mock-up.
   b. Expose aggregate in concrete surface only as determined by approved mock-up.
   c. All concrete surfaces shall be as uniform in appearance as possible.

4. Dyed and Polished Concrete:

   a. Locate demarcation line between dyed surfaces and other finishes.
   b. Polish concrete to final finish level.
   c. Apply diluted dyes to polished concrete surface.
   d. Allow dye to dry.
   e. Remove residue with dry buffer; reapply as necessary for desired result.

5. Apply FGS Hardener Plus, Hardener, Densifier As Follows:

   a. First coat at 250 ft2/gal (6.25 m2/L).
   b. Second coat at 350 ft2/gal (8.75 m2/L).
   c. Follow manufacturer's recommendations for drying time between successive coats.

6. Remove defects and re-polish defective areas.

7. Finish edges of floor finish adjoining other materials in a clean and sharp manner.

3.05 ADJUSTMENTS

A. Polish to higher gloss those areas not meeting specified gloss levels per mock-up.

B. Fill joints flush to surface.

3.06 OWNER ORIENTATION

A. Upon completion and acceptance, the Polished Concrete Contractor shall instruct the Owner's maintenance personnel in the operation, maintenance of the polished concrete floor system. Furnish copies of all user guides, available parts lists, specifications and information on trouble shooting.

3.07 CLEANUP

A. Keep all areas of work clean, neat and orderly at all times.

B. Clean up and remove all excess materials and debris from the entire work area prior to Final Acceptance.

C. Sweep or vacuum floor thoroughly.

1. Do not wash stained concrete until after time period recommended by manufacturer.
2. Damp-mop floor to remove marks and soil.

3.08 PROTECTION

A. Protect installed product from damage during construction.

B. Protect with EZ Cover™ by McTech Corp., (866) 913-8363, www.ezform.net, or comparable product.

End of Section

SECTION 06 10 00 - ROUGH CARPENTRY

PART I GENERAL

1.01 SCOPE:

A. Furnish all labor, materials, equipment and supervision necessary to perform all work traditionally performed by Carpenter including furnishing and installing rough carpentry as herein specified and shown on the drawings as necessary to complete the work.

1.02 RELATED DOCUMENTS:

A. Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

Section	06 22 00	Millwork
Section	09 91 00	Painting

1.03 SUBMITTALS:

A. Submit shop drawings on fabricated items.

B. Pressure treated wood: Submit certification by treating plant stating chemicals and process used, net amount of salts retained, and conformance to applicable standards.

C. Preservation treated wood: Submit certification for waterborne preservative that moisture content was reduced to moisture content specified elsewhere in this section.

1.04 DELEGATED ENGINEER'S DESIGN OF PREFABRICATED WOOD TRUSSES:

A. When a Structural Engineer of Record and A Delegated Engineer exist as may be determined by Florida Law, the apportionment of responsibilities between the Structural Engineer of Record and a Delegated Engineer shall be as set forth in Chapter 2 of ANSI/TPI 1-1995, wherein the Structural Engineer of Record is the Building Designer and The Delegated Engineer is the Truss Designer as defined by the Standard.

B. The Structural Engineer of Record shall provide design requirements in writing to the Delegated Engineer and shall review the design documents of the designated engineer for conformance to his written instructions.

C. The design documentation prepared by the delegated engineer shall be signed and sealed by the delegated engineer and shall contain the following information as a minimum:

1. Truss design and placement documentation for each truss.
2. The name, address, and license number of the Structural Engineer of Record and the name, address and license number of the Delegated Engineer.
3. Identification of the project, by address or by lot number, block number, section or subdivision and city or county.
4. Identification of the applicable building code and chapters that the Truss System design is intended to meet, the engineer design criteria relied upon in designing the Truss System and the truss design loading.
5. Identification of any computer program used for engineering the Truss System.
6. An index of the attached Truss System design drawings. The naming and numbering system utilized for the drawings shall be clear as to how many drawings there are in the set and the date and sequence number of each of these drawings shall be included.

1.05 REFERENCES:

A. Applicable Standards:

1. American Plywood Association (APA), current standards.
2. American Society for Testing and Materials (ASTM), standards as referenced herein.
3. American Wood Preservers Association (AWPA), standards as referenced herein.
4. Product Standards (PS) of the National Bureau of Standards, U.S. Department of Commerce, PS 20-99 for softwood lumber and PS 1-83 for softwood plywood.

B. Grading rules; current rules of the following associations applicable to wood materials:

1. Southern Pine Inspection Bureau (SPIB).
2. Western Wood Products Association (WWPA).
3. West Coast Lumber Inspection Bureau (WCLIB).
4. National Lumber Grades Authority (NLGA).

1.06 QUALITY ASSURANCE:

A. Lumber: Lumber shall bear the grade stamp of a listed grading rules association certified by the Board of Review of the American Lumber Standards Committee (ALSC), identifying species or species combination, grade, moisture content at time of surfacing, mill origin and grading agency.

B. Plywood: Plywood shall bear the stamp of American Plywood Association (APA), indicating type, grade, thickness, exposure durability, span rating, species group, edging, surface finish, and regulatory agency compliance.

C. Pressure-preservative-treated wood materials: Pressure-preservative-treated lumber and plywood shall bear the quality standard stamp of the applicator indicating compliance with AWPA standards, preservative type used, retention level, exposure conditions, treating company and plant location, year of treatment and name of certified treatment inspection agency.

1.07 DELIVERY, STORAGE, AND HANDLING:

A. Deliver materials to project site and place in areas protected from the weather.

B. Store materials minimum 6” off of ground or floor on level blocking. Cover with waterproof sheets or tarps if stored outdoors. Provide for adequate air circulation and ventilation when covering materials. Do not store seasoned materials in wet or damp areas of building.

C. Protect edges, ends, corners and surfaces of sheet materials from damage.

PART II PRODUCTS

2.01 DIMENSION LUMBER

A. General: Provide dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.

B. Moisture Content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.

C. Framing: Grade No. 1 of any species with the required modulus of elasticity and extreme fiber stress in bending as indicated on structural drawings or approved by Engineer.

2.02 BOARDS

A. Concealed Boards: Where boards will be concealed by other work, provide lumber with 15 percent maximum moisture content and of on of the following species and grade:

1. Eastern softwoods, No. 3 Common per NELMA rules.

2. Northern species, No. 3 Common or Standard per NLGA rules.
3. Mixed southern pine, No. 2 per SPIB rules.
4. Hem-fir, Standard per WCLIB rules or No. 3 Common per WWPA rules.
5. Spruce-pine-fir, Standard per WCLIB rules or No. 3 Common per WWPA rules.
6. Western woods, Standard per WCLIB rules or No. 3 Common per WWPA rules.

2.03 MISCELLANEOUS LUMBER

A. General: Provide lumber for support or attachment of other construction, including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members.

B. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shapes shown.

C. Moisture Content: 15 percent maximum for lumber items not specified to receive wood preservative treatment.

D. Grade: For dimension lumber sizes, provide No. 3 or Standard grade lumber per ALSC's NGRs of any species. For board-size lumber, provide No. 3 Common grade per NELMA, NLGA, or WWPA; No. 2 grade per SPIB; or Standard grade per NLGA, WCLIB or WWPA of any species.

2.04 SHEET MATERIALS:

A. Interior Plywood: Wall Surfaces: APA-rated A-D, Group 1, Interior, thickness as indicated; A-grade veneer face to exposed side.

B. Exterior Plywood - Wall and/or Roof Sheathing: APA-rated Sheathing, Exposure 1, Span rating shall be as required for support spacing at each condition.

C. Preservative-Treated Plywood: APA-rated Sheathing, Exposure 1, Series V-611, thickness as indicated; pressure-preservative-treated as specified herein.

2.05 TREATED WOOD MATERIAL:

A. Preservative Treatment by Pressure Process: AWPA C2, except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWPA C31 with inorganic boron (SBX).

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium**:** Alkaline Copper Quat (ACQ), or Copper Azole (CA type A or B)

2. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review. For exposed lumber indicated to receive a stained or natural finish, omit marking and provide certificates of treatment compliance issued by inspection agency.

D. Application: Treat items indicated on Drawings AND the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood floor plates, sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.

3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
4. Wood framing members that are less than 18" above the ground in crawlspaces or unexcavated areas.

5. Where Preservative treated wood is used in contact with metal other than G-90 hot dipped galvanized steel, a separation sheet of either 15-pound unperforated organic asphalt saturated roofing felt complying with ASTM D -226, or 10 mil polyethylene shall be placed between wood and metal to prevent corrosion from contact.

2.06 FIRE RETARDANT TREATED LUMBER:

A. Comply with AWPA C-27 as applicable. Process shall not promote premature degradation of wood products in the conditions in which fire-treated lumber/panels will be installed.

1. Provide materials with maximum moisture content, after treatment, of 15% or less.
2. Manufacturer: Provide "Dricon FRT" or "D-Blaze FRT" by Chemical Specialties Inc., with current warranty.

2.07 TRUSSED RAFTERS:

A. Roof framing shall be furnished as complete system of prefabricated trusses and trussed rafters.

B. All lumber used in fabrication of trusses shall be stress graded and shall be of species, size and grade specified in the truss design. Note that sizes called for on drawings are minimums. Connector plates shall be stamped from 16, 18, or 20 gauge, Grade A, galvanized structural steel. Both plate width and plate length must equal or exceed that specified in the truss design.

C. Engineering design for trussed rafters shall be provided by the fabricator and shop drawings of the complete framing system shall be furnished to the Architect for approval before trusses are fabricated. Shop drawings shall bear a registered engineer's certification and shall be submitted to the Architect for approval and shall contain the following information for each type and size of truss assembly to be provided: detail of truss, specie, size, and grade of lumber used, and connector plate sizes and orientation. Trusses shall be designed for the roof loads indicated on the Architect's drawings and shall conform to the requirements of the following standards:

1. National Design Specifications for Stress-Grade Lumber and its Fastenings - By National Lumber Manufacturer's Association.
2. Timber Construction Standards - By American Institute of Timber Construction.
3. Design Specifications for Light Metal Plate Connected Wood Trusses by Truss Plate Institute.
4. International Building Code, Latest Edition.

D. Trusses shall be shipped and stored at the building site so as to prevent possible warping or twisting which could result in loosening of the gusset plates. Trusses shall be stored flat and level or standing vertical, properly blocked to prevent twisting and covered to protect from damage.

2.08 HARDWARE AND ACCESSORIES:

A. Fasteners and accessories: Provide nails, bolts, nuts, washers, screws, expansion bolts, lag bolts, clips, powder-actuated fasteners, anchor bolts and similar hardware necessary for complete installation of rough carpentry materials.

B. Nails, fasteners and anchors for treated wood materials: Hot-dipped galvanized or type 304 or 316 stainless steel.

C. Fasteners for attachment of plywood to light gage steel framing: Corrosion-resistant, type S-12 bugle head self-drilling screws; length as required to extend minimum 1/2” through framing member.

D. Construction adhesive: meeting APA Performance Specification AFG-01.

PART III EXECUTION

3.01 WORKMANSHIP:

A. Install rough carpentry work cut square and straight to provide neat, fitted joints. Set to required levels and lines with members plumb, true, and aligned.

B. Coordinate and lay out work to provide correct locations and opening to receive work of other trades.

C. Install framing members aligned, leveled, plumbed and squared over bearing points.

D. Secure carpentry work in place to substrates and supporting members using fasteners of types and sizes complying with building code requirements and as specified. Install fasteners without splitting wood and with positive anchorage into substrates or adjoining wood members.

E. Anchor members rigid and secure to adequately resist design loads, maintaining proper alignment, free of warp or wind.

F. Install linear runs of materials using longest lengths as practicable. Where multiple members are used to form linear runs, offset joints in member not less than three feet.

G. Bolting: Drill holes 1/16” larger in diameter than bolt to be installed. Drill straight and true from one side only. Provide plates or washers between bolt head or nut and wood surface.

H. Screws: Pre-bore holes same diameter as root of thread. Enlarge holes to shank diameter for length of shank.

I. Make wood-to-wood fastenings with proper size cement coated nails.

J. Install plywood and other sheet material in compliance with APA Design/Construction Guide - Residential and Commercial unless more stringent requirements are specified.

3.02 TREATED WOOD MATERIALS:

A. Handle and install treated wood in accordance AWPA M4-84.

B. Coat cut edges and ends of pressure-preservative-treated wood, including drilled holes with a brushed-applied solution of copper napthenate containing minimum 2% metallic copper.

C. Attach treated wood materials using hot-dipped galvanized or stainless steel fasteners, nails or anchors as specified.

3.03 PLATES, BLOCKING, NAILERS AND MISCELLANEOUS FRAMING:

A. Install minimum 2” nominal thickness wood members to support and to provide as a substrate for attachment of finishing materials, trim, fixtures, accessories and specialty items. Cut blocking to fit snug between studs, wedge, align and anchor to framing by end nailing or toenailing.

B. Anchor members to structural steel or metal framing using appropriate bolts spaced at 48” o.c. maximum.

C. Anchor members to concrete or masonry construction using cast-in anchor bolts, powder-actuated studs or sleeve, wedge or expansion type anchors, spaced at 48" o.c. maximum.

D. Provide linear members in maximum practical lengths to minimize joints. Install multiple linear members so joints are offset minimum 36".

E. Install anchors and fasteners positioned to be located within 3" of ends of members.

F. Attach furring at 12" o.c. to substrates with appropriate fasteners spaced at maximum, 24" o.c.

G. Wood Framed Walls: Install minimum 2" thickness solid wood blocking or framing members to firestop all vertical and horizontal concealed draft opening to comply with governing building code requirements. Firestopping members shall be of sizes matching full width or depth of framing or structural members. Walls exceeding eight feet in height shall be laterally braced with nominal 2" solid blocking, same width as studs, installed continuous in horizontal row at mid-point of wall height.

3.04 INSTALLATION OF ENGINEERED WOOD TRUSSES:

A. Install wood trusses within installation tolerances of ANSI/TPI 1. Return wood trusses that are damaged or do not meet requirements to fabricator and replace with trusses that do meet requirements.

B. Do not install wood trusses until supporting construction is in place and is braced and secured.

C. Handling:

1. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.
2. Install trusses plumb, square, and true to line and securely fasten to supporting construction.
3. Space, adjust, and align trusses in location before permanently fastening.
4. Do not cut or remove truss members without written approval of truss manufacturer.

D. Fastening:

1. Anchor trusses securely at all bearing points using metal framing anchors. Install fasteners through each fastener hole in metal framing anchor according to manufacturer's fastening schedules and written instructions.
2. Securely connect each truss ply required for forming built-up girder trusses.
3. Anchor trusses to girder trusses as shown on approved shop drawings.
4. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.

E. Repair damaged galvanized coatings on exposed surfaces with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

3.05 CLEAN UP:

A. Clean up debris and excess materials from this work and remove from site. Leave area broom clean.

End of Section

SECTION 07 11 13 – DAMPPROOFING

PART I GENERAL:

1.01 SCOPE :

A Furnish all labor, materials and equipment, and perform all work to install dampproofing as shown on the drawings and as specified herein.

B Work Included:

1. In general this section shall include the installation of mastic dampproofing on CMU walls behind brick veneer.

1.02 RELATED DOCUMENTS:

A Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

1.03 SUBMITTALS:

A Submit manufacturer's specifications and installation instructions for mastic dampproofing.

1.04 PROJECT CONDITIONS:

A Provide a suitable area for storage of dampproofing materials and equipment.

B Any work or materials damaged during the handling and application of asphalt emulsion shall be restored to original condition or replaced at no additional cost to the Owner.

1.05 GUARANTEE:

A All areas waterproofed are to be guaranteed during the one (1) year guarantee period. Any water leakage covered herein is to be repaired at the contractor's expense.

PART II PRODUCTS

2.01 MATERIALS:

A Emulsified-Asphalt Primer: ASTM D 1227, Type III, Class 1, except diluted with water as recommended by manufacturer.

B Cold-Applied, Emulsified-Asphalt Dampproofing Fibered Brush and Spray Coats: ASTM D 1227, Type II, Class 1.

C Mastic dampproofing shall be asphalt emulsion type equal to Karnak 220 fibrated, manufactured by Karnak Chemical Corporation, Air-Shield™ LMP by W.R. Meadows, or Hydrocide 700 semi-mastic manufactured by Sonneborn Building Products, Division Contech, Inc.

PART III EXECUTION

3.01 SURFACE PREPARATION:

A Surfaces to receive dampproofing shall be clean, and free of voids, loose aggregate scale, and sharp projections.

3.02 INSTALLATION OF DAMPPROOFING:

A Apply mastic dampproofing to exterior face of exterior masonry wall which are to receive stone veneer, in one full coat over the block.

B Fill all cracks, crevices, and pores of concrete. Make sure coating is continuous and free form breaks and pinholes.

C Dampen the dry concrete surfaces and keep surface damp ahead of application.

D On Exterior Face of Inner Wythe of Cavity Walls: Apply primer and one brush or spray coat at manufacturer's recommended thicknesses but not less than 1 gal./100 sq. ft.

3.03 CLEANING:

A Remove dampproofing materials from surfaces not intended to receive dampproofing.

End of Section

SECTION 07 21 00 – BUILDING INSULATION

PART I GENERAL

1.01 SCOPE:

A. Furnish and install thermal insulation at all exterior cavity walls and batt insulation and insulation where noted on the drawings.

1.02 RELATED DOCUMENTS:

A. Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

Section	09 29 00	Gypsum Wallboard
Section	09 51 13	Acoustic Treatment

1.03 SUBMITALS

A. Submit product data for all insulation products.

1.04 DELIVERY, STORAGE, AND HANDLING:

A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

B. Protect foam-plastic board insulation as follows:

1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site before installation time.
3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

PART II PRODUCTS

2.01 MATERIAL:

A. Insulation for exterior metal stud walls shall be of such thickness to provide minimum R-Value indicated on the drawings (if not indicated, provide minimum R-19) FSK faced fiberglass batt insulation ASTM C665 Type III, Class A with attachment flanges on paper backing. Insulation shall be sized for friction fit between studs.

B. Batt insulation at roof trusses shall be of such thickness to provide minimum R-Value indicated on the drawings (if not indicated, provide R-30) unfaced fiberglass batt insulation ASTM C 665 Type II, Class A.

C. Batt insulation not covered by gypsum wallboard, or other code-approved substrate, shall be foil-faced, fire-resistant batt insulation complying with ASTM C 665, Type III, Class A, Category 1. Surface burning characteristics: Maximum flame spread: 25; Maximum smoke developed: 50, when tested in accordance with ASTM E 84.

D. Sound Attenuation insulation shall be 3-1/2 inch thick (unless indicated on drawings otherwise) unfaced fiberglass acoustical insulation complying with ASTM C 665 Type I. Surface burning characteristics: Maximum flame spread: 10; Maximum smoke developed: 10, when tested in accordance with ASTM E 84. Combustion Characteristics: Passes ASTM E 136 test. Fire resistance rating: Passes ASTM E 119 test.

E. Sound insulation above acoustic tile ceilings shall be 6-1/4" sonobat insulation (Unfaced fiberglass batt insulation ASTM C665 Type I provided in 24" wide rolls for installation above acoustical ceilings)

F. Rigid insulation shall be of thickness indicated in drawings (minimum) AND provide R-Value if indicated in drawings (minimum). If rigid insulation is called for in the drawings, but no thickness or R-Value is indicated, thickness shall be selected by the Architect. Provide rigid closed-cell board complying with ASTM C-578 Type IV with the following properties in all location indicated on drawings:

1. In locations indicated for non-vertical installation (under slab, above roof deck, etc.)

   a. Compressive Strength: 25 psi minimum
   b. Flexural Strength: 50lbs/in^2 min (ASTM C 203)
   c. Water Absorption: max. 0.1% by volume (ASTM C 272).

2. In locations indicated for vertical installation (walls, etc.):

   a. Compressive Strength: 15 psi minimum
   b. Flexural Strength: 40lbs/in^2 min (ASTM C 203)
   c. Water Absorption: max. 1.1% by volume (ASTM C 272).

3. In all locations:

   a. Thermal Resistance: 5 year aged R-values of 5.4 and 5.0 min. $^0F\text{-}ft^2\text{-}h/Btu^2$/inch at 40^0F and 75^0F respectively (ASTM C 518).
   b. Water Vapor Permeance: 1.1 perm-inch max.
   c. Dimensional Stability: 2% max. linear change (ASTM D2126).
   d. Flame Spread: 5 (ASTM E 84).
   e. Smoke Developed: 45 to 165 (ASTM E84)
   f. Size: Lengths and widths as required by project conditions and dimensions.

4. Approved manufacturers include:

   a. DiversiFoam Products.
   b. Dow Chemical Company.
   c. Owens Corning.
   d. Pactiv, Building Products Division.
   e. Additional alternate manufacturers must be approved by Architect prior to Bidding and provide product equal to or exceeding specified requirements.

G. Eave Ventilation Troughs: Preformed, rigid fiberboard or plastic sheets designed and sized to fit between roof framing members and to provide cross ventilation between insulated attic spaces and vented eaves.

PART III EXECUTION

3.01 GENERAL:

A. Clean substrates of substances harmful to insulations or vapor retarders, including removing projections capable of puncturing vapor retarders or that interfere with insulation attachment.

B. Comply with insulation manufacturer's written instructions applicable to products and application indicated.

C. Install insulation that is undamaged, dry, unsoiled, and has not been exposed at any time to ice or snow.

D. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation. Remove projections that interfere with placement.

E. Apply single layer of insulation to produce thickness indicated, unless multiple layers are otherwise shown or required to make up total thickness.

3.02 INSTALLATION OF BATT INSULATION:

A. Install sound insulation in walls around rooms and above ceilings as shown on the drawings. Whether or not shown in drawings, install sound insulation in walls around, and above ceilings in, ALL restrooms, offices indicated for three or fewer occupants, conference/meeting rooms, mechanical rooms and any room with a computer server, voltage transformer or dimming rack.

B. Set vapor-retarder faced units with vapor retarder to warm side of construction, unless otherwise indicated. Do not obstruct ventilation spaces except for firestopping.

C. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure airtight installation.

D. Install mineral-fiber blankets in cavities formed by framing members according to the following requirements:

1. Use blanket widths and lengths that fill cavities formed by framing members. Where more that one length is required to fill the cavity, provide lengths that will produce a snug fit between studs.
2. Place blankets in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
3. For wood framed construction with faced blankets having stapling flanges, lap blanket flange over flange of adjacent blanket to produce air tight installation after concealing finish is in place.
4. Stuff glass-fiber loose-fill insulation into miscellaneous voids and cavity spaces not large enough to receive batts. Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft.

3.03 INSTALLATION OF RIGID INSULATION AT FURRED MASONRY WALLS:

A. Install wall insulation as follows:

1. Install insulation boards vertically against backup wythe of masonry. Wedge insulation boards tightly between rows of metal furring stripes.
2. Cut insulation by means of saw, knife, or similar sharp tool to fit around obstructions across the cavity such as vents, louvers, pipe, and conduit. Cut insulation to 8” widths and bevel edges to seal tightly at radius corners.
3. Coordinate the installation of insulation with the masonry work. Be sure the dampproofing or waterproofing is in place on face of backup before insulation is installed.

3.04 CLEAN UP:

A. Remove all debris and unused insulation products from the site.

3.05 PROTECTION:

A. Protect installed insulation and vapor retarders from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

End of Section

SECTION 07 21 20 – SPRAY FOAM INSULATION

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Furnish all materials, equipment, labor and supervision necessary to provide and install Closed Cell Spray Polyurethane Foam (SPF) where indicated on the drawings and as specified herein.

1.02 RELATED DOCUMENTS:

A. Applicable provisions of the General Conditions, Supplementary Conditions, and Division 1 General Requirements, apply to the work under this section.

Section 07 92 00 Sealants and Caulking

1.03 REFERENCES:

A. ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

B. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

C. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.

D. ASTM E 283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

E. ASTM D 1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics.

F. ASTM D 1622 - Standard Test Method for Apparent Density of Rigid Cellular Plastics.

G. ASTM D 6226 - Standard Test Method for Open-Cell Content of Rigid Cellular Plastics.

H. AATCC 127 - Water Resistance: Hydrostatic Pressure Test.

1.04 PERFORMANCE REQUIREMENTS:

A. Conform to applicable code for flame and smoke, concealment, and over coat requirements.

1.05 SUBMITTALS:

A. Submit under provisions and requirements of Division 1.

B. Product Data: Manufacturer’s data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Manufacturer’s Certificates: Certify products meet or exceed specified requirements.

1.06 QUALITY ASSURANCE:

A. Manufacturer Qualifications: Company specializing in manufacturing urethane foam products and systems of this section with minimum ten years documented experience.

B. Installer Qualifications: Company specializing in performing Work of this section with minimum three years documented experience.

1. Installer must be a certified spray foam insulation contractor or have manufacturer's certification for the application.
2. Installer shall provide the equipment required by the manufacturer for proper installation including high pressure plural component proportioning pump, heated hoses of suitable length, spray gun, drum pumps or other material feeding system, and other ancillary equipment required for the Work.

1.07 DELIVERY, STORAGE, AND HANDLING:

A. Strictly adhere to all of the manufacturer's instructions regarding delivery, storage and handling.

B. Store products under cover in manufacturer's unopened and labeled packaging until ready for installation.

C. Storage temperatures should not exceed 90 degrees F (32.22 degrees C). Do not store in direct sunlight.

D. Keep the temperature of the chemicals above 70 degrees F (21.66 degrees C) for several days prior to use. Cold chemicals can cause pump cavitations and incorrect metering. Keep drums tightly closed when not in use and under dry gas pressure of 2-3 psi after they have been opened.

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

1.08 COORDINATION:

A. Ensure that the installation of products of this section is coordinated with affected trades to prevent interruption of construction progress.

1.09 PROJECT CONDITIONS:

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

B. Do not install spray polyurethane foam during precipitation or when precipitation is imminent. Do not install when the ambient temperature is less than 50 degrees F (10 degrees C) without specific authorization of the manufacturer. Do not install when the ambient humidity exceeds the manufacturer's limits.

1.10 PRE-INSTALLATION MEETING:

A. Convene pre-installation meeting to review installation sequence and scheduling a minimum of two weeks prior to commencing SPF work.

B. Attendance: Architect, Contractor, framer, wall finish applicator and SPF applicator.

PART 2 - PRODUCTS

2.01 PRODUCT:

A. Insulation shall be Lapolla AirTight polyurethane insulation as manufactured by Lapolla Industries Inc., 15402 Vantage Parkway East, Houston, TX 77032; Ph: 888-452-7655; Fax: 281-219-4102; www.lapolla.com.

B. Subject to compliance with specified requirements, acceptable alternate manufacturers include the following:

1. Demilec (USA) LLC, 2925 Galleria Drive, Arlington, TX 76011; Ph: 817-640-4900; Fax: 817-633-2100; www.demilecusa.com.
2. NCFI Polyurethanes, Mount Airy Industrial Park P. O. Box 1528, Mount Airy, NC 27030; Ph: 336-789-9161; www.insulquiet.com.
3. BASF Polyurethane Foam Enterprises LLC, 1703 Crosspoint Ave., Houston, TX 77054, Ph: 713-796-9743 Fax: 713-383-4590, www.basf-pfe.com.
4. CertainTeed Corporation, P.O. Box 860, Valley Forge, PA 19482-0105, Ph: 610-341-7000, 800-233-8990, Fax: 610-341-7571, www.certainteed.com.
5. Other manufacturers submitted and approved in accordance with provisions of Division 1.

2.03 MATERIALS:

A. Closed Cell (CC) Spray Polyurethane Foam (SPF): High-performance, closed cell spray polyurethane foam (SPF) insulation having the following physical properties:

1. Core Density: 1.8 to 2.3 lbs/ft3 when tested in accordance with ASTM D 1622.
2. Compressive Strength: 22 psi minimum when tested in accordance with ASTM D 1621.
3. Water Vapor Transmission: Less than or equal to 1.8 perms at 1 inch thick when tested in accordance with ASTM E 96.
4. Closed Cell content: Greater than 90 percent when tested in accordance with ASTM D 6226.
5. Maximum Service Temperature: 180 degrees F (82 degrees C).
6. Air Leakage: Infiltration/exfiltration, 0.004 CF/min/SF at 1.57 psf when tested in accordance with ASTM E 283.
7. Water Resistance: No Failure at greater than 40 foot Head Pressure when tested in accordance with AATCC 127.
8. Flammability Characteristics: Class I (with Flame Spread less than 25 and smoke developed less than 450) when tested in accordance with ASTM E 84.
9. Aged R-Value: 6.3 Minimum per 1 inch (25 mm) thickness when tested in accordance with ASTM C 518.

2.04 MISCELLANEOUS MATERIALS:

A. Thermal Barrier: Equal to intumescent fire resistant coating, water based and with no VOCs, equal to Flame Seal -TB™ Thermal Barrier for Polyurethane Foam Insulation as manufactured by Specialty Products, Inc., 2410 - 104th St. Ct. S., Suite D, Lakewood, WA 98499, 253-588-7101.

1. Film Thickness: 25 wet mils (thermal barrier).

B. Joint Filler Foam: Hilti CF 124 Filler Foam or equivalent.

C. Sealant: Sikaflex 1a: Single component polyurethane or equivalent.

D. Foam Repair Kit: Handi-Foam two part kits from Fomo Products, or Touch n' Seal 2 component systems from Convenience Products, or other equivalent kits.

E. Moisture Detection Paper Strips: MDP Strips manufactured by NCFI Polyurethanes, Mount Airy, NC or equivalent.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION:

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Proceed with spray polyurethane foam application only after substrate construction, substrate penetration work, and related electrical and plumbing work has been completed.

D. Remove sawdust and other debris from areas to be sprayed by blowing with compressed air or vacuuming with a shop vacuum.

E. All metal to which foam is to be applied must be free of oil, grease, rust, etc. Primers should be used where necessary.

F. Verify that substrate is dry by checking surface for moisture with Moisture Detection Paper strips.

G. Fill voids greater than 2 inches (51 mm), with mineral wool or a backer gypsum board cut to fit in the void, and then spray over the backer material.

H. Mask off all areas not to receive spray foam with masking tape and plastic sheeting. Apply release agent to stud facing to facilitate removal of foam.

I. At the start of work, spray-apply SPF to an area of approximately 100 sf (9.29 sm) at the specified thickness. Proceed with work only after ensuring proper foam thickness and full adhesion to the substrate.

3.03 INSTALLATION:

A. Install in strict accordance with manufacturer's instructions.

B. All surfaces to be sprayed with SPF must be free of all moisture and ice.

C. Do not apply SPF during inclement weather or when ambient temperature and humidity are outside the ranges prescribed by the manufacturer.

D. Apply the SPF where indicated on the Drawings and as indicated below:

1. **Exterior Stud Walls:** Apply to a minimum thickness of 3" or to a thickness to produce the minimum R-value indicated on the drawings (whichever is greater), Closed Cell (CC) SPF to the interior face of the exterior sheathing, unless average thickness is otherwise specified on the Drawings.

2. **Roofline:** Apply to a minimum thickness of 3" or to a thickness to produce the minimum R-value indicated on the drawings (whichever is greater), Closed Cell (CC) SPF to the underside of the roof decking, unless average thickness is otherwise specified on the Drawings.

3. **At door and window jambs and headers with multiple metal framing members:** Insert spray nozzle into holes and completely fill inside void of steel members with Open Cell (OC) SPF.

E. Apply SPF using a "picture framing" technique: apply a cant of foam between the substrate and the structure/framing. Then spray-apply the required thickness of foam against the substrate.

Apply the foam 2 inches thick maximum for each pass, using multiple passes to achieve the desired thickness.

F. Do not apply SPF to fill voids around doors and windows. Use low-expansion foam for those applications.

G. Apply SPF to fill voids around accessible service and equipment penetrations in non fire rated conditions.

H. Seal plumbing stacks, electrical wiring and other penetrations into attic to control air leakage not otherwise specified to be sealed by those subcontractors.

I. Remove overspray from adjacent surfaces.

L. Where damage occurs which violates the spray foam's air seal and moisture seal, repair as needed using the specified spray polyurethane material or the specified foam repair kit material.

3.04 ACCESSORY APPLICATION:

A. Apply Thermal Barrier Coating where required by code:

1. Apply coating with airless spray equipment, brush or roller, in strict accordance with manufacturer's written instruction.

B. Joint Filler Foam and Caulk:

1. Use joint filler foam and/or caulk to seal around windows, doors, chimneys, electrical raceways, sill plates, multiple studs, etc. Note that the expansion of joint filler foam in a confined space can tighten window frames and door jambs to the point that they will not open or close properly. Care must be used in these areas to avoid distortion of these members.

3.05 PROTECTION:

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

3.06 CLEANING:

A. Remove excess SPF.

B. Replace defective SPF.

C. Clean soiled surfaces with cleaning solution.

End of Section

SECTION 07 27 20 - VAPOR PERMEABLE, FLUID-APPLIED MEMBRANE AIR BARRIERS

PART 1 GENERAL

1.01 SCOPE:

A. Furnish all materials, equipment, labor and supervision necessary to provide and install vapor permeable, fluid-applied membrane air barriers (infiltration barriers).

1.02 RELATED DOCUMENTS:

A. Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

Section 07 62 00 Flashing and Sheet Metal
Section 07 92 00 Sealants and Caulking

1.03 SUMMARY

A. This Section includes the following:

1. Materials and installation methods for fluid applied, vapor permeable air barrier membrane system located in the non-accessible part of the wall.
2. Materials and installation methods to bridge and seal air leakage pathways in roof and foundation junctions, window and door openings, control and expansion joints, masonry ties, piping and other penetrations through the wall assembly.

1.04 DEFINITIONS:

A. Air Barrier Assembly: The collection of air barrier materials and auxiliary materials applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.

1.05 PERFORMANCE REQUIREMENTS

A. General: Air barrier shall be capable of performing as a continuous vapor-permeable air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

B. Commonwealth of Massachusetts Building Code Requirements: The intent of this specification is to require compliance with 780 CMR 13, Section 1304.3 Air Leakage.

1.06 AIR BARRIERS: ’

A. The building envelope shall be designed and constructed with a continuous air barrier to control air leakage into, or out of the conditioned space. An air barrier shall also be provided for interior partitions between conditioned space and space designed to maintain temperature or humidity levels which differ from those in the conditioned space by more than 50% of the difference between the conditioned space and design ambient conditions. The air barrier shall have the following characteristics:

1. It must be continuous, with all joints made airtight.

2. It shall have an air permeability not to exceed 0.004 cfm/sq. ft. under a pressure differential of 0.3 in. water. (1.57 psf.) (equal to 0.02L/sq. m @ 75 Pa.).
3. It shall be capable of withstanding positive and negative combined design wind, fan and stack pressures on the envelope without damage or displacement, and shall transfer the load to the structure. It shall not displace adjacent materials under full load.
4. It shall be durable or maintainable.
5. The air barrier shall be joined in an airtight and flexible manner to the air barrier material of adjacent systems, allowing for the relative movement of systems due to thermal and moisture variations and creep. Connection shall be made between:

    a. Foundation and walls.
    b. Walls and windows or doors.
    c. Different wall systems.
    d. Wall and roof.
    e. Wall and roof over unconditioned space.
    f. Walls, floor and roof across construction, control and expansion joints.
    g. Walls, floors and roof to utility, pipe and duct penetrations.

6. All penetrations of the air barrier and paths of air infiltration/exfiltration shall be made airtight.

1.07 REFERENCES:

A. The following standards and publications are applicable to the extent referenced in the text. The most recent version of these standards is implied unless otherwise stated.

B. American Society for Testing and Materials (ASTM)

1. C920 Specifications for Elastomeric Joint Sealants
2. C1193 Guide for Use of Joint Sealants
3. D412 Standard Test Methods for Rubber Properties in Tension
4. D570 Test Method for Water Absorption of Plastics
5. D1004 Test Method for Initial Tear Resistance of Plastic Film and Sheeting
6. D1876 Test Method for Peel Resistance of Adhesives
7. D1938 Test Method for Tear Propagation Resistance of Plastic Film and Sheeting
8. D1970 Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
9. D4258 Practice for Surface Cleaning Concrete for Coating
10. D4263 Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
11. E96 Test Methods for Water Vapor Transmission of Materials
12. E154 Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover
13. E162 Test Method for Surface Flammability of Materials Using a Radiant Heat Source
14. E1186 Practice for Air Leakage Site Detection in Building Envelopes and Air Retarder Systems
15. E2178-01 Standard Test Method for Air Permeance of Building Materials

1.08 SUBMITTALS:

A. Product Data: Include manufacturer's written instructions for evaluating, preparing, and treating substrate; technical data; and tested physical and performance properties of air barrier.

B. Shop Drawings: Show locations and extent of air barrier. Include details for substrate joints and cracks, counterflashing strip, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.

1. Include details of interfaces with other materials that form part of air barrier.
2. Include details of mockups.

C. Samples: Submit representative samples of the following for approval:

1. Fluid applied membrane
2. Transition tape
3. Through Wall Flashing

D. Product Certificates: For air barriers, certifying compatibility of air barrier and accessory materials with Project materials that connect to or that come in contact with the barrier; signed by product manufacturer.

E. Qualification Data: For Applicator.

F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for air barriers, submit certified test report showing compliance with requirements specified for ASTM E2178.

G. Warranty: Submit a sample warranty identifying the terms and conditions stated in Article 1.10.

1.09 QUALITY ASSURANCE:

A. Manufacturer: Air barrier systems shall be manufactured and marketed by a firm with a minimum of 20 years experience in the production and sales of waterproofing. Manufacturers proposed for use, but not named in these specifications shall submit evidence of ability to meet all requirements specified, and include a list of projects of similar design and complexity completed within the past five years.

B. Applicator Qualifications: A firm experienced in applying air barrier materials similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

C. Mockups: Before beginning installation of air barrier, provide air barrier work for exterior wall assembly mockups, incorporating backup wall construction, external cladding, window, door frame and sill, insulation, and flashing to demonstrate surface preparation, crack and joint treatment, and sealing of gaps, terminations, and penetrations of air barrier membrane.

1. Coordinate construction of mockup to permit inspection by Owner's testing agency of air barrier before external insulation and cladding is installed.
2. If Architect determines mockups do not comply with requirements, reconstruct mockups and apply air barrier until mockups are approved.

D. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work. Preinstallation conference shall include the Contractor, installer, Architect, and system manufacturer's field representative. Agenda for meeting shall include but not be limited to the following:

1. Review of submittals.
2. Review of surface preparation, minimum curing period and installation procedures.
3. Review of special details and flashings.
4. Sequence of construction, responsibilities and schedule for subsequent operations.
5. Review of mock-up requirements.
6. Review of inspection, testing, protection and repair procedures.

1.10 DELIVERY, STORAGE, AND HANDLING:

A. Deliver materials and products in labeled packages. Store and handle in strict compliance with manufacturer's instructions, recommendations and material safety data sheets. Protect from damage from sunlight, weather, excessive temperatures and construction operations. Remove damaged material from the site and dispose of in accordance with applicable regulations.

B. Do not double-stack pallets of fluid applied membrane components on the job site. Provide cover on top and all sides, allowing for adequate ventilation.

C. Protect fluid-applied membrane components from freezing and extreme heat.

D. Sequence deliveries to avoid delays, but minimize on-site storage.

1.11 PROJECT CONDITIONS:

A. Environmental Limitations: Apply air barrier within the range of ambient and substrate temperatures recommended by air barrier manufacturer. Protect substrates from environmental conditions that affect performance of air barrier. Do not apply air barrier to a wet substrate or during snow, rain, fog, or mist.

1.12 WARRANTY:

A. Material Warranty: Manufacturer's standard form in which manufacturer agrees to replace fluid-applied air barrier membrane materials, that fail within specified warranty period when installed and used in strict conformance with written manufacturer's instructions.

1. Failures include, but are not limited to, the following:

a. Failure to maintain air permeance rating not to exceed 0.02 L/s/sq. m. when tested per ASTM E2178, within specified warranty period.
b. Failure to maintain a vapor permeance rating greater than 10 perms when tested in accordance with ATM E96, Method B.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 FLUID-APPLIED, VAPOR PERMEABLE MEMBRANE AIR BARRIER:

A. Single-Component Acrylic, Fluid-Applied, Vapor-Permeable Membrane Air Barrier subject to compliance with requirements, provide the following:

1. Perm-A-Barrier VP as manufactured by Grace Construction Products
2. Air-Shield LMP as manufactured by W. R. Meadows, Inc.
3. Enershield-HP as manufactured by BASF
3. Additional alternate products must be approved by Architect prior to bidding.

B. Physical and Performance Properties: Provide products with the following minimum properties:

1. Membrane Air Permeance: Not to exceed 0.004 cfm/sq. ft. of surface area (at specified thickness) at 1.57-lbf/sq. ft. pressure difference (0.002 L/s x sq. m of surface area at 75-Pa) when applied to CMU wall; when tested per ASTM E2178.
2. Membrane Vapor Permeance: Not less than 11.2 perms (649.6 ng/Pa x s x sq. m); when tested per ASTM E96.

3. UV Exposure Limit: Not more than 150 calendar days; per ASTM D412 and ASTM E96-Method B.

2.02 AUXILIARY MATERIALS:

A. General: Auxiliary materials recommended by air barrier manufacturer for intended use and compatible with air barrier membrane. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

B. Liquid Membrane for Details and Terminations: Provide Bituthene Liquid Membrane as manufactured by Grace Construction Products, 62 Whittemore Avenue, Cambridge, MA.

C. Wall Primer (for Use with Throughwall Flashing and Tapes Applied to Substrate): Liquid waterborne primer recommended for substrate by manufacturer of air barrier material.

1. Flash Point: No flash to boiling point
2. Solvent Type: Water
3. VOC Content: Not to exceed 10 g/l
4. Application Temperature: -4°C (25°F) and above
5. Freezing point (as packaged): -7°C (21°F)
6. Product: Perm-A-Barrier WB Primer manufactured by Grace Construction Products.

D. Flexible Membrane Wall Flashing: 0.8 mm (32 mils) of self-adhesive rubberized asphalt integrally bonded to 0.2 mm (8 mil) of cross-laminated, high-density polyethylene film to provide a min. 1.0 mm (40 mil) thick membrane. Membrane shall be interleaved with disposable silicone-coated release paper until installed, conforming with the following:

1. Water Vapor Transmission: ASTM E96, Method B: 2.9 ng/m2sPa (0.05 perms) max.
2. Water Absorption: ASTM D570: max. 0.1% by weight
3. Puncture Resistance: ASTM E154: 356 N (80 lbs.) min.
4. Tear Resistance

    a. Initiation ASTM D1004: min. 58 N (13.0 lbs.) M.D.
    b. Propagation ASTM D1938: min. 40 N (9.0 lbs.) M.D.

5. Lap Adhesion at -4ºC (25ºF): ASTM D1876: 880 N/m (5.0 lbs./in.) of width
6. Low Temperature Flexibility ASTM D1970: Unaffected to -43ºC (-45ºF)
7. Tensile Strength: ASTM D412, Die C Modified: min. 5.5 MPa (800 psi)
8. Elongation, Ultimate Failure of Rubberized Asphalt: ASTM D412, Die C: min. 200%.
9. Product: Perm-A-Barrier Wall Flashing manufactured by Grace Construction Products.

E. Joint Reinforcing Strip: Air barrier manufacturer's approved tape.

F. Transition Tape: 0.8 mm (32 mils) of self-adhesive rubberized asphalt integrally bonded to 0.2 mm (8 mil) of cross-laminated, high-density polyethylene film to provide a min. 1.0 mm (40 mil) thick membrane. Membrane shall be interleaved with disposable silicone-coated release paper until installed, conforming with the following:

1. Water Vapor Transmission: ASTM E96, Method B: 2.9 ng/m2sPa (0.05 perms) max.
2. Water Absorption: ASTM D570: max. 0.1% by weight
3. Puncture Resistance: ASTM E154: 356 N (80 lbs.) min.
4. Tear Resistance

a. Initiation ASTM D1004: min. 58 N (13.0 lbs.) M.D.
b. Propagation ASTM D1938: min. 40 N (9.0 lbs.) M.D.

5. Lap Adhesion at -4ºC (25ºF): ASTM D1876: 880 N/m (5.0 lbs./in.) of width
6. Low Temperature Flexibility ASTM D1970: Unaffected to -43ºC (-45ºF)
7. Tensile Strength: ASTM D412, Die C Modified: min. 5.5 MPa (800 psi)
8. Elongation, Ultimate Failure of Rubberized Asphalt: ASTM D412, Die C: min. 200%.
9. Product: Perm-A-Barrier Wall Flashing manufactured by Grace Construction Products.

G. Substrate Patching Membrane: Manufacturer's standard trowel-grade substrate filler.

1. Product: Bituthene Liquid Membrane, manufactured by Grace Construction Products.

H. Sprayed Polyurethane Foam Sealant: 1- or 2-component, foamed-in-place, polyurethane foam sealant, 1.5 to 2.0 lb/cu. ft (24 to 32 kg/cu. m) density; flame spread index of 25 or less according to ASTM E162; with primer and noncorrosive substrate cleaner recommended by foam sealant manufacturer.

I. Joint Sealant: ASTM C920, single-component, neutral-curing silicone; Class 100/50 (low-modulus), Grade NS, Use NT related to exposure, and, as applicable to joint substrates indicated, Use O.

PART 3 EXECUTION

3.01 EXAMINATION:

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.

1. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
2. Verify that concrete has cured and aged for minimum time period recommended by air barrier manufacturer.
3. Verify that concrete is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D4263.
4. Verify that masonry joints are struck flush and completely filled with mortar.
5. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 SURFACE PREPARATION:

A. Refer to manufacturer's literature for requirements for preparation of substrates. Surfaces shall be sound and free of voids, spalled areas, loose aggregate and sharp protrusions. Remove contaminants such as grease, oil and wax from exposed surfaces. Remove dust, dirt, loose stone and debris. Use repair materials and methods that are acceptable to manufacturer of the fluid-applied air barrier system.

B. Exterior sheathing panels: Ensure that the boards are sufficiently stabilized with corners and edges fastened with appropriate screws. Pre-treat all board joints with 50 - 75mm (2-3 in.) wide, manufacturer's recommended self-adhesive tape. Gaps greater than 6mm (1/4 in.) should be filled with mastic or caulk, allowing sufficient time to fully cure before application of the tape and fluid applied air barrier system.

C. Masonry Substrates: Apply air and vapor barrier over concrete block and brick with smooth trowel-cut mortar joints, struck full and flush. Fill all voids and holes, particularly in the mortar joints, with a lean mortar mix, non-shrinking grout or parge coat.

D. Related Materials: Treat construction joints and install flashing as recommended by manufacturer.

E. Clean, prepare, treat, and seal substrate according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate for air barrier application.

F. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.

G. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.

H. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate patching membrane.

I. Remove excess mortar from masonry ties, shelf angles, and other obstructions.

J. At changes in substrate plane, apply sealant or Bituthene Liquid Membrane at sharp corners and edges to form a smooth transition from one plane to another.

K. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.

3.03 JOINT TREATMENT:

A. Concrete and Masonry: Prepare, treat, rout, and fill joints and cracks in substrate according to ASTM C1193 and air barrier manufacturer's written instructions. Remove dust and dirt from joints and cracks complying with ASTM D4258 before coating surfaces.

1. Prime substrate as required.

B. Gypsum Sheathing: Fill joints greater than 1/4 inch (6 mm) with sealant according to ASTM C1193 and with air barrier manufacturer's written instructions. Apply tape to joint prior to installing fluid air barrier membrane.

3.04 AIR BARRIER MEMBRANE INSTALLATION:

A. Apply air barrier membrane to achieve a continuous air barrier according to air barrier manufacturer's written instructions.

B. Apply air barrier membrane within manufacturer's recommended application temperature ranges.

C. Apply a continuous unbroken air barrier to substrates according to the following minimum thickness. Apply membrane in full contact around protrusions such as masonry ties.

1. Vapor-Permeable Membrane Air Barrier: 90-mil (2.4-mm) wet film thickness, 45-mil (1.2-mm) dry film thickness.

D. Do not cover air barrier until it has been tested and inspected by Owner's testing agency.

E. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air barrier components.

3.05 TRANSITION STRIP INSTALLATION:

A. Install strips, transition strips, and auxiliary materials according to air barrier manufacturer's written instructions to form a seal with adjacent construction and maintain a continuous air barrier.

1. Coordinate the installation of air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
2. Install strip on roofing membrane or base flashing so that a minimum of 3 inches (75 mm) of coverage is achieved over both substrates.
3. Install all flashings only after application of air barrier.

B. Apply primer to substrates to receive transition tapes at required rate and allow to dry. Limit priming to areas that will be covered by transition tape in same day. Reprime areas exposed for more than 24 hours.

1. Prime glass-fiber-surfaced gypsum sheathing not covered with air membrane material with number of prime coats needed to achieve required bond, with adequate drying time between coats.

C. Connect and seal exterior wall air barrier membrane continuously to roofing membrane air barrier, concrete below-grade structures, floor-to floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.

D. At end of each working day, seal top edge of strips and transition strips to substrate with termination mastic.

E. Apply joint sealants forming part of air barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

F. Wall Openings: Prime concealed perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply transition strip so that a minimum of 3 inches (75 mm) of coverage is achieved over both substrates. Maintain 3 inches (75 mm) of full contact over firm bearing to perimeter frames with not less than 1 inch (25 mm) of full contact.

1. Transition Strip: Roll firmly to enhance adhesion.

G. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, and doors, and miscellaneous penetrations of air barrier membrane with foam sealant.

H. Repair punctures, voids, and deficient lapped seams in strips and transition strips. Slit and flatten fishmouths and blisters. Patch with transition strips extending 6 inches (150 mm) beyond repaired areas in strip direction.

3.06 FIELD QUALITY CONTROL:

A. Testing Agency: Owner may engage a qualified testing agency to perform tests and inspections and prepare test reports.

B. Inspections: Air barrier materials and installation are subject to inspection for compliance with requirements. Inspections may include the following:

1. Continuity of air barrier system has been achieved throughout the building envelope with no gaps or holes.
2. Continuous structural support of air barrier system has been provided.
3. Masonry and concrete surfaces are smooth, clean and free of cavities, protrusions, and mortar droppings.
4. Site conditions for application temperature and dryness of substrates have been maintained.
5. Maximum exposure time of materials to UV deterioration has not been exceeded.

6. Surfaces have been primed, if applicable.
7. Laps in strips and transition strips have complied with minimum requirements and have been shingled in the correct direction (or mastic has been applied on exposed edges), with no fishmouths.
8. Termination mastic has been applied on cut edges.
9. Strips and transition strips have been firmly adhered to substrate.
10. Compatible materials have been used.
11. Transitions at changes in direction and structural support at gaps have been provided.
12. Connections between assemblies (membrane and sealants) have complied with requirements for cleanliness, preparation and priming of surfaces, structural support, integrity, and continuity of seal.
13. All penetrations have been sealed.

C. Tests: Testing to be performed will be determined by Owner's testing agency from among the following tests:

1. Qualitative Testing: Air barrier assemblies will be tested for evidence of air leakage according to ASTM E1186, smoke pencil with pressurization or depressurization.

D. Remove and replace deficient air barrier components and retest as specified above.

3.07 CLEANING AND PROTECTION:

A. Protect air barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.

B. Protect air barrier from exposure to UV light and harmful weather exposure as required by manufacturer. Remove and replace air barrier exposed for more than 150 days.

C. Clean spills, stains, and soiling from construction that would be exposed in the completed work using cleaning agents and procedures recommended by manufacturer of affected construction.

D. Remove masking materials after installation.

End of Section

SECTION 07 31 13 – ROOFING SHINGLES

PART I GENERAL

1.01 SCOPE:

A Furnish all labor, materials, tools, equipment and services required to install new shingle roofing and felt.

1.02 RELATED DOCUMENTS:

A Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

Section 07 62 00 Flashing and Sheet Metal

1.03 SUBMITTALS:

A Submit shingle samples for color selection by the Architect.

1.04 WARRANTY:

A Warranty shall be manufacturer's standard 30-year limited warranty.

B In addition to manufacturer's limited warranty on materials, provide manufacturer's 5 year non-prorated warranty covering labor and materials

PART II PRODUCTS

2.01 MANUFACTURERS:

A Manufacturers: Subject to compliance with requirements, provide asphalt shingles produced by one of the following:

1. CertainTeed Corporation.
2. GAF Building Materials Corporation.
3. Owens-Corning Fiberglas Corp.
4. Tamko Asphalt Products, Inc.

B Manufacturers: Subject to compliance with requirements, provide Waterproof Underlayment produced by one of the following:

1. WinterGuard; CertainTeed Corporation.
2. Bituthene Ice and Water Shield; Grace: W.R. Grace & Co.
3. Nordshield Ice and WaterGard; Nord Bitumi US, Inc.
4. Polyguard Deck Guard; Polyguard Products, Inc.
5. Polyken 640 Underlayment Membrane; Polyken Technologies; Kendall Co. Division.
6. QSC-707; Quaker Construction Products, Inc.
7. Moisture Guard; Tamko Asphalt Products, Inc.

2.02 DIMENSIONAL SHINGLES

A. CertainTeed Landmark IR: Conforming to ASTM D 3018 Type I – Self Sealing; UL Certification of ASTM D 3462, ASTM D 3161/UL997 80 mph Wind Resistance and UL Class A Fire Resistance, UL2218 Class IV Impact Resistance, glass fiber mat base, ceramically colored/UV resistant mineral surface granules across entire face of shingle; algae-resistant; three-layer laminated four tab shingle.

1. Weight: 240 pounds per square (100 square feet).

2. Color: As selected by the Owner

B. Fungus Resistant: Provide shingles that have been surface treated to remain free of fungus and algae growth, which adversely affects the appearance of the roof, for at least 10 years.

C. Hip and Ridge Shingles: Manufacturer's standard, factory-precut units to match asphalt shingles.

2.03 ACCESSORY MATERIALS:

A Underlayment of shingles shall be 30-pound unperforated organic asphalt saturated roofing felt complying with ASTM D 226, 36 inches wide. This underlayment is a minimum. At no time shall an underlayment be installed which is not acceptable to the shingle manufacturer for specified warranty.

B Eaves Protection: Sheet barrier which meets ASTM D1970 of self-adhering rubberized asphalt membrane shingle underlayment having internal reinforcement and "split" back plastic release film; provide material warranty equal in duration to that of shingles being applied.

C Roofing cement shall be manufacturer's standard cement complying with ASTM D-2822.

D Nails for shingles and underlayment shall be hot-dip galvanized barbed roofing nails, 12 gauge minimum with 3/8" diameter head, length to penetrate ¾ inches into solid decking or to penetrate through plywood sheathing. Staples are prohibited.

E Starter Course: Manufacturer's standard, color to match field shingles.

2.04 RIDGE VENTS:

A. Rigid Ridge Vent: Manufacturer's standard rigid section high-density polypropylene or other UV-stabilized plastic ridge vent with nonwoven geotextile filter strips and with external deflector baffles; for use under ridge shingles.

1. Acceptable Products:

a. Air Vent Inc., a CertainTeed Company; ShingleVent II.
b. Cor-A-Vent, Inc.; V-Series.
c. GAF Materials Corporation; Cobra Rigid Vent II.
d. Lomanco, Inc.; OR-4.
e. Owens Corning; VentSure Ridge Vent.
f. Ridglass Manufacturing Company, Inc.; Coolvent.

2. Minimum Net Free Area: 18 square inches per lineal foot.

3. Width: 12 inches.

4. Thickness: 1 inch.

2.05 METAL TRIM AND FLASHING:

A Sheet Metal Materials: Furnish the following sheet metal materials:

1. Aluminum Sheets: ASTM B 209 alloy 3003 H14 with mill finish, minimum 0.024 inch thick, unless otherwise indicated18 inches wide minimum. Job cut to sizes and configurations recommended in Figure 4-10 of SMACNA manual fifth edition. If used in an open valley, configure to match Figure 4-9 SMACNA manual fifth edition. Provide 1 inch V crimp profile. Open valley flashing shall be prefinished to match shingle color.

B Metal Drip Edge: 0.019” (24 Ga.) Brake-formed sheet metal with at least a 2 inch roof deck flange and a 2 inch fascia flange with a 3/8 inch drip at lower edge. Furnish the following material in lengths of 8 or 10 feet.

1. Material: 0.019” Aluminum sheets.

C Metal Flashing: Job-cut to sizes and configurations required.

1. Material: 0.032” Aluminum sheets.

D Vent Pipe Flashing: Lead conforming to ASTM B 749, Type L51121, at least 1/16 inch thick, unless otherwise indicated. Provide lead sleeve sized to slip over and turn down into pipe 1 inch minimum, soldered to skirt at slope of roof extending at least 6 inches from pipe onto roof.

E Vent Pipe Flashing: Thermoplastic pipe flashing

1. 85300 Series as manufactured by Portals Plus, 639 Thomas Drive, Bensenville IL 60106, (630) 766-5240.

2. Molded Polypropylene pipe flashing NPF Series as manufactured by The Never Leak Company LP, P.O. Box 1397, Olive Branch, MS 38654, (800) 274-2409.

F. Mast Flashing: All electrical mast flashing shall be done with a zipper/split/wrap-around boot. Field splicing of standard boots are unacceptable.

PART III EXECUTION

4.01 EXAMINATION:

A Examine substrate for compliance with requirements for substrates, installation tolerances, and other conditions affecting performance of asphalt shingles. Do not proceed with installation until unsatisfactory conditions have been corrected.

4.02 PREPARATION:

A Clean substrates of projections and substances detrimental to application. Cover knotholes or other minor voids in substrate with sheet metal flashing secured with non-corrosive roofing nails.

B Coordinate installation with flashings and other adjoining work to ensure proper sequencing. Do not install roofing materials until all vent stacks and other penetrations through roof sheathing have been installed and are securely fastened against movement.

4.03 SEQUENCE OF WORK:

A The sequence of work in the various roof areas shall be such as to minimize construction traffic over completed roof areas.

B Roofing materials shall be hoisted directly from grade to the roof level where roofing is to be installed and shall not be transported over existing roofs at roof levels below work areas.

C No materials shall be stored or stacked on the roof deck in such a manner as to exceed a live load of 20 PSF.

4.04 INSTALLATION:

A General: Comply with manufacturer’s instructions and recommendations but not less than those recommended by ARMA’s "Residential Asphalt Roofing Manual" or "The NRCA Steep Roofing Manual."

1. Fasten asphalt shingles to roof sheathing with nails.

B Felt Underlayment: Apply 1 layer of felt underlayment horizontally over entire surface to receive asphalt shingles, lapping succeeding courses a minimum of 2 inches, end laps a minimum of 4 inches, and hips and valleys a minimum of 6 inches. Fasten felt with sufficient number of roofing nails to hold underlayment in place until asphalt shingle installation.

1. Omit felt underlayment at areas of waterproof underlayment. Lap felt underlayment over waterproof underlayment as recommended by manufacturer but not less than 2 inches.

C Waterproof Underlayment at Roof Overhang: Apply 1 layer of waterproof underlayment horizontally over surface of roof where soffit is exposed to weather. Beginning at eave and extending 1 foot minimum beyond wall line below, lap succeeding courses a minimum of 2 inches, end laps a minimum of 4 inches. Fasten waterproof underlayment with only enough roofing nails to hold underlayment in place until asphalt shingle installation. Lap roof underlayment over waterproof underlayment at least 6 inches.

D Flashing: Install metal flashing and trim as indicated and according to details and recommendations of the "Asphalt Roofing" section of "The NRCA Steep Roofing Manual" and ARMA's "Residential Asphalt Roofing Manual."

E Install asphalt shingles, beginning at roof's lower edge, with a starter strip of roll roofing or inverted asphalt shingles with tabs removed. Fasten asphalt shingles in the desired weather exposure pattern; use number of fasteners per shingle as recommended by manufacturer. Use vertical and horizontal chalk lines to ensure straight coursing.

1. Cut and fit asphalt shingles at valleys, ridges, and edges to provide maximum weather protection. Provide same weather exposure at ridges as specified for roof. Lap asphalt shingles at ridges to shed water away from direction of prevailing wind.

2. Use fasteners at ridges of sufficient length to penetrate sheathing as specified.

3. Pattern: Comply with manufacturer's recommendations for offset and exposure.

4.05 RIDGE VENTS:

A. Install continuous ridge vents over asphalt shingles according to manufacturer's written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing.

4.06 ADJUSTING:

A Replace any damaged materials installed under this Section with new materials that meet specified requirements.

End of Section

SECTION 07 65 00 – PEEL AND STICK FLASHING

PART I GENERAL

1.01 SCOPE:

A. Furnish all labor, materials and equipment, and perform all work to install peel and stick polyethylene faced rubberized asphalt flashing as shown on the drawings and as specified herein.

1.02 RELATED DOCUMENTS:

A. Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

1.03 SUBMITTALS:

A. Submit manufacturer's data, installation instructions, and 6" square samples of specified sheet materials to the Architect for approval.

1.04 PROJECT CONDITIONS:

A. Store flashing materials in protected location safe from soiling with and water with temperatures maintained above 50° F.

B. Do not store materials exposed to direct sunlight.

PART II PRODUCTS

2.01 MANUFACTURER:

A. Provide one of the following product systems by the indicated manufacturer:

1. Vycor Plus self-adhering flashing as manufactured by Grace Construction Products, 62 Whittemore Avenue, Cambridge, MA 02140, 866-333-3726, Fax: 410-431-7281

2. BT020XL self-adhering flashing as manufactured by Protecto Wrap Company, 2255 South Delaware Street, Denver, CO 80223, Phone: 800-759-9727 or 303-777-3001, Fax: 303-777-9273

3. Tyvek® Flashing System as manufactured by DuPont, P.O. Box 80728, Wilmington, Delaware 19880-0728, 800-448-9835

4.01 SURFACE PRIMERS:

A. Primer or Spray Adhesive must be used on weathered surfaces, masonry, concrete, OSB sheathing and fiberglass matt faced gypsum sheathing. Primer or spray adhesive must be used in applications with temperatures below 45° F.

PART III EXECUTION

5.01 COORDINATION:

A. Coordinate the installation of sheet metal work with the work of other trades, e.g., thru-wall flashing and counter-flashing and with the installation of windows and doors.

5.02 CONDITIONS:

A. Surfaces should be clean, dry, free of dirt and other foreign matter.

B. There should be no solvent-based caulks used in conjunction with peel and stick flashing.

C. Peel and stick flashing should be applied at a temperature above 45° F (7° C). For applications from 20° F to 45° F (-6° C to 7° C), the material must be stored in a warm area prior to use.

D. Work shall be installed as detailed and in accordance with the manufacturer's latest printed instructions, unless otherwise approved by the Architect in writing. Requests for permission to use alternate materials, methods, and details shall be submitted to the Architect, in writing, and shall fully describe the proposed alternatives and the reasons for such proposed changes.

5.03 PRIMER APPLICATION:

A. Apply primer to all surfaces by roller or brush.

B. Primed surface shall be free of runs, puddles or excessive primer as this could cause blistering. Brush or roll out all primer puddles or drips immediately.

C. Prime only as much area as can be covered in half a day's work. Re-prime areas not covered in half a day's work with a light coat of Primer.

D. The opened containers, when not in use, should have the lids replaced so as to lessen the evaporation of the solvents.

E. Some bubbling in the primer may occur on the surface as it cures. This has no effect on the performance of the product and will smooth out as the membranes are applied.

5.04 SPRAY ADHESIVE APPLICATION:

A. Shake can before using.

B. Turn spray tip so arrow points to dot on rim.

C. Hold can 6 - 8 inches from surface to be sprayed and apply to surface.

D. After use, invert can, depress spray tip until spray is free of adhesive. Clean spray tips with turpentine.

E. Clean oversprayed areas with a mix of 25% - 30% water added to isopropyl alcohol.

5.05 INSTALLING FLASHING:

A. Self-Adhered Flashing must be continuously supported by the substrate and must not span or bridge joints, gaps or voids in excess of 1/4" (6.4 mm). End laps that occur in subsequent lengths must maintain a minimum overlap of 2" (51 mm).

B. Begin installation at the bottom of openings and work toward the top lapping all joints to excluded moisture penetration.

C. Move along opening or joint, being careful to put flashing as evenly as possible over the opening and avoiding fishmouths along the edges.

D. Press flashing firmly into place with heavy hand pressure as soon as possible, to ensure continuous and intimate contact with the substrate.

E. If wrinkles develop, carefully cut out affected area and replace in the similar procedure outlined above. The repair piece also must be pressed into place with heavy hand pressure as soon as possible to ensure continuous and intimate contact with the substrate.

F. Rolling the flashing is essential to gain 100% surface contact of the flashing adhesive to the substrate and will minimize trapping air beneath the tape.

G. Care should be taken not to leave the membrane exposed to direct sunlight for over 120 days.

H. Do not stretch the flashing membrane. Stretching will adversely affect the adhesion of the product.

I. Lap building wrap material 4" on top of flashing and seal the building wrap to flashing.

End of Section

SECTION 07 71 00 – GUTTERS AND DOWNSPOUTS

PART I GENERAL

1.01 DESCRIPTION

A. Furnish all labor, material, equipment, and supervision to provide and install aluminum gutters and downspouts.

B. Dimensions, details of fabrication and area of usage shall be as shown on the drawings.

1.02 SUBMITTALS

A. Prepare and submit shop drawings for all proposed work of this section.

B. Product data: Indicate product description, finishes and installation instructions including interface with adjacent materials and surfaces.

C. Samples: Submit manufactured expansion joint covers.

1.03 MANUFACTURERS

A. In order to define requirements for quality, function, sizes, gauges, grades, colors, etc. for manufactured products, the specifications for materials designate brand names of products that conform to minimum requirements that are acceptable.

1.04 COORDINATION WITH OTHER TRADES

A. When work is to be executed in conjunction with roofing and flashing products that are to be bonded by the roofing product manufacturer, the sheet metal work shall be coordinated and executed to permit required bonds to be obtained.

1.05 REFERENCE STANDARDS

A. SMACNA Architectural Sheet Metal Manual, 5th Edition

B. Industry standards

1. Kaiser Aluminum Company, "Technical Information Architectural Aluminum”

2. Aluminum Association, "Aluminum Sheet Metal Work in Building Construction"

C. ASTM Standards

1. ASTM B209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate

2. ASTM B32 – Standard Specification for Solder Metal

1.06 WARRANTY

A. Warrant flashing and sheet metal work to be free of defects in materials and workmanship. Warranty period shall be one (1) year.

PART II PRODUCTS

2.01 PERFORMANCE CRITERIA

A. Provide expansion joints in gutters at 40 feet on center maximum.

B. Where downspouts are subject to damage from grounds-keeping equipment or vehicular traffic, provide downspout protection covers fabricated from .050 inch prefinished aluminum in accordance with SMACNA Figure 1-32I . Protection covers shall be set 1 foot above grade and shall extend to 3 feet above grade and shall be fastened to wall with 6 minimum 1/4 inch diameter sleeve anchors.

C. Where sheet metal abuts or members into adjacent dissimilar materials, execute juncture to prevent electrolysis between the two materials.

1. Paint dissimilar contact surfaces with bituminous coating, by applying rubberized-asphalt underlayment to each surface, or by other permanent separation as recommended by manufacturer. Coating shall not be exposed to view.

D. Unless otherwise indicated on drawings, provide and install 16 inch by 30 inch precast reinforced concrete splash blocks at all downspouts that empty on grade. Where downspouts discharge on low-slope roofs, provide splash pans set in asphalt roofing cement compatible with roof membrane.

E. Provide all accessories essential to complete sheet metal installation of same kind of material as item to which applied. Nails, screws and bolts shall be of types and of a composition that is compatible with metal.

2.02 ALUMINUM SHEET METAL MATERIAL

A. All aluminum sheet material shall meet ASTM B 209 (ASTM B 209M), Alloy 3003, 3004, 3105, or 5005, Temper suitable for forming and structural performance required, but not less than H14, .032 inch thickness (minimum) unless otherwise noted.

B. Gutters shall be fabricated from 0.032-inch-thick aluminum meeting specified requirements.

1. Mill Finish: One-side

C. Downspouts shall be fabricated from .032 inch aluminum meeting specified requirements.

D. Provide downspout hangers of .028 inch aluminum meeting specified requirements.

1. Locate downspout hangers 6 feet apart maximum, no more than 2 feet from the top and bottom of the downspout. Provide a minimum of 2 hangers per downspout.

2.03 ACCESSORY MATERIALS

A. Solder:

1. Shall conform to ASTM B32, composition shall contain 50% tin and 50% lead except as specified otherwise.
2. Solder for aluminum and metal shall be of composition as recommended by metal manufacturer.
3. Solder flux: Muriatic acid neutralized with zinc for galvanized metal

B. Mastic: Meet ASTM D2822-82, fibrated asphalt flashing cement.

C. Fasteners: Same material or compatible with sheet metal being fastened

1. Nails: Flathead, needle point, 12 ga (min.) and of length to penetrate substrate 1" (min.)
2. Expansion shields: Lead or bronze sleeves
3. Screws: Self-tapping type, with round heads
4. Bolts: Furnished complete with nuts and washers
5. Rivets: Round head type

6. Blind clips and cleats shall be the same gauge as sheet metal.

D. Caulk: Pecor, Corp.: BR-96, non-shrink, non-drying butyl caulk

2.04 FINISH

A. High-Performance Organic Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

1. Fluoropolymer 2-Coat System: Manufacturer's standard 2-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2605.

B. Color: As indicated on drawings. If not indicated on drawings, color shall be selected by the Architect from the manufacturer's full range of non-metallic colors. If manufacturer's full range does not consist of a minimum of 24 colors, the manufacturer shall match custom color sample provided by Architect at no additional cost to the Architect or Owner.

2.05 SHEET METAL FABRICATIONS:

A. General: Dimensions, shapes and profiles shall be as indicated on drawings for all rainware, edge metal and other fabrications.

PART III EXECUTION

3.01 INSPECTION:

A. Verify curbs are solidly set and nailing strips located.

B. Beginning of installation means acceptance of existing conditions.

C. Field measure site conditions prior to fabricating work.

D. Installation shall not disrupt other trades. Verify that substrate is dry, clean and free of foreign matter.

3.02 GENERAL INSTALLATION

A. Except as otherwise shown or specified, workmanship of sheet metal, including method of forming joints, anchoring, cleating and provisions for expansion, shall conform to details and recommendations of the "Architectural Sheet Metal Manual" published by the Sheet Metal and Air Conditioning Contractors National Association.

B. Shop Fabricated Work: Metal work shall be shop fabricated to configurations and forms in accordance with recognized sheet metal practices. Hem all exposed edges. Angle bottom edges of exposed vertical surfaces to form drip. All corners for sheet metal shall be lapped with adjoining pieces fastened and set in sealant.

C. Manufactured Systems: Furnish and install all systems in strict accordance with manufacturer's printed instructions.

D. Installing Contractor shall be responsible for determining if the edge metal systems are in general conformance with roof manufacturer's recommendations.

E. Coordinate the installation of sheet metal work with the work of other trades, e.g. thru-wall flashing and counterflashing with installation of masonry work.

F. Dissimilar metals shall not be allowed to come in contact with each other. Isolate any dissimailar metals, masonry or concrete, from metals using bituminous paint, tape, or slip sheet. Use gasketed fasteners where required to prevent corrosive actions.

G. Fastening of metal to walls and wood blocking shall comply with SMACNA Architectural Sheet Metal Manual, Factory Mutual I-60 wind uplift specifications and/or manufacturer's recommendations whichever is of the highest standard.

H. All accessories or other items essential to the completeness of sheet metal installation, whether specifically indicated or not, shall be provided and of the same material as item to which applied.

I. Allow sufficient clearances for expansion and contraction of linear metal components. Secure metal using fasteners as required by the system. No exposed face fastening shall be accepted.

J. Joints, end caps, and expansion joints in gutters and downspouts shall be made be the "Rivseal" procedure. Apply Gutterseal to the joint and then draw joint tight by blind riveting.

K. Install any and all accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

3.03 COMPONENT INSTALLATION:

A. Gutters: Join sections with riveted and soldered joints or with lapped joints sealed with sealant. Provide for thermal expansion. Attach gutters at eave or fascia to firmly anchored gutter brackets spaced not more than 36 inches (900 mm) apart. Provide end closures and seal watertight with sealant. Slope to downspouts at a rate of 1/8 inch per foot.

1. Fasten gutter spacers to front and back of gutter.
2. Loosely lock straps to front gutter bead and anchor to roof deck.
3. Anchor and loosely lock back edge of gutter to continuous eave or apron flashing.
4. Install gutter with expansion joints at locations indicated, but not exceeding, 40 feet apart. Install expansion-joint caps.
5. Install continuous gutter screens on gutters with noncorrosive fasteners, removable for cleaning gutters.

B. Downspouts: Join sections with 1-1/2-inch (38-mm) telescoping joints.

1. Provide hangers with fasteners designed to hold downspouts securely to walls. Locate hangers at top and bottom and at approximately 60 inches (1500 mm) o.c. in between.
2. Provide elbows at base of downspout to direct water away from building.
3. Connect downspouts to underground drainage system indicated.

3.04 SOLDERING:

A. Clean and roughen edges to be soldered. Apply non-corrosive flux precoat to the surfaces to be joined with solder alloy for a distance of 1-1/2" back from edge of metal. Remove flux residue with clean water. Assemble the parts and solder, using regular non-corrosive rosin flux.

B. Soldering shall be used for sealing only and joints that must withstand mechanical stresses shall be riveted or screwed in addition to soldering.

3.05 CLEANING AND PROTECTION

A. Clean exposed metal surfaces, removing substances which might cause corrosion of metal or deterioration of finishes workmanship.

End of Section

SECTION 07 92 00 – SEALANTS AND CAULKING

PART I GENERAL

1.01 SCOPE:

A. Furnish all labor, materials, tools, equipment and services required to install joint sealants for the following locations:

1. Joints in exterior vertical surfaces and non-traffic horizontal surfaces as indicated below:

a. Perimeter joints between wall materials and frames of doors and windows.
b. Joints between different materials.
c. Other joints as indicated on the drawings.
d. Openings around pipes projecting through exterior walls.

2. Joints in exterior horizontal traffic bearing surfaces as indicated below:

a. Control and expansion joints in concrete paving.

3. Interior joints in vertical and vertical surfaces as indicated below:

a. Joints between different materials.
b. Joints between plumbing fixtures and adjacent materials.
c. Joints around pipes projecting through interior walls.

1.02 RELATED DOCUMENTS:

A Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

B Caulking in connection with ductwork is specified in Division 23.

1.03 SUBMITTALS:

A Submit manufacturer's product and application data on products specified.

B Submit color charts on products requiring color selection.

C Product test reports.

1.04 QUALITY ASSURANCE:

A Engage an experienced installer who has completed joint sealant applications similar in material, design, and extent to that indicated for the project that have resulted in construction with a record of successful in-service performance.

1.05 ENVIRONMENTAL CONDITIONS:

A Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer.
2. When joint substrates are wet.
3. Where joint widths are less than allowed by joint sealant manufacturer for application indicated.
4. Until contaminant capable of interfering with their adhesion are removed from joint substrates.

PART II PRODUCTS

2.01 GENERAL:

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

B Match colors indicated by reference.

2.02 MATERIALS:

A Sealant for caulking of control joints in concrete slabs shall be a two-part, Jet-Fuel-Resistant, non-sag, Polyurethane Rubber Sealant for Concrete: Pourable, chemically curing elastomeric formulation complying with the following requirements relative to formulation and with ASTM C 920 for Type, Grade, Class, and Uses indicated.

1. Urethane formulation: Type M, Class 25, Uses T, M, and O as applicable to joint substrates.
2. Grade P for joints in horizontal paved surfaces.
3. Grade NS for vertical and other joints where installation of a Grade P (self-leveling) sealant would result in sealant flowing out of joint.

B Sealant for all exterior caulking except as noted, and at cabinets shall be a multicomponent non-sagging urethane sealant complying with ASTM C920 for type M, Grade NS, class 25, Uses A, G, M, and O as applicable to joint substrates. Provide products with the capability, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C719, to withstand the specified percentage change in the joint width existing at the time of installation and remain in compliance with other requirements of ASTM C920 for uses indicated. Acceptable manufacturers include DAP, Pecora, Sonneborn, and Tremco.

1. Additional Movement Capability: 50 percent movement in extension and 50 percent in compression for a total of 100 percent movement.

C Sealant for interior use unless otherwise specified shall be a paintable type equal to DAP Acrylic Latex Caulk, Pecora AC-20 Acrylic Latex, or Tremco Acrylic Latex Caulk.

D Sealant for interior use in conjunction with plumbing fixtures shall be a low-modulus nonacid-curing silicone sealant, type S, Grade NS, Class 25, uses: A, G, and O as applicable to joint substrates . Provide products with the capability, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C719, to withstand the specified percentage change in the joint width existing at the time of installation and remain in compliance with other requirements of ASTM C920 for uses indicated. Acceptable manufacturers include DAP, Pecora, Sonneborn, and Tremco.

1. Additional Movement Capability: 100 percent movement in extension and 50 percent in compression for a total of 150 percent movement.

E Primer shall be the type recommended by the sealant manufacturer and shall be supplied by the manufacturer of the sealant used.

F Backup material and joint fillers shall be non-staining, compatible with sealant and primer used, and of a resilient nature. Raveled strands of non-staining rope fiber or cotton wicking may be used as filler in deep joints but the filler backing up the sealant shall be rod shaped foam neoprene, foam polyethylene, or hollow vinyl extrusions. Filler material impregnated with oil, bitumen, or similar substances shall not be used in any case.

G Bond breakers shall be polyethylene tape, pressure sensitive masking tape, or equal, as recommended by the sealant manufacturer.

H Preformed Foam Sealants: Manufacturer's standard preformed, precompressed, impregnated open cell foam sealant manufactured from high density urethane foam impregnated with a nondrying water repellent agent: factory produced in precompressed sizes and in roll or stick form to fit joint widths indicated and to develop watertight and airtight seal when compressed to the degree specified by the manufacturer, and complying with the following requirements:

1. Permanently mildew-resistant non-migratory, non-staining, and compatible with joint substrates and other joint sealants.
2. Impregnating Agent: Chemically stabilized acrylic.
3. Density: Manufacturer's standard.
4. Backing: None
5. Product shall be Colorseal as manufactured by Emseal Joint Systems, Westborough, MA. or equal product of Willseal or Tremco Illbruck.

2.03 JOINT SEALANT BACKING:

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

B Plastic Foam Joint Fillers: Preformed, compressible, resilient, non-staining, non-waxing, non-extruding strips of flexible plastic foam of material indicated below and of size, shape, and density to control sealant depth and otherwise contribute to producing optimum sealant performance

C Closed-cell polyethylene foam, non-absorbent to liquid water and gas, non-outgassing in unruptured state.

D Elastomeric Tubing Joint Fillers: Neoprene, butyl EPDM, or silicone tubing complying with ASTM D 1056, non-absorbent to water and gas, capable of remaining resilient at temperatures down to -26° F (-32° C). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and otherwise contribute to optimum sealant performance.

E Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

PART III EXECUTION

3.01 EXAMINATION:

A Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance. Do not proceed with installation of joint sealants until unsatisfactory conditions have been corrected.

3.02 PREPARATION:

A Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturer and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and

approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.

2. Clean concrete, masonry, unglazed surfaces of ceramic tile, and similar porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
3. Remove laitance and form release agents from concrete.
4. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile, and other nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable if interfering with adhesion of joint sealants.

B Joint Priming: Prime joint substrates where indicated or where recommended by joint sealant manufacturer based on preconstruction joint sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's recommendations. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.

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

3.03 INSTALLATION OF JOINT SEALANTS:

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

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

C Install joint filler of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of joint fillers.
2. Do not stretch, twist, puncture, or tear joint fillers.
3. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.

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

E Tooling of Non-sag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

1. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

F Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, and to comply with sealant manufacturer's directions for installation methods, materials, and tools that produce seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures

where expansion of sealant requires acceleration to produce seal, apply heat to sealant in conformation with sealant manufacturer's recommendations.

3.04 CLEANING:

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

3.05 PROTECTION:

A Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so that and installations with repaired areas are indistinguishable from original work.

End of Section

SECTION 08 11 13 – HOLLOW METAL DOORS AND FRAMES

PART I GENERAL

1.01 WORK INCLUDED:

A Furnish and install all exterior and interior hollow metal doors, steel doorframes and frames for fixed glass windows, and all necessary incidental work in connection therewith.

1.02 RELATED DOCUMENTS:

A Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

Section 079200 Sealants and Caulking
Section 087100 Finish Hardware
Section 088000 Glazing
Section 099100 Painting

1.03 SUBMITTALS:

A Submit schedules and shop drawings of hollow metal doors and frames to the Architect for approval before any work is fabricated.

PART II PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

A Doors and frames shall be products as specified, manufactured by Steelcraft Manufacturing Company, Cincinnati, Ohio; or equal products of the following manufacturers:

Mesker Brothers, St. Louis, Mo.
Metal Products, Inc., Corbin, Kentucky
Curries Corporation, Mason City, Iowa

2.02 MATERIALS:

A Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

C Frame Anchors: ASTM A 591/A 591M, Commercial Steel (CS), 40Z (12G) coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.

D Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

2.03 DOORS:

A Doors shall be full flush construction 1-3/4" thick, made of cold, 16 gauge, cold rolled steel. Doors shall be Type B-16. Doors shall be reinforced, stiffened, sound deadened and insulated with impregnated kraft honeycomb core completely filling the inside of the doors and laminated to both inside faces of the panels.

1. All doors shall have mechanical edge seam or be fully welded and ground smooth if joint is in center of door edge.
2. Hinge and lock edge shall have 1/8" in 2" bevel.
3. Top and bottom #14 gauge cold, rolled steel reinforcing channels shall be spot welded within the door.
4. Top edges of exterior doors shall be finished with flush metal closure.
5. Hinge reinforcing shall be 8-gauge steel.
6. Lock reinforcing shall be #16 gauge.
7. Closer reinforcing shall be #12 gauge.
8. Adequate reinforcing shall be provided for other hardware as required.
9. Mortise, drill and tap for hardware, except that doors be drilled and tapped for surface-mounted hardware in the field.

B Glass light openings shall be provided with removable metal moldings secured in place with oval head countersunk screws.

C Glass in fire rated doors shall be 1/4" wire glass. Glass in non-label doors shall be 1/4" thick tempered clear.

2.04 FRAMES:

A Frames shall be flush frames with 2" wide faces, formed of #16 gauge steel. Interior frames shall be fabricated from cold rolled steel. Exterior frames shall be fabricated from metallic coated steel sheet. Frames shall be set up and welded and doorframes shall be provided with temporary spreaders at bottom. Mitered corners shall have reinforcements with integral tabs for secure and easy interlocking of jambs to head. Strike jambs shall be supplied with three factory installed rubber bumpers. Mullions at pairs of doors shall be removable type.

1. Frames shall have 8 gauge steel hinge reinforcings and be mortised for hinges specified.
2. Strike reinforcings shall be #16 gauge.
3. Provide metal plaster guards for all mortise cutouts. Reinforcings for surface closers shall be #12 gauge.
4. Adequate reinforcing shall be provided for other hardware as required.
5. Mortise, drill and tap for hardware, except that frames shall be drilled and tapped for surface-mounted hardware in the field.

B Frames shall be furnished with a minimum of six wall anchors and two adjustable base anchors of manufacturer's standard design at masonry walls and a minimum of six wall anchors (2 base) at stud walls. Anchors for labeled frames shall be UL approved type.

C Steelcraft unitized weatherstripping will be acceptable in lieu of weatherstripping specified for exterior doors in Finish Hardware Section herein.

2.05 LOCATION OF HARDWARE:

A Finishing hardware is specified to be furnished in "Finish Hardware" section under Division 8. Doors and frames shall be prepared for hardware from templates of the hardware to be furnished.

B Unless otherwise specifically indicated, hardware shall be located as follows:

1. Knob locks, handle sets, and exit bolt locks; 36" from finish floor to centerline of strike.

2. Deadlocks: 42" from finish floor to centerline of strike.

3. Door Pulls and Single Push Bars: 42" from finish floor to centerline of grip or to centerline of push bar.

4. Push Plates: 42" from finish floor to centerline of strike.

5. Hinges: Top hinge 9-3/4" from head of frame to centerline of hinge; bottom hinge 10-3/8" from finished floor to centerline of hinge; intermediate hinges equally spaced from top and bottom hinges. Locate top and bottom hinges at toilet stall doors 6" from top and bottom of door.

2.06 DOOR CLEARANCE:

A Doors shall have 1/8" clearance at top, 3/32" clearance at sides, and 5/8" clearance above finished floor at the bottom, unless noted on the drawings to be undercut.

2.07 FINISH:

A Doors and frames shall be cleaned, bonderized, and finished with one coat of baked-on prime paint.

PART III EXECUTION

3.01 EXAMINATION:

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of standard steel doors and frames.

1. Examine roughing-in for embedded and built-in anchors to verify actual locations of standard steel frame connections before frame installation.2.

2. Delete first subparagraph below if not required.

3. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.

4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION:

A Remove welded-in shipping spreaders installed at factory.

B Prior to installation and with installation spreaders in place, adjust and securely brace standard steel door frames for squareness, alignment, twist, and plumb to the following tolerances:

1. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.

2. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.

3. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.

4. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a perpendicular line from head to floor.

C Drill and tap doors and frames to receive nontemplated mortised and surface-mounted door hardware.

3.03 INSTALLATION:

A General: Provide doors and frames of sizes, thicknesses, and designs indicated. Install standard steel doors and frames plumb, rigid, properly aligned, and securely fastened in place with all clearances accurately maintained; comply with Drawings and manufacturer's written instructions.

B Standard Steel Frames: Install standard steel frames for doors and other openings, of size and profile indicated. Comply with SDI 105.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.

    a. At fire-protection-rated openings, install frames according to NFPA 80.

    b. Where frames are fabricated in sections due to shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.

    c. Install frames with removable glazing stops located on secure side of opening.

    d. Install door silencers in frames before grouting.

    e. Remove temporary braces necessary for installation only after frames have been properly set and secured.

    f. Check plumb, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.

    g. Apply bituminous coating to backs of frames that are filled with mortar, grout, and plaster containing antifreezing agents.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor and secure with postinstalled expansion anchors.

    a. Floor anchors may be set with powder-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.

3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames.

4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar as specified in Division 4 Section "Unit Masonry Assemblies."

5. Concrete Walls: Solidly fill space between frames and concrete with grout. Install grout in lifts and take precautions, including bracing frames, to ensure that frames are not deformed or damaged by grout forces.

6. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.

7. In-Place Gypsum Board Partitions: Secure frames in place with postinstalled expansion anchors through floor anchors at each jamb. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.

8. Ceiling Struts: Extend struts vertically from top of frame at each jamb to supporting construction above, unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction above. Provide adjustable wedged or bolted anchorage to frame jamb

members.

9. Installation Tolerances: Adjust standard steel door frames for squareness, alignment, twist, and plumb to the following tolerances:

   a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.

   b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.

   c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.

   d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.

C Standard Steel Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Standard Steel Doors:

   a. Jambs and Head: 1/8 inch (3 mm) plus or minus 1/16 inch (1.6 mm).

   b. Between Edges of Pairs of Doors: 1/8 inch (3 mm) plus or minus 1/16 inch (1.6 mm).

   c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch (9.5 mm).

   d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch (19 mm).

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

D Smoke-Control Doors: Install doors according to NFPA 105.

E Where labeled fire doors are called for on the drawings, the doors and frames shall meet the requirements of the Underwriters' Laboratories and the National Fire Protection Association and shall bear UL label.

3.04 ADJUSTING AND CLEANING:

A Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including standard steel doors or frames that are warped, bowed, or otherwise unacceptable.

B Clean grout and other bonding material off standard steel doors and frames immediately after installation.

C Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.

D Galvannealed Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

End of Section

SECTION 085200 – ALUMINUM AND WOOD WINDOWS

PART I GENERAL

1.01 WORK INCLUDED

A Factory assembled aluminum/wood double hung windows, glass and glazing, operable hardware, weatherstripping, insect screen, grilles.

B Anchorages, attachments, and shims.

1.02 RELATED WORK

Section 072100 Building Insulation.
Section 079200 Sealants and Caulking.

1.03 REFERENCES

A American Society for Testing and Materials (ASTM):

1. ASTM E-283 – Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors.

2. ASTM E-547 – Water Penetration of Exterior Windows, Curtain Walls, and Doors by Cyclic Static Air Pressure Difference.

3. ASTM E-330 – Structural Performance of Exterior Windows, Curtain Walls, and Doors under Uniform Static Air pressure Difference.

4. ASTM E-774 – Sealed Insulating Glass.

B National Wood Window and Door Association (NWWDA):

1. NWWDA I.S.-2 – Industry Standard for Wood Windows.

2. NWWDA I.S.-4 – Industry Standard for Water-repellant Preservative treatment for Millwork.

C Federal Specifications (FS):

1. FS-DD-G-1403d – Glass, Float or Plate, Sheet, Figured (flat, for glazing, mirrors, and other uses).

2. FS-DD-G-1403b – Tempered Glass

D American National Standards Institute (ANSI):

1. ANSI Z97.1 – American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test.

1.04 PERFORMANCE CRITERIA

A Window units shall meet Grade 40 specifications in accordance with NWWDA I.S.-2 except where more stringent requirements are specified otherwise.

B Air leakage, when tested in accordance with ASTM E-283 at 1.57 p.s.f. (25 mph), must be 0.25 cfm/ft. of crack length or less.

C No water penetration shall be allowed, when tested in accordance with ASTM E-547 under maximum cyclic pressure of 4.43 psf after 3 cycles of no less than five (5) minutes each, with water being applied at a rate of five gallons per hour per square foot.

D The window assembly shall withstand positive and negative wind loads acting normal to the plane of the window, in accordance with the applicable building code. Structural Tests shall be conducted in accordance with ASTM E-330.

E Residual deflection or permanent deformation, in a direction normal to the plane of the assembly, of any framing member, at the completion of physical load testing, shall not exceed 0.4% of the span of the member. In addition, any residual deflection shall not cause any malfunction or impair the operation of the unit.

1.05 SUBMITTALS

Issue submittals in accordance with Section 013300. Submittals under this section shall include:

A Manufacturer's specifications and installation instructions.

B Shop drawings indicating elevations, pertinent dimensions, general construction, component connections and locations, anchorage methods and locations, hardware locations, and installation details.

C Testing Laboratory reports certifying compliance with applicable performance requirements.

D Complete warranty information on unit and insulating glass.

E Upon completion of the project, submit Operation and Maintenance Manuals for all units supplied.

1.06 SAMPLES

A Submit samples in accordance with Section 013300.

B Submit sample of window illustrating glazing system, quality of construction, and color of finish.

1.07 MOCKUP / SAMPLE INSTALLATION

A Provide mockup sample installation for field testing unit performance requirements and to determine the acceptability of the unit installation methods.

B Approved mockup sample installation will represent minimum quality for the work.

C Mockup Sample installation cannot be used within the work.

1.08 TESTING

A Field Testing of window units shall be conducted by an independent testing agency as selected by the architect, with representatives from the owner, architect, and window manufacturer present.

1.09 DELIVERY OF MATERIALS

A Deliver materials to the job site in manufacturer's original packaging undamaged, complete with installation instructions.

B Store off ground, under cover, protected from weather and construction activities.

PART II PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

A Windows shall be Series 500 Tilt Double Hung window units, as manufactured by Peachtree Doors and Windows, Inc., Gainesville, Georgia.

2.02 WINDOW TYPE

A Factory-assembled aluminum/wood window with upward/downward opening sash installed in the frame in sizes and configurations indicated. Sash will tilt into room for cleaning.

2.03 COMPONENTS

A Frame – Exterior component of prefinished tubular aluminum extrusions with integral nailing fin, precision mitered corners, mechanically joined, and sealed with closed cell foam gasket. Interior components of clear Ponderosa Pine without finger joints, water repellant preservative treated in accordance with NWWDA I.S.-4, rabbeted corners mechanically joined. Standard frame depth 4-9/16". Standard frame extenders available for 5-1/4", 6-9/16", 6-13/16" and 7-1/4"

B Sash – Prefinished tubular extrusions, precision coped corners, mechanically fastened and sealed. Wood liners and high impact PVC members protect the inside surfaces from thermal exposure. Liners are mechanically fastened to the sash and are easily removed for cleaning and painting.

C Glazing – Double-lite sealed insulating glass shall meet the requirements of ASTM E-774, Class C or better. Glass components shall comply with FS DD-G-451d, type I, quality q3, and/or FS DD-G-1403.

D Weatherstripping – Compression type bulb seal between sash at head and sill and between sash and frame is a compression dual bulb seal.

E Screen – Grey 18/16 mesh fiberglass screen cloth set in extruded tubular aluminum frame finished Driftwood, Colonial White, Nature Brown, Sand or Hunter Green with mechanically joined corners to form a rigid frame. Retaining clip hardware.

F Grilles – Interlocking 5/8" or 7/8" width precision crafted muntin bars of clear Ponderosa Pine, rectangular pattern KD stick with retaining pins, or integrally installed in sash liner.

G Head Drip Cap – Extruded aluminum prefinished to match window, designed to channel water away from the unit.

2.04 FABRICATION

A Fabricate windows to accommodate the following Rough Opening tolerances:

1. Vertical dimensions between high and low points: plus 1/4", minus 0".

2. Width dimensions: plus 1/2", minus 0".

3. Building columns or masonry openings: plus or minus 1/4" from plumb.

2.05 FINISH

A Exterior Finish – exterior aluminum surfaces shall be cleaned, etched and coated with baked enamel. Color shall be Colonial White, Nature Brown, Driftwood Sand or Hunter Green.

1. Thermosetting exterior finishes shall pass the following tests:

Adhesion	1/16" wet cross-hatch

Salt Spray Resistance	1,000 hours
Humidity Resistance	1,000 hours
Detergent Resistant	3% @ 100° F – 100 hours
Acid Resistance	10% muriatic – 15 minutes
Alkali Resistance	mortar spot test – 24 hours
Direct Impact	no film removal

B Interior Finish – Unfinished - suitable for stain or prefinished White wood members and jamb liners are available.

2.06 HARDWARE

A Spring loaded block and tackle balances in aluminum housing mounted in jamb liners of each frame; lever operated sash lock of cam lock design. Sash will tilt into room by working tilt latches at each corner of sash. Sash lifts are of high impact injection moulded ABS in Driftwood or Colonial White color, mechanically fastened to the sash.

PART III EXECUTION

3.01 INSTALLATION

A Install window in accordance with manufacturer's recommendations, to achieve weathertight and freely operating installation.

B Maintain alignment with adjacent work. Secure assembly to framed openings, plumb, square, without distortion.

C Place insulation in shim spaces around the unit perimeter, to maintain continuity of the building Section 072100.

D Install sealant and related backing materials between the window frames and the building, tightly and continuously, in accordance with Section 079200.

E Leave window units closed and locked.

3.02 FINAL CLEANING

A Clean window frames and glass with a suitable material which will not adversely affect the insulating glass, weatherstripping or the painted finish.

B Remove labels and visible markings.

C Protect the window and its components with suitable materials prior to cleaning the building surface.

End of Section

SECTION 087180 – RESIDENTIAL FINISH HARDWARE

PART I GENERAL

1.01 SCOPE:

A Furnish all labor, materials, tools, equipment, and supervision as required to properly and completely equip all doors as shown on the drawings and specified herein.

1.02 RELATED DOCUMENTS:

A Applicable provisions of the General Conditions, supplemental Conditions and Division 1, General Requirements, apply to the work under this section.

1.03 QUALITY ASSURANCE:

A Obtain each type of Hardware (i.e. locks) from a single manufacturer.

B "Supplier" refers to a recognized architectural hardware supplier, with warehouse facilities, furnishing hardware for not less than 2 years in the project's vicinity. Supplier must be or employ a full time experienced Architectural Hardware Consultant (AHC – Certified by the Door and Hardware Institute) who, at reasonable times during the course of the work, is available for consultation with the Owner, Architect and Contractor about the project's requirements.

1.04 SUBMITTALS:

A Submit hardware schedule in manner indicated below. Coordinate hardware with doors, frames, and related work to insure proper size, thickness, hand, function and finish of hardware.

B Final Hardware Schedule: Based on finish hardware, organize a schedule into "hardware sets" containing all items required for each door or opening. Include the following information:

1. Type, style, function, size, finish and manufacturer of each hardware item.

2. Explanation of abbreviations, symbols, codes, etc. contained in schedule.

3. Fastening and other pertinent information.

4. Location of hardware set cross-referenced to drawings.

5. Mounting locations for hardware.

6. Door frame size and material.

7. Keying information.

C Submit schedule at earliest possible date since acceptance of hardware schedule must precede fabrication of other work (i.e. prehung doors and frames) critical to construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by finish hardware, and other information essential to a coordinated review of hardware schedule.

D Furnish templates to fabricators of doors, frames, and other work to be factory-prepared for the installation of hardware. Upon request, check shop drawings of each other's work, to confirm that adequate provisions are made for proper location and installation of hardware.

E No hardware shall be ordered until hardware schedule has been approved by the Architect.

1.05 PACKING AND MARKING:

A All hardware shall have the required screws, bolts, and other fasteners necessary for its installation

packed in the same package as the hardware. Each package shall be legibly and adequately labeled to indicate the part of the work for which it is intended.

B Hardware shall include such adjusting tools and instructions as furnished by the manufacturer as standard practice. Upon completion of the work, the Contractor shall turn over to the Owner or his representative all such tools, instructions and emergency keys.

PART II PRODUCTS

2.01 GENERAL:

A Coordinate finish hardware work with work of other trades as required.

B Cooperate with Finish Hardware supplier in scheduling dates for submittals and delivery of templates and finish hardware.

2.02 MATERIALS:

A Hardware shall be as indicated on the drawings.

B Labeled Doors: Hardware for labeled fire doors shall be UL listed and shall be labeled where required by NFPA standards.

C Maintenance Requirements: Furnish a complete set of specialized tools and instructions for maintenance, adjustment, removal and replacement.

2.03 FINISH:

A Finish to be Satin Chrome, US26D for all items unless otherwise

2.04 KEYING:

A Key locks and cylinders in groups as directed by the Owner, and master keyed into the existing Best Access System master key system.

B Provide three (3) keys per lock and six (6) master keys.

C All locksets and cylinders shall have construction cores. Provide twelve (12) construction keys for use during the construction period. On completion of job, Owner shall remove the construction cores and install permanent cores.

D Deliver permanent keys direct from the manufacturer to the Owner.

2.05 BUTTS:

A Furnished complete with prehung door units.

2.06 DOOR STOPS:

A Except where overhead chain stops are scheduled, provide 324W Series base door stop for each door leaf.

2.07 LOCKSETS:

A Provide types as specified with lever design “14D”.

B Where deadbolts are specified, provide 1 inch throw.

PART III EXECUTION:

3.01 INSTALLATION:

A Locations of hardware shall be in accordance with the recommendations of the National Builders Hardware Association for detailed locations.

B Install hardware in accurate conformity with the manufacturer's templates.

C Lock trim shall be as listed in schedule, or equivalent of other approved manufacturers. Dummy trim levers and roses shall be identical to those supplied with locksets. All locksets shall be beveled 1/8" in 2".

3.02 ADJUSTMENT AND CLEANING:

A Check and adjust each operating item to ensure proper functioning of each unit. Replace units which cannot be adjusted to operate properly.

B Clean adjacent surfaces soiled by hardware installation.

C Whenever hardware installation is completed more than one month prior to acceptance or occupancy of building or space, during the week prior to acceptance or occupancy, make final check and adjustment of all items. Clean operating items and restore proper function and finish of hardware and doors. Adjust door control devices to compensate for permanent heating and ventilating conditions.

D During final adjustment of hardware, instruct Owner's personnel in proper adjustment and maintenance procedures for hardware operations and finished.

End of Section

SECTION 09 29 00 - GYPSUM WALLBOARD

PART I GENERAL

1.01 SCOPE:

A. Furnish all labor, materials and equipment, and perform all work to install Gypsum Wallboard exposed ceilings, furr-downs and wallboard, including all miscellaneous trim and accessories as required for a complete installation.

1.02 RELATED DOCUMENTS:

A. Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements apply to the work under this section.

Section	06 10 00	Rough Carpentry
Section	07 92 00	Caulking and Sealants
Section	09 91 00	Painting

1.03 SUBMITTALS:

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show locations, fabrication, and installation of control and expansion joints including plans, elevations, sections, component details and attachments to other units of Work.

C. Textured Finish Samples: Manufacturer's standard size for each textured finish indicated and on same backing indicated for Work.

1.04 QUALITY ASSURANCE:

A. Fire-Test-Response Characteristics: For gypsum board assemblies with fire-resistance ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by independent testing and inspecting agency acceptable to authorities having jurisdiction. Fire-Resistance-Rated Assemblies are indicated on drawings by design designations from UL's "Fire Resistance Directory.

B. Sound Transmission Characteristics: For gypsum board assemblies with STC ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by a qualified independent testing agency.

1. STC-Rated Assemblies: Indicated by design designations from GA-600, "Fire Resistance Design Manual."

1.05 DELIVERY, STORAGE, AND HANDLING:

A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.

B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Stack gypsum panels flat to prevent sagging.

1.06 PROJECT CONDITIONS:

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

PART II PRODUCTS

2.01 MANUFACTURERS:

A. Materials shall be products of United States Gypsum Company as listed or equal products of CertainTeed Gypsum, Georgia-Pacific, Lafarge North America, National Gypsum Company, or equal product of other manufacturers approved prior to bidding, except as specifically noted otherwise.

2.02 GYPSUM BOARD AND ACCESSORIES:

A. Fire rated Gypsum Board shall be fire-rated 5/8" thick, Type "X" Gypsum panels, unless otherwise noted on the drawings. Non Fire-rated wallboard shall be 5/8" thick Gypsum panels unless otherwise noted. All wallboard shall be 4'-0" wide and most economical lengths to suit building conditions. Ceilings shall receive 5/8" Gypsum panels unless otherwise notes.

B. Abuse resistant Gypsum Board shall be similar and equal to 5/8 inch thick Fiberock® abuse resistant panels as manufactured by United States Gypsum Company as listed or equal products of Georgia-Pacific, Lafarge North America, Gold Bond Building Products, the Flintkote Company, Bostwick, or Allied Structural Industries, except as specifically noted otherwise

C. Accessories:

1. Cornerbeads for all external corners shall be USG Dur-A-Bead No. 103 (1-1/4" x 1-1/4").
2. Metal trim for edges of wallboard abutting masonry, plaster or metal wall surfaces shall be USG No. 200-A.
3. Control Joint Trim shall be zinc control joint USG No. 093.

D. Materials for exposed joint treatment shall be USG Perf-A-Tape Dura-bond Compound Taping, Dura-bond 90 Joint Compound, and USG Ready-mixed Joint Compound Topping.

E. Wallboard in Toilets and elsewhere as noted on the drawings shall be paperless gypsum board similar and equal to 5/8 inch thick DensArmor Plus® panels as manufactured by Georgia Pacific Corporation as listed or equal products of CertainTeed Gypsum, U S Gypsum Co., Lafarge North America, National Gypsum Company, or equal product of other manufacturers approved prior to bidding, except as specifically noted otherwise. Use Finish level 5 on all paperless gypsum board installations.

1. Thickness: 5/8 inch.
2. Width: 4 feet.
3. Length: 8 feet.
4. Weight: 2570 pounds per M square feet.
5. Edges: Tapered.
6. Surfacing: Coated glass mat on face, back, and long edges.
7. Flexural Strength, Parallel (ASTM C473, ASTM C1396): Not less than 100 lbf.
8. Flexural Strength, Perpendicular (ASTM C473, ASTM C1177): Not less than 140 lbf.
9. R-Value (ASTM C518): Not less than 0.67.
10. Nail Pull Resistance (ASTM C473, ASTM C1177): Not less than 90 lbf.
11. Humidified Deflection (ASTM C79, ASTM C473 and ASTM C1177): Not more than 1/8 inch.
12. Hardness, Core, Edges, and Ends (ASTM C473, ASTM C1396): Not less than 15.
13. Water Absorption (ASTM C473, ASTM C630 and ASTM C1396): Less than 5% of weight.
14. Mold Resistance (ASTM D3273): 10, in a test as manufactured.

2.03 CEMENTITIOUS BACKER UNITS:

A. Provide cementitious backer units complying with ANSI A118.9 in maximum lengths available to minimize end-to-end butt joints.

1. Thickness: 5/8 inch .
2. Width: Manufacturer's standard width, but not less than 32 inches (813 mm).

B. Acceptable Products:

1. C-Cure; C-Cure Board 990.
2. Custom Building Products; Wonderboard.
3. FinPan, Inc.; Util-A-Crete Concrete Backer Board.
4. USG Corporation; DUROCK Cement Board.
5. National Gypsum Co.; PermaBase.

C. Fasteners

1. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and application.

2. Screws for Fastening Gypsum Sheathing to Cold-Formed Metal Framing: DUROCK Brand Steel or USG Sheathing SF steel drill screws 1-1/4 inch with corrosion-resistant coating.

   a. For steel framing less than 0.0329 inch thick, attach sheathing to comply with ASTM C 1002.
   b. For steel framing from 0.033 to 0.112 inch thick, attach sheathing to comply with ASTM C 954.

2.04 ACOUSTICAL SEALANT

A. Provide nonsag, paintable, nonstaining, latex sealant complying with ASTM C 834 that effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90: Subject to compliance with requirements, acceptable include:

1. Pecora Corp.; AC-20 FTR Acoustical and Insulation Sealant.
2. United States Gypsum Co.; SHEETROCK Acoustical Sealant.
3. Additional alternate products must be approved by Architect prior to bidding.

2.05 TEXTURE FINISHES:

A. Products: Subject to compliance with requirements, provide one of the following where noted on the drawings:

1. G-P Gypsum Corp.; GyProc Vermiculite Ceiling Texture.
2. United States Gypsum Co.; SHEETROCK Wall and Ceiling Spray Texture (Aggregated).

B. Primer: As recommended by textured finish manufacturer.

C. Aggregate Finish: Water-based, job-mixed, aggregated, drying-type texture finish for spray application.

D. Texture: Spatter knock-down.

2.06 AUXILIARY MATERIALS::

A. Isolation strip at exterior walls: Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.

PART III EXECUTION

2.07 INSTALLATION - GENERAL:

A. The installation of Gypsum board shall conform to applicable provisions of Gypsum Board Application and Finishing Standards: ASTM C 840 and GA-216, the recommended specifications

of the Gypsum board manufacturer and to underwriter's laboratory. Refer to UL Assembly installation requirements at fire-rated partitions.

B. At all fire-rated partitions the wallboard shall extend to the roof deck above. At all non-rated partitions the wallboard shall extend to a minimum of 6 inches above the ceiling.

C. Where fixtures or accessories are recessed into rated partitions, take caution and do work necessary to maintain the fire rating of the partition.

D. Apply W/R sealant to all cut or exposed edges of W/R panels prior to installing.

E. Furr out around Columns, and thicken partitions at electrical panels, alarm panels, columns, piping ductwork and other items as required.

F. Install sound attenuation blankets before installing gypsum panels, unless blankets are readily installed after panels have been installed on one side.

G. Install ceiling board panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

H. Install gypsum panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

I. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

J. Attach gypsum panels to steel studs so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

K. Attach gypsum panels to framing provided at openings and cutouts.

L. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members using resilient channels, or provide control joints to counteract wood shrinkage.

M. Form control and expansion joints with space between edges of adjoining gypsum panels.

N. Fit gypsum panels around ducts, pipes, and conduits.

O. Where partitions intersect open concrete coffers, concrete joists, and other structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by coffers, joists, and other structural members; allow 1/4 to 3/8-inch-wide joints to install sealant.

P. Isolate perimeter of non-load-bearing gypsum board partitions at structural abutments, except floors. Provide 1/4 to 1/2-inch-wide spaces at these locations, and trim edges with U-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

Q. Floating Construction: Where feasible, including where recommended in writing by manufacturer, install gypsum panels over wood framing, with floating internal corner construction.

R. STC-Rated Assemblies: Seal construction at perimeters, behind control and expansion joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and manufacturer's written recommendations for locating edge trim and closing off

sound-flanking paths around or through gypsum board assemblies, including sealing partitions above acoustical ceilings.

S. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's written recommendations.

T. Apply Gypsum panels parallel to studs, perpendicular to resilient channels. Position all edges over studs. Fit ends and edges closely, but not forced together. Stagger joints on opposite sides of partition. Fasten panels to studs with 1" Type S Bugle Head Screws 8" on center at vertical joints, in field, and to door head and ceiling runners.

U. Power drive at least 3/8" from edges and ends of gypsum panels to provide uniform 1/32" dimple.

2.08 PANEL APPLICATION METHODS:

A. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.
2. On partitions/walls, apply gypsum panels perpendicular to framing, unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
3. Stagger abutting end joints not less than one framing member in alternate courses of board.
4. At stairwells and other high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.
5. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
6. Fastening Methods: Apply gypsum panels to supports with steel drill screws. For exterior applications, use corrosion-resistant screws.

B. Multi-Layer Application:

1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints 1 framing member, 16 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
3. On Z-furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
4. Fastening Method: Fasten base layers with screws; fasten face layers with adhesive and supplementary fasteners unless specified assembly requires fastening base layers and face layers separately to supports with screws.

C. Laminating to Substrate: Where gypsum panels are indicated to be directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.

D. Curved Partitions:

1. Install panels horizontally and unbroken, to extent possible, across curved surface plus 12-inch (min.) long straight sections at ends of curve which continue tangent to curve.
2. Wet gypsum panels on surfaces that will become compressed where curve radius prevents using dry panels. Comply with gypsum board manufacturer's written recommendations for curve radii, wetting methods, stacking panels after wetting, and other preparations that precede installing wetted gypsum panels.
3. On convex sides of partitions, begin installation at one end of curved surface and fasten gypsum panels to studs as they are wrapped around curve. On concave side, start fastening panels to stud at center of curve and work outward to panel ends. Fasten panels to framing with screws spaced 12 inches o.c. max.
4. For double-layer construction, fasten base layer to studs with screws 16 inches o.c. (max.) Center gypsum board face layer over joints in base layer, and fasten to studs with screws spaced 12 inches o.c. (max.)
5. Allow wetted gypsum panels to dry before applying joint treatment.

2.09 CEMENTITIOUS BACKER BOARD INSTALLATION:

A. Install as indicated to comply with ANSI A108.11 and in accordance with manufacturer's instructions.

B. Complete plumbing rough-in before boards are erected.

C. Separate board from rough-in and fixtures and fill space as recommended by manufacturer.

D. Securely fasten boards to substrate as required.

E. Follow manufacturer's instructions for treatment of edge terminations.

F. At joints and corners, embed fiberglass tape in skim coat of mortar.

2.10 INSTALLING TRIM ACCESSORIES:

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect. Provide gypsum board backing at control installed in fire rated partitions in accordance with manufacturer's recommendations and as required to maintain the rating specified. Install control joints in the following locations if not specifically located on the drawings:

1. In partition or furring runs at 30 feet on center maximum.
2. In ceilings where dimensions exceed 30 feet in either direction maximum.
3. In ceilings at ridge lines or at change of slope.
4. In exterior gypsum board soffits that exceed 30 feet in either direction maximum.
5. Where wings of "L", "U", and "T" shaped ceiling areas are joined.
6. Expansion or control joints that occur throughout the building itself.
7. Less-than-ceiling height door and window frames should have control joints extending to the ceiling from both corners. Ceiling height door and window frames may be used as control joints.
8. Install backer rod and sealant behind control joints in wall noted on the drawings to contain sound insulation or to include resilient channels in the wall assembly.

C. Cornerbeads shall be installed at all exterior corners attached with screws or 9/16" rosin-coated staples 9" o.c. Cornerbeads shall be in single lengths except where corner exceeds standard stock lengths. Clinch-on cornerbeads shall not be allowed.

D. Casing beads shall be installed where gypsum board abutts masonry walls.

2.11 APPLYING TEXTURE FINISHES

A. Surface Preparation and Primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes. Apply primer to surfaces that are clean, dry, and smooth.

B. Mix and apply finish using powered spray equipment, to produce a uniform texture free of starved spots or other evidence of thin application or of application patterns.

C. Prevent texture finishes from coming into contact with surfaces not indicated to receive texture finish by covering them with masking agents, polyethylene film, or other means. If, despite these precautions, texture finishes contact these surfaces, immediately remove droppings and overspray to prevent damage according to texture finish manufacturer's written recommendations.

2.12 FINISHING GYPSUM BOARD ASSEMBLIES:

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints, rounded or beveled edges, and damaged surface areas.

C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

D. In sanding jointing compound, care shall be taken not to sand exposed face of gypsum board and raise a knap on the paper covering.

E. Gypsum Board Finish Levels: Finish panels to levels indicated below, according to ASTM C 840, for locations indicated:

1. Level 1: Embed tape at joints**. Use this finish level in ceiling plenum areas not exposed to view, concealed areas, and elsewhere as indicated**.
2. Level 2: Embed tape and apply separate first coat of joint compound to tape, fasteners and trim flanges. **Use this finish level where panels are substrate for tile and elsewhere as indicated.**
3. Level 3: Embed tape and apply separate first and fill coats of joint compound to tape, fasteners, and trim flanges. **Use this finish level where indicated**.
4. Level 4: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges. **Use this finish level at panel surfaces that will be exposed to view or covered with flexible wall coverings unless otherwise indicated.**
5. Level 5: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges, and apply skim coat of joint compound over entire surface. **Use this finish level at panel surfaces to be painted with semi-gloss or gloss paint.**

2.13 PROTECTION:

A. During Gypsum panel application and joint finishing, temperatures within the buildings shall be maintained within the range of 55°F to 70°F. Adequate ventilation shall be provided to carry off excess moisture.

B. All materials shall be delivered to the buildings in their original unopened packages and stored in an enclosed shelter providing protection from damage and exposure to the elements. Damaged or deteriorated materials shall be removed from the premises.

3.08 CLEANUP:

A. Upon completion of work, remove all drywall debris and scrap materials from site.

End of Section

SECTION 09 51 13 – ACOUSTICAL TREATMENT

PART I GENERAL

1.01 SCOPE :

A Furnish all labor, materials, equipment and supervision necessary to provide and install suspended acoustical tile and grid where scheduled on the drawings.

1.02 GENERAL:

A Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

1.03 SUBMITTALS:

A Submit shop drawings.

B Submit samples of tile and sections of suspension system.

PART II PRODUCTS

2.01 MATERIALS:

A Tile shall be as scheduled on the Drawings.

1. If Tile is not scheduled on the Drawings, tile shall be Fine Fissured, Second Look Two™ No. 1761 24" x 48" x 3/4"Lay-in as manufactured by Armstrong Cork Company, or approved equals of National Gypsum, Conweb, Celotex, or U.S. Gypsum.

B Suspension system shall be as scheduled on the Drawings.

1. If Suspension system is not scheduled on the drawings system shall be: Double-webb, direct hung system complying with ASTM C-635 similar and equal to Donn DX system by USG Interiors Inc.
2. Classification: Intermediate duty.
3. Metal: Electro-galvanized steel 0.015 inch thick x 1-1/2 inch high x 15/16 inch face.
4. Color: White

C Hanger Wire: Provide not less than 12 gage galvanized carbon steel ASTM A641, soft temper.

D Edge Moldings and trim: Manufacturer's standard metal of types and profiles required for all applications encountered. Fabricate to fit all penetrations exactly.

E Ceiling tile hold down clips shall be similar and equal to Donn Q-1 for use as required at Fire rated assemblies and at entries a shown on the drawings.

PART III EXECUTION

3.01 INSTALLATION:

A Installation shall be by distributor authorized by the manufacturer of the tile in accordance with published recommendations and approved drawings. Provide all edge moldings, clips and related accessories.

B Cooperate and coordinate installation with electrical and mechanical trades, regarding light fixtures, diffusers, and other equipment.

C Install systems in compliance with ASTM C636, governing regulations and fire-resistance requirements. Support hangers only from structural members. Locate hangers not less than 6 inches from each end and spaced 4 feet on center along main runner. Level to within 1/8 inch in 12 feet. Limit deflection to 1/360 of span length in inches.

D Install hangers plumb and free from contact with objects which are not part of structural or ceiling system. Wire connections shall be capable of supporting a 100 pound allowable load.

E Provide main runners continuous in line with each side of recessed lights. Entire suspension system shall be completely connected forming a homogeneous frame. Independent/unattached fields are prohibited.

F Provide trim and moldings as required to conceal edges of acoustic tiles.

G Install panels to fit accurately at borders and penetrations.

H Suspended ceiling system shall not be used to support ductwork, piping, insulation, etc.

3.02 ADDITIONAL INSTALLATION REQUIREMENTS:

A General: Comply with requirements of authority having jurisdiction in the respective seismic zone.

B Individual light fixtures or other attachments to the ceiling system, with a combined weight of 56 pounds or less shall have two 12 gage wire hangers attached, with slack, at diagonal corners of the fixture to prevent drop out.

C Any fixture or attachment weighing more than 56 pounds must be independently supported from the structure.

D The minimum connection strength for main and cross runner intersection/splices shall be 60 pounds. In compression and tension (must allow 5 degree offset in any direction).

1. Ceiling system actual weight, including grid, panel, light fixtures and air terminals to be 2.5 pounds per sq. ft. or less. All other services shall be independently supported from the structure.

E The ceiling system cannot be used to provide lateral support for walls or partitions.

F Perimeter closure angles must provide a min 7/8 inch support ledge. Terminal ends of grid or tile must rest on ledge with min 3/8 inch clearance from wall:

1. For support ledges smaller than 7/8 inch, terminal ends of cross or main runners shall be independently supported within 8 inches from each wall or ceiling discontinuity. This support must prevent grid from falling. This support should not be out of plumb greater than 1 in 6. Maintain 3/8 inch end clearance from wall.

2. All penetrations (i.e. columns, sprinklers, etc.) and independently supported fixtures are considered perimeter closures that must allow noted clearances.

G At wall Closure ledges, cross and main runners must be prevented from spreading apart. Permanent attachment for grid alignment purposes is prohibited.

3.03 ADJUST AND CLEAN:

A Clean exposed surfaces of panels, moldings, and trim. Remove and replace work which cannot be cleaned to permanently eliminate evidence of damage.

3.04 ATTIC STOCK:

A Contractor shall furnish 5% extra ceiling tile for each type used in this project.

B Extra tile shall be packaged and marked as to type and furnished to the Owner at the completion of the project.

3.05 CLEAN-UP:

A Remove all debris after tile work is complete in each space.

End of Section

SECTION 09 65 19 – RESILIENT BASE

PART I GENERAL

1.01 SCOPE:

A Furnish all labor, materials, equipment and supervision to provide and install vinyl base in areas where indicated on the drawings and as specified herein.

1.02 RELATED DOCUMENTS:

A Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

1.03 PROJECT CONDITIONS:

A Maintain 70° F. minimum temperature in room for 48 hours prior to installation, during installation, and 48 hours after installation. Maintain a minimum temperature of 55° F. thereafter.

1.04 QUALITY ASSURANCE:

A Installation shall be by experienced and skilled mechanics, in accordance with the manufacturer's latest printed instructions.

B Coordinate the requirements of adhesives and finish to assure compatibility between adhesive and wall finish.

1.05 SUBMITTALS:

A Submit product data, certificates, and maintenance data in accordance with Division 1 requirements. Submit the following:

1. Product data: For each type of product specified.
2. Samples for Selection: In manufacturer's standard size for each product specified.

1.06 GUARANTEE:

A Furnish to the Owner a written guarantee that all work required by this section will be free from defects of materials and workmanship for a period of one year from date of acceptance of the work by the Architect.

PART II PRODUCTS

2.01 MATERIALS:

A Cove Base shall be Thermoset vulcanized Rubber Base manufactured from 100% virgin synthetic rubber as manufactured by Johnsonite, Flexco Roppe, or approved substitute. Provide 1/8" gauge set-on straight base 4 inches high at carpeted floors unless noted otherwise on the drawings. Provide 1/8" gauge set-on cove type, 4 inches high at all other floor surfaces where rubber base is scheduled. Provide base in 120 foot rolls. Colors to be selected by the Owner.

B Adhesive shall be types specified by the manufacturer. Adhesive for installing base shall be in accordance with manufacturer's written instructions.

C Provide and install preformed base corners at all inside and outside corners.

PART III EXECUTION

3.01 INSPECTION:

A The Contractor shall inspect substrate to receive new work prior to beginning work and shall bring any deficiencies, which would prevent him from producing an acceptable installation to the attention of the General Contractor. He shall not proceed until the deficiencies are corrected. In no case shall the correction of deficiencies in the substrate, required for successful installation, be cause for additional charges to the Owner. In any event, start of work shall be construed by the Owner as acceptance by the Contractor, of the substrate for proper installation.

3.02 PREPARATION OF SURFACES:

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

C. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.

D. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

3.03 INSTALLATION:

B Install resilient base at all wall-to-floor connections in which wall or floor has received a new or repaired surface treatment and where indicated on the drawings and around the base of all fixed base cabinets.

3.03 CLEANING AND PROTECTION:

A Perform the following operations immediately after installing resilient products:

1. Remove and replace all damaged, defective, scratched, and discolored base.
2. Remove adhesive and other surface blemishes using cleaner recommended by the resilient product manufacturers.
3. Sweep or vacuum floor thoroughly.

B Clean according to manufacturer's recommendations.

End of Section

SECTION 09 91 00 - PAINTING

PART I GENERAL

1.01 SCOPE:

A. Painting is required on all new and existing surfaces unless otherwise scheduled and/or as noted on the drawings and herein as specified.

B. The term "paint" as used herein is all inclusive, meaning emulsions, enamels, oil paints, sealers, stains, varnishes, polyvinyl emulsions, latex emulsions and similar coatings.

C. Before any paint material has been delivered to the job, submit a complete list of materials proposed for use, identifying each type of material by manufacturer's brand name, and no material shall be delivered to the job until the Architect's approval has been secured in writing. Approval will be of brands and quality, but not for results obtained.

D. Painting will not be required on non-ferrous metal, putty, or glazing compound, masonry with integral color, or on factory finished items including prefinished cabinet work, equipment and galvanized wirework, except as may be specifically required elsewhere in the specifications.

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

F. Conditions of Surfaces: It shall be the responsibility of each subcontractor to carefully inspect and examine surfaces or areas prepared to receive his work. Should he consider such surfaces or areas not proper or satisfactory for the installation or application of his work, he shall notify the Contractor in writing with copy to the Architect. Should he proceed before proper corrections have been made, it shall be at his own risk and any subsequent corrections that may be ordered or required shall be at his expense.

1.02 RELATED DOCUMENTS:

A. Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

B. See Section 092900 Gypsum Wallboard for finish requirements for prime coat on Paperless Gyp. Bd.

1.03 DEFINITIONS:

A. Flat: lusterless or matte finish with gloss range below 15 when measured at 85-degree meter.

B. Eggshell: low-sheen finish with gloss range 5 to 20 when measured at 60-degree meter.

C. Semi gloss: medium-sheen finish with gloss range 30 to 65 when measured at 60-degree meter.

D. Full gloss: high-sheen finish with gloss range more than 65 when measured at 60-degree meter.

1.04 SUBMITTALS:

A. Submit manufacturer's data including label analysis and instructions for handling, storing, and applying each material proposed for use. Include block fillers and primers.

B. Provide certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).

C. Where substitutions are approved, submit manufacturer's color charts for color selection.

D. Provide samples of each color and material to be applied, with texture to simulate actual conditions, on representative samples of the actual substrate if required by the Architect.

1.05 QUALITY ASSURANCE:

A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to that indicated for this Project with a record of successful in-service performance.

B. Obtain primers, block fillers and undercoat paint for each system from same manuf. as finish coats.

C. Provide primers compatible with finish system in strict accordance with manufacturer's recommendations. Upon request, furnish data for characteristics of finish materials to ensure compatible prime coats are used.

D. Notify the Architect of problems anticipated using the materials specified.

E. Provide the manufacturer's best quality paint material for each coating type specified. Paint material containers not displaying manufacturer's product identification will not be acceptable.

F. Proprietary names used to designate colors or materials are not intended to imply that products named are required, or to exclude equal products of other manufacturers.

G. No claim by the Contractor concerning the unsuitability of any material specified or his inability to produce satisfactory results therewith will be considered unless such claim is made in writing to the Architect before the Contract is signed.

H. The Architect will select one room or surface to represent surfaces and condition for each type of coating and substrate to be painted, demonstrating finished colors textures. Final acceptance of colors will be given based on job-applied samples. After finishes are accepted, the Architect will use the room or surface to evaluate coating systems of a similar nature.

1.06 DELIVERY, STORAGE, AND HANDLING:

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

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

B. Store materials not in use in tightly covered containers in a well ventilated area at a minimum ambient temperature of 45° F. Maintain containers used in storage in a clean condition, free of foreign materials and residue.

C. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.07 EXTRA MATERIALS:

A. Furnish extra paint materials from the same production run as the materials applied in the quantities described below. Package paint materials in unopened, factory- sealed containers for storage and identify with labels describing contents. Deliver extra materials to owner at close of Project.

B. Furnish Owner with additional 5 percent, but not less than 1 gal of each material & color applied.

1.08 JOB CONDITIONS:

A. Apply water-based paints only when temperature of surfaces to be painted and surrounding air temperatures are 50° F -90° F.

B. Apply solvent-thinned paints only when temperature of surfaces to be painted and surrounding air temperatures are 45° F -95° F.

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

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

PART II PRODUCTS

2.01 MANUFACTURERS:

A. Products: Subject to compliance with requirements, provide one of the products in the paint schedules.

B. Manufacturer's Names: The following manufacturers are referred to in the paint schedules by use of shortened versions of their names, which are shown in parentheses:

1. PPG Industries, Inc. (PPG).
2. Sherwin Williams (SW).
4. Comex Group (CW).

2.02 PAINT:

A. Paint shall be ready-mixed, except that tinting and thinning may be done at the job. The paint shall be suitable for spraying when thinned by not more than 12 percent by volume of thinner. All paint materials shall be delivered in original unopened containers with labels intact and legible.

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

C. Provide manufacturer's best-quality paint material of the various coating types specified. Paint- material containers not displaying manufacturer's product identification will not be acceptable.

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

E. Colors: Match colors indicated by reference to manufacturer's color designations.

2.03 COLORS AND SPECIMENS FOR APPROVAL:

A. Colors and finishes shall be as indicated on the drawings. If not scheduled on the drawings, colors whall be as selected by the Architect. Before any work is done, the Architect will furnish the Contractor with a set of color cards and a schedule showing where the various colors shall go. The Contractor shall then prepare samples at the job as required until the colors and textures are satisfactory. Wood used to display stains shall be the same kind on which the stain is to be used.

B. The Contractor, if requested by the Architect, shall finish one complete room, space, or item, for each color scheme or finish required, showing selected colors, finished texture, materials and workmanship. After approval, these sample rooms or items shall serve as standard for similar work throughout the building.

PART III EXECUTION

3.01 EXAMINATION:

A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements.

B. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.

C. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.

3.02 GENERAL REQUIREMENTS:

A. Maintain temperature of rooms where varnish or enamel is being applied at 70 degrees or more, and at 50 degrees or more during other interior painting. Do exterior painting only when temperature is 50 degrees or higher, and in dry weather.

B. Apply all materials under adequate illumination, evenly spread and smoothly flowed on without runs or sags. Only skilled workmen shall be employed.

C. Vary tints of succeeding coats slightly to permit identification of coats.

D. If any paint is applied to damp material or improperly prepared surfaces; the Contractor shall use such corrective measures as determined by the Architect.

E. Protect all adjacent work and materials by suitable covering, or other methods, during progress of the work. Upon completion, remove all paint spots from floors, glass and other surfaces.

F. Store and mix paint materials only in spaces designated and assigned for the purpose. Do not permit paint or oil soaked rags or waste to accumulate. Exercise strict precautions at all times against fire.

G. Covering shall be complete. When color, stain, dirt, or undercoats show through the final coat of paint, apply additional coats until the finish is of uniform color and appearance and coverage is complete.

H. Paste wood filler, when set, shall be wiped across the grain, then with the grain, to secure a clean surface.

I. Enamel, varnish, or oil finish applied to wood or metal shall be sanded between coats with fine sandpaper to produce an even, smooth finish.

J. Before painting, remove hardware, accessories, plates, lighting fixtures and similar items, or provide ample protection for such items. Upon completion of each space, replace above items. Remove doors, if necessary, to paint bottom edge. Use only skilled workmen for removing and connecting above items.

K. Paint all new exterior wood.

L. Paint all interior wood.

M. Paint all new metal structure exposed in interior of building.

N. When painting existing surfaces or new work cut into existing surfaces, new paint coverage shall extend corner to corner and floor to ceiling covering the entire plane of the surface in question.

3.03 PREPARATION OF SURFACES:

A. Wood surfaces shall be sandpapered to a smooth and even surface and dusted off. After priming or stain coat has been applied, thoroughly fill nail or other holes and cracks with plastic wood or putty; for natural finish work, filler (if required) shall be colored to match wood.

B. On metal surfaces, remove grease, rust, scale and dust, and touch up any abraded place on items that have been shop coated. Where steel or iron has a heavy coating of scale, it shall be removed by wire-brushing or sandblasting as necessary to produce satisfactory painting surface.

C. Chemically treat galvanized metal surfaces with a compound for this purpose, in accordance with the manufacturer's directions for use, before applying the first coat of paint.

D. Concrete block surfaces: Wire brush to remove loose materials.

E. Exposed concrete: Wire brush to remove loose mortar. Patch and repair surfaces for uniform texture.

F. Clean concrete floors to be painted with a 5 percent solution of muriatic acid or other etching cleaner. Flush the floor with clean water to remove acid, neutralize with ammonia, rinse, allow to dry, and vacuum before painting.

G. Backpriming: All concealed surfaces of painted wood shall be backprimed. Spot prime all ends of trim.

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

I. Clean galvanized surfaces with non-petroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

J. Between coats of polyurethane prime coat rub with steel wool and allow overnight drying.

3.04 PROTECTION:

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

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

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

3.05 CLEANING:

A. At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.

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

3.06 SCHEDULE OF PAINTING:

GENERAL:

1. All items listed in the following paint schedule may not apply to this project.

2. Numbers of coats listed in this schedule are minimum. If coverage is not complete and uniform, additional coats must be added until the finished surface is satisfactory and accepted by the Architect.

3. Omit primer on metal surfaces that have been shop primed and touch-up painted.

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

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

6. Electric Panel Boxes: Two (2) coats Rustoleum over prime coat.

7. Exposed Pipe, Pipe Hangers, Sprinkler Pipe, Sprinkler Pipe Hangers, Supports etc.: Two (2) coats satin enamel over metal primer.

8. Exposed Ductwork: Two (2) coats satin enamel over one (1) coat metal primer for galvanized.

9. Specific finishes listed in the finish schedule on the drawings take precedence over the finishes listed below. Luster levels indicated or scheduled on drawings shall take precedence over those specified below. If they differ, provide like product below in luster indicated on drawings.

B. EXTERIOR:

1. Metal: Provide the following finish system over miscellaneous ferrous metal, structural, hollow metal doors and frames, louvers:

   Semi gloss, Acrylic-Enamel Finish: Two (2) finish coats over a rust-inhibitive primer:

   Primer: Rust-inhibitive metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils:
   PPG: 6-208 Speedhide Interior/Exterior Rust Inhibitive Steel Primer.
   SW: DTM Acrylic Primer/Finish, B66W1 (OR) Kem Kromik Universal Metal Primer, B50Z (Alkyd).
   CW: C309 Ultra Teach DTM Universal Water-Based Metal Primer

   First and Second Coats: Semi gloss, exterior, acrylic –latex enamel applied at spreading rate recommended by manuf. to achieve total dry film thickness of not less than 2.6 mils.
   PPG: 78 Line Sun-Proof Semi-Gloss House and Trim Paint.
   SW: A100 Exterior Acrylic Gloss A8 Series or Metalatex Exterior Semi-gloss Coating, B42-100.
   CW: C218 Ultra Tech Exterior 100% Acrylic Semi-Gloss Coating

2. Non-Ferrous Metal: Galvanized. (Acid etch galvanized surfaces that have not weathered at least six months prior to beginning painting operations). Provide the following finish systems over exterior zinc-coated (galvanized) metal surfaces:

   Semi gloss, Acrylic-Enamel Finish: Two (2) finish coats over a galvanized metal primer.

   Primer: Galvanized metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
   ICI: 4020 Devflex DTM; Flat Int./Ext. Waterborne Primer /Finish.
   PPG: 90-709 Pitt-Tech One Pack Interior/Exterior Primer/Finish DTM Industrial Enamel.
   SW: DTM Acrylic Primer/Finish, B66W1.
   CW: C309 Ultra Teach DTM Universal Water-Based Metal Primer

   First and Second Coats: Semi gloss, exterior, acrylic-latex enamel applied at spreading rate recommended by manufacturer to achieve total dry film thickness of not less than 2.6 mils.
   PPG: 78 Line Sun-Proof Semi-Gloss Acrylic Latex House and Trim Paint.
   SW: A100 Exterior Acrylic Gloss A8 Series (OR) Metalatex Exterior Semi-gloss Coating, B42-100.
   CW: C218 Ultra Tech Exterior 100% Acrylic Semi-Gloss Coating

3. Aluminum surfaces in contact with masonry or steel to have a coat of zinc chromate.

4. Smooth Wood and PVC pipe columns: Provide the following finish systems over smooth wood siding and other smooth, exterior wood surfaces:

   Semi gloss, Acrylic-Enamel Finish: Two (2) finish coats over a primer.
   Primer: Exterior, alkyd or latex wood primer, as recommended by the manufacturer for this substrate, applied at a spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils.
   PPG: 72-1 Sun-Proof Exterior House & Trim Wood Primer-Flat Latex.
   SW: (Wood) A100 Exterior Latex Primer, B42W41; (PVC) PrepRite Bonding Primer, B51W50.
   CW: 330 Optima All Prime Acrylic

   First and Second Coats: Semi gloss, waterborne, exterior, acrylic enamel applied at a spreading rate recommended by the manuf. to achieve a total dry film thickness of not less than 2.4 mils.

PPG: 78 Line Sun-Proof Semi-Gloss Acrylic Latex House and Trim Paint.
SW: A100 Exterior Acrylic Gloss A8 Series (OR) Metalatex Exterior Semi-gloss Coating, B42-100.
CW: C218 Ultra Tech Exterior 100% Acrylic Semi-Gloss

5. Concrete, Stucco, and Masonry (Other than Concrete Masonry Units):

Flat Acrylic Finish: Two (2) finish coats over a primer.

Primer: Alkali-resistant, exterior, acrylic-latex primer applied at spreading rate recommended by manufacturer to achieve total dry film thickness of not less than 1.5 mils.
PPG: 6-603 Speedhide Interior/Exterior Acrylic Latex Alkali Resistant Primer.
SW: Loxon Exterior Acrylic Masonry Primer, A24-300.
CW: 335 Tropicoat Masonry Alkali-Resistant Primer (OR) 1240 Flex Lox High Build Coating Alkali-Resistant

First and Second Coats: Flat, exterior, acrylic-emulsion paint applied at a spreading rate recommended by manufacturer to achieve total dry film thickness of not less than 2.4 mils.
PPG: 10 Line Pitt-Cryl Exterior Water Base Paint.
SW: A100 Exterior Latex Flat House Paint, A6 Series.
CW: C214 UltraTech Exterior 100% Acrylic Flat

C. INTERIOR:

1. Concrete and Masonry walls (Other than Concrete Masonry Units): Provide the following paint systems over interior concrete and brick masonry surfaces.

Flat Acrylic Finish: Two (2) finish coats over a primer. (Omit primer on previously painted surfaces.)

Primer: Alkali-resistant, acrylic-latex, interior primer applied at spreading rate recommended by manufacturer to achieve a total dry film thickness of not less than 1.0 mil.
PPG: 6-2 Speedhide Interior Quick –Drying Latex Sealer.
SW: PrepRite 200 Interior Latex Wall Primer, B28W200.
CW: Ultra Tech C152 Interior Latex Primer-Sealer

First and Second Coats: Flat, latex-based, interior paint applied at spreading rate recommended by manufacturer to achieve total dry film thickness of not less than 2.5 mils.
PPG: 90 Line Wallhide Interior Wall Flat Latex Paint.
SW: ProMar 400 Latex Flat Wall Paint, B30W400.
CW: Ultra Tech C115 Interior Latex Flat

2. Epoxy Painted Concrete Masonry Units: provide the following finish systems over interior concrete masonry block units:

Semi-gloss Polyamid Epoxy Finish: Two (2) finish coats over a block filler.

Block Filler: Heavy Duty Acrylic block filler applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 12mils.
PPG: 16-90 Pit-Glaze Heavy Duty Acrylic Block filler
SW: Heavy Duty Block Filler, B42W46.
CW: 3250 Hi-Build Block Filler

First and Second Coats: Semi-Gloss Polyamide Epoxy applied at spreading rate recommended by manufacturer to achieve a total dry film thickness of not less than 5 mils.
PPG: 97 Line Aquapon Polyamide Epoxy Semi-Gloss Coating.
SW: Tile Clad H.S. Epoxy, B62Z-100 Series (Eg-Shel) or B70-200 Semi-gloss.
CW: 1300 Clean Coat Aqua Epoxy

3. Gypsum Board: provide the following finish systems over interior gypsum board surfaces:

Flat Acrylic Finish: Two (2) finish coats over a primer. (Walls scheduled to receive wall fabric shall receive one coat of Latex Primer – Tint Primer to match wall fabric).

Primer: Latex – based, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
PPG: 17-10 Quick-Drying Interior Latex Primer-Sealer.
SW: PrepRite 200 Latex Wall Primer, B28W200.
CW: UltraTech C152 Interior Latex Primer-Sealer

First and Second Coats: Flat, acrylic-latex based, interior paint applied at spreading rate recommended by manufacturer to achieve total dry film thickness of not less than 2.5 mils.
PPG: 80 Line Wallhide Interior Wall Flat Latex Paint.
SW: ProMar 400 Latex Flat Wall Paint, B30W400.
CW: UltraTech C115 Interior Latex Flat

4. Painted Interior Wood Surfaces: Provide the following paint finish systems over new, interior wood surfaces.

Semi gloss, Acrylic-Enamel Finish: Two (2) finish coats over a wood undercoater. (Omit undercoater on previously painted surfaces.

Undercoat: Alkyd – or acrylic-latex based, interior wood undercoater, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
PPG: 6-755 Speedhide Interior Water-Based Undercoater.
SW: PrepRite ProBlock Latex Primer/Sealer, B51W20.
CW: Ultra Tech C152 Interior Latex Primer-Sealer

First and Second Coats: Semi gloss, acrylic-latex, interior enamel applied at spreading rate recommended by manufacturer to achieve total dry film thickness of not less than 2.6 mils.
PPG: 88-110 Satinhide Interior Enamel Wall and Trim Lo-Lustre Semi-Gloss Latex.
SW: ProMar 200 Latex Semi-gloss Enamel, B31-2200.
CW: UltraTech C119 Interior Latex Semi-Gloss Enamel

5. Stained Woodwork: Provide the following stained finish over new, interior woodwork :

Waterborne, Satin-Varnish Finish: Two (2) finish coats of a waterborne, clear-satin varnish over a sealer coat and a waterborne, interior wood stain.

Stain Coat: Waterborne, interior wood stain applied at spreading rate recommended by manuf.
PPG: 77-302 Rez Interior Semi-Transparent Stain.
SW: Wood Classic Interior Oil Stain, A49-200.
CW: UltraTech C365 Semi-Transparent Wood Stain

Sealer Coat: Clear sanding sealer applied at spreading rate recommended by manuf.
PPG: 77-30 Rez Interior Quick-Drying Sealer and Finish.
SW: Wood Classic Fast Dry Sanding Sealer, B26V43.
CW: 901 Var-Prep

First and Second Finish Coats: Waterborne varnish finish applied at spreading rate recommended by manufacturer.
PPG: 77-49 Rez Satin Acrylic Clear Polyurethane.
SW: Wood Classic Water Borne Polyurethane Varnish A68 Series.
CW: UltraTech C167 Interior Polyurethane Satin Varnish

6. Painted Ferrous Metal (Hollow Metal doors and frames, electrical panel boxes etc.): Provide the following finish over interior metal work.

Semi gloss Acrylic-Enamel Finish: One finish coat over an enamel undercoater and a primer. (Omit primer on shop primed items)

Primer: Quick-drying rust-inhibitive, alkyd-based or epoxy-metal primer, as recommended by manufacturer for this substrate, applied at spreading rate recommended by manufacturer to achieve a total dry film thickness of not less than 1.5 mils.
PPG: 6-208 Speedhide Interior/Exterior Rust Inhibitive Steel Primer.
SW: Kem Kromik Universal Metal Primer, B50Z Series.
CW: UltraTech C305 Alkyd Rust Inhibitive Primer

Undercoater: Alkyd, interior enamel undercoat or semi gloss, acrylic-latex, interior enamel as recommended by the manufacturer for this substrate, applied at spreading rate recommended by manufacturer to achieve total dry film thickness of not less than 1.3 mils.
PPG: 6-6 Speedhide Interior Quick-Drying Enamel Undercoater.
SW: ProMar 200 Latex Semi-gloss Enamel, B31-2200.
CW: UltraTech C119 Interior Latex Semi-Gloss Enamel

Finish Coat: Semi gloss, acrylic-latex, interior enamel applied at spreading rate recommended by manufacturer to achieve total dry film thickness of not less than 1.3 mils.
PPG: 88-110 Satinhide Interior Enamel Wall and Trim Lo-Lustre Semi-Gloss Latex.
SW: ProMar 200 Latex Semi-gloss Enamel, B31-2200.
CW: UltraTech C119 Interior Latex Semi-Gloss Enamel

7. Non-Ferrous Metal: Galvanized. Provide the following finish systems over exterior zinc-coated (galvanized) metal surfaces:

Semi gloss, Acrylic-Enamel Finish: Two (2) finish coats over a galvanized metal primer.

Primer: Galvanized metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
PPG: 90-709 Pitt-Tech One Pack Interior/Exterior Primer/Finish DTM Industrial Enamel.
SW: DTM Acrylic Primer/Finish, B66W1.
CW: UltraTech C309 Universal Water-Based Metal Primer

First and Second Coats: Semi gloss, acrylic-latex enamel applied at spreading rate recommended by manufacturer to achieve total dry film thickness of not less than 2.6 mils.
PPG: 88-110 Satinhide Interior Enamel Wall and Trim Lo-Lustre Semi-Gloss Latex.
SW: ProMar 200 Latex Semi-gloss Enamel, B31-2200.
CW: UltraTech C119 Interior Latex Semi-Gloss Enamel

8. Metal Decking, Bar Joists, exposed metal structure (non-galvanized): Provide the following finish systems over shop primed metal surfaces:

Flat Waterborne Acrylic Dry Fall Finish: Two (2) coats applied at spreading rate recommended by manufacturer to achieve a total dry film thickness of 4 mils.
PPG: Spedhide Latex dry Fog Flat Spray Paint, 6-715
SW: Waterborne Acrylic Dryfall, Flat, B42W1
CW: UltraTech C157 Interior Latex Flat Dryfall
CW: UltraTech C309 Universal Water-Based Metal Primer
CW: UltraTech C119 Interior Latex Semi-Gloss

9. Aluminum surfaces in contact with masonry or steel to have a coat of zinc chromate.

3.07 MECHANICAL AND ELECTRICAL ITEMS:

A. All equipment such as pumps, tanks, air units, compressors, cabinets, etc., that have had their paint defaced, scarred or skinned shall be touched up with machinery enamel.

PPG: Lavax Machinery Enamel, 23- Line.
SW: Steel Spec Fast Dry Alkyd Enamel, B55W811.
CW: UltraTech C248 Exterior Alkyd Semi-Gloss Enamel

B. All uncovered pipe hangers, tank stands, equipment support stands and brackets, uncovered portions of tank, and other mechanical apparatus, including factory finished items, shall be painted as scheduled above for painted ferrous metal.

C. All hot water, cold water, steam, condensation, circulating water lines for heating and cooling, drains gas piping, electrical conduit, junction boxes and similar items exposed shall be painted as scheduled above for painted ferrous metal, galvanized metal or Aluminum Metal-lite, as appropriate for the substitute.

D. All electrical panel boxes, box covers, conduit junction boxes, brackets and accessories except those in electrical rooms shall have field finish paint, as scheduled above for ferrous metal over prime finish, or factory finish.

E. Exposed Ductwork: As scheduled above for galvanized metal. Interior of ducts exposed to view shall be painted flat black for the first two (2) feet beyond grill or diffuser.

End of Section

SECTION 10 14 00 - SIGNAGE

PART I GENERAL

1.01 SCOPE:

A. Furnish all materials, labor, equipment, and supervision necessary to provide and install signage as shown on the drawings and specified herein.

1.02 RELATED DOCUMENTS:

A. Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

1.03 WARRANTY:

A. Provide manufacturers standard warranty.

PART II PRODUCTS

2.01 INTERIOR SIGNAGE MANUFACTURERS

A. Provide specified sign products as manufactured by:

1. Scott Sign Systems (by Identity Group), Nashville, TN, 615-515-9008.

B. Manufacturers pre-approved to provide alternate, equal products meeting the specified requirements include the following:

1. APCO Signs
2. ASI Sign System
3. InPro Corporation
4. Vomar Products, Inc.
5. Additional alternate manufacturers must be approved by Architect prior to bidding.

2.02 INTERIOR SIGNAGE

A. Provide and install signage of type, color, thickness and mounting style as indicated on the drawings. If not indicated on the drawings, provide and install signage equal to molded polymer “Square Corner ADA Plaques” as manufactured by Scott Sign Systems.

1. Size: 6” x 9” with radius corners
2. Color: As selected by Architect from manufacturer’s full range of color selections.
3. Thickness: 1/8”
4. Mounting: Factory-applied Very High Bond (VHB) Tape

B. Signs shall read as indicated on drawings. Each shall have a raised graphic symbol, the applicable international symbol of accessibility. Raised lettering and Grade 2 Braille as required by the Americans with Disabilities Act.

2.03 EXTERIOR SIGNAGE

A. Post and Panel Site Signs:

1. Handicapped Parking Signs shall be as indicated on drawings. If not indicated, signs shall be RT-8 and R7-8D Type, as required by the ADA, 12” x 18” center post 7’ height to bottom of sign. Van accessible space shall have the words “Van Accessible” on the bottom of the sign. Provide and install one sign per accessible parking space.

2. Aluminum Sheet: Alloy and temper recommended by the aluminum producer and finisher for the type of use and finish indicated, and with at least the strength and durability properties specified in ASTM B 209 for 5005-H15 alloy.

   a. Panel Material: 0.125-inch- thick aluminum plate.
   b. Panel Finish: Baked enamel.
   c. Corner Condition: Corners rounded to 2”radius.
   d. Surface-Applied, Die-Cut Vinyl Copy: Provide die-cut characters from nonreflective vinyl film with pressure-sensitive adhesive backing. Apply copy to exposed face of sign panel.

3. Steel Tubing: Cold-formed steel tubing conforming to ASTM A 500, Grade B, hot-dip galvanized after fabrication with a minimum of 2.0 oz. of zinc/sq. ft. of surface area conforming to ASTM A 123.

4. Vinyl Film: Opaque, nonreflective vinyl film, 0.0035-inch minimum thickness, with pressure-sensitive adhesive backing, suitable for exterior applications.

5. Colored Coatings for Plastic Sheet: Use nonfading colored coatings, including inks and paints for copy and background colors, which are recommended by the manufacturers for optimum adherence to the type of surface used.

6. Concrete for Post Holes: Mix Portland cement complying with ASTM C 150, aggregates complying with ASTM C 33, and clean water to obtain concrete with a minimum 28-day compressive strength of 2500 psi. Use at least 4 sacks of cement/cu. yd., 1-inch maximum-size aggregate, maximum 3-inch slump, and 2 to 4 percent entrained air.

7. Steel Posts: 0.120-inch, galvanized, seamless, square steel posts in length adequate for mounting method specified. Include post caps, fillers, spacers, junction boxes, access panels, and related accessories required for a complete installation. Comply with the following requirements for post shape, finish, and mounting method indicated:

   a. Post Size: 3 by 3 inches square.
   b. Post Mounting Method: Provide sign posts of length required for permanent installation by direct-burial mounting method.

PART III EXECUTION

3.01 SIGNAGE

A. Provide and install ADA-compliant signage as indicated on drawings.

3.02 INSTALLATION:

A. Locate signs where indicated on the drawings and in strict accordance with ADA regulations.

B. Install in accordance with manufacturers recommendations.

C. Installation of Panel and Post Signs:

1. Excavation: In firm, undisturbed or compacted soil, drill or (using a post-hole digger) hand-excavate holes for each post to the minimum diameter recommended by sign manufacturer, but at least 4 times the largest post cross-section.

End of Section

SECTION 10 28 00 - TOILET ROOM ACCESSORIES

PART I GENERAL

1.01 SCOPE:

A Furnish and install toilet room accessories and miscellaneous accessories as listed herein and shown on the drawings.

1.02 RELATED DOCUMENTS:

A Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

Section 06 10 00 Rough Carpentry

1.03 SUBMITTALS:

A Submit to the Architect for approval a brochure containing catalog cuts and full description of accessories proposed for use and a schedule of accessories.

PART II PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

A Accessories shall be specified or indicated model numbers by specified or indicated manufacturers unless alternate products are approved by Architect prior to bidding. Additional alternate manufacturers must be approved by Architect prior to Bidding and provide product equal to or exceeding specified requirements. Acceptable manufacturers include Bobrick Washroom Equipment, Inc., American Specialties Inc., Bradley Corporation and Frost Products Ltd.

2.02 TYPE OF ACCESSORIES:

A Mirrors shall be as noted on drawings. If not noted, provide frameless, float plate glass mirror 24" x 36" attached to wall with 4 minimum clear plastic mirror clips.

B Toilet accessories shall be as scheduled on the drawings. If manufacturers and/or model numbers are not indicated on the drawings, provide the accessories indicated below for each accessory shown on the drawings. Accessories in this schedule may or may not apply to this project.

1.	Paper Towel Dispenser:	Bobrick Model No. B-262.
2.	Toilet Paper Dispenser:	Bobrick Model No. B-6857
3.	Vandal-Resist. T.P. Disp'r:	Bobrick Model No. B-264 (w/ 283-604 spindle)
4.	Toilet Stall Grab Bar:	Bobrick Model No. B 6806 x 42, B 6806 x 36 & B 6806 x 18
5.	Mop Rack:	Bobrick Model No. 224, 36" long
6.	Soap Dispenser:	Bobrick Model No B-2111
7.	Feminine Napkin Recept.:	Bobrick Model No. B-270
8.	Robe Hook:	Stanley Model No. 819065

2.03 BABY CHANGING STATION:

A. Provide horizontal-design, FDA-approved, 300 lb.-capacity baby changing station with Braille instructions, pneumatic gas spring operation and anti-microbial properties by Koala Corp., Bradley Corp or equal approved by Architect prior to Bidding. Hinges shall be reinforced, full length steel on steel and mounting supports must be multiple 11 ga. steel. Style and material shall be as indicated on the drawings. If not indicated, provide the following:

1. For newly constructed walls, provide stainless steel clad recess-mounted unit with grey polyethylene interior.
2. For existing walls, provide stainless steel clad wall-mounted unit with grey polyethylene interior.
3. For units indicated to be mounted within an accessible toilet stall, provide grey, molded-HDPE unit.

2.04 UNDERCOUNTER PIPE GUARDS:

A. Where undercounter pipes are exposed to view and as required by ADA guidelines, provide soft, resilient molded-vinyl pipe guards equal to Trubro Lav Guard as manufactured by IPS Corporation of Collierville, TN in model numbers, sizes and lengths required for the pipes indicated. Guards shall be virtually indestructible with a nominal wall of 1/8" with internal ribs. Guards shall be self-extinguishing according to ASTM D635 tests and result in zero mold growth according to ASTM G21 and G22 testing. Must be capable of being wiped clean using common detergents.

PART III EXECUTION

4.01 INSTALLATION:

A Accessories shall be substantially secured in place with fastenings most suitable for the construction to which they are fastened. All exposed fasteners shall be stainless steel or chromium plated brass and shall be Phillips Head Screws or Bolts.

B For gyp. bd. installations where no wood blocking has been provided, install accessories using GCW40 as manufactured by WingIts, LLC, 181 West Clay Avenue, Roselle Park NJ 07204, 877-894-6448, www.wingits.com.

C The exact location of accessories shall be as directed by the Architect.

D Install barrier free shower threshold in accordance with manufacturer's latest printed instructions and Americans with Disabilities Act guidelines.

End of Section

SECTION 104400 - FIRE EXTINGUISHERS

PART I GENERAL

1.01 SCOPE:

A Furnish and install fire extinguishers and cabinets, as shown on drawings and as specified herein.

1.02 RELATED DOCUMENTS:

A Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

1.03 SUBMITTALS:

A Submit manufacturer's data for fire extinguishers and cabinets including mounting recommendations.

1.04 QUALITY ASSURANCE:

A Fire extinguishers shall be UL listed with UL listing mark for type, rating and classification of extinguisher.

PART II PRODUCTS

2.01 MATERIALS:

A. Fire extinguishers shall be J. L. Industries Cosmic Series E, Model 10, Dry Chemical Extinguisher or approved equal of Elkhart, Casco, Larsen, Allenco, Badger-Powhatter, and Ansul.

B. Extinguisher cabinet shall be model 1526 with clear bubble, 1-1/2 inch square edge trim, powder coated steel frame cabinet. Cabinet shall have zinc plated handle and roller catch. Provide Mark Bracket MB846 for attachment of extinguisher inside cabinet.

C. Fire extinguisher cabinets located in fire rated walls shall be provided with FX fire rated tub option.

D. Fire extinguishers indicated in the drawings for mounting within a Kitchen shall be J. L. Industries Saturn Series, Class K, Wet Chemical Extinguisher or approved equal of Elkhart, Casco, Larsen, Allenco, Badger-Powhatter, and Ansul.

PART III EXECUTION

3.01 INSTALLATION:

A Examine walls and partitions for thickness and framing for cabinets to verify cabinet depth and mounting prior to cabinet installation.

B Follow manufacturer's printed instructions for installation.

C Install in locations and at mounting heights located, or if not indicated, at heights to comply with applicable regulations of governing authorities.

D Install fire extinguisher cabinets in fire rated walls in accordance with manufacturer's instructions for maintaining fire rating of wall assembly.

End of Section

SECTION 12 21 14 – WOODEN HORIZONTAL BLINDS:

PART I GENERAL

1.01 SCOPE:

A Furnish all labor, materials, equipment, and supervision as required to provide and install wooden horizontal blinds as shown on the drawings and as specified herein.

1.02 RELATED DOCUMENTS:

A Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

1.03 QUALITY ASSURANCE:

A. Installer's qualifications:

1. The installer shall be a firm approved by the manufacturer.
2. The installer shall be qualified to install the product specified, as demonstrated by prior experience.

1.03 SUBMITTALS:

A. Product information: Submit Levolor product literature and installation instructions.

B. Shop drawings: Indicate field-measured dimensions of opening which are to receive blinds, details on mounting surface and sill conditions, and details of corners and conditions between adjacent blinds.

C. Color samples: Submit a sample of each type and color of material specified.

1.04 DELIVERY, STORAGE, AND HANDLING:

A. Packing and Shipping: Materials shall be delivered to the Project in manufacturer's original unopened packaging with labels intact.

B. Storage:

1. Materials shall be stored in a clean area, which is free of corrosive fumes, dust, and away from construction activities.
2. Materials shall be stacked horizontally using plastic or wood shims such that drainage and ventilation are provided for, and such that water cannot accumulate in, about or upon the containers.
3. Stacks shall be covered with tarpaulins or plastic such that ventilation is provided for, and such that contaminants are prevented from contacting surfaces.

1.05 PROJECT/SITE CONDITIONS:

A. Roof must be tight, windows and frames installed and glazed, and interior doors hung.

B. Wet work including concrete, masonry, plaster, stucco, terrazzo, Sheetrock, spackling, and taping (including sanding) shall be complete and dry.

C. Ceilings, window pockets, electrical, and mechanical work above the product shall be complete.

1.06 WARRANTY:

A. One year warranty: Manufacturer shall repair or replace for one year, at its option, without charge, any part found defective in workmanship or material as long as the blind remains in the same window for which it was purchased.

PART II PRODUCTS

2.01 MANUFACTURER AND PRODUCT DESCRIPTION:

A. Acceptable product: Custom 2" Wood Blind manufactured by

Levolor Home Fashions, 4110 Premier Drive, High Point, NC 27265, 800-221-6803
Contract Customer Service, 800-826-8021, Fax: 800-624-0029

B. Materials:

1. Headrail: .019" thick Tomized steel, "U" shaped, 2" high x 2 1/4" wide. All hardware enclosed in the metal headrail.
2. Tilt Wand: North American Hardwood, with a .38" diameter.
3. Cord Lock: .031" thick Tomized steel and shall be crash-proof.
4. Drum and Cradle: Provided for each ladder. Drums are injection molded engineering thermoplastic. Cradles are injection molded engineering thermoplastic.
5. Installation Brackets: .040" thick Tomized steel with a rivet-hinged safety locking front cover to permit removal of headrail without lateral movement.
6. Ladders (slat supports): Distance between 2" slats does not exceed 44mm (nominally 6.9 slats per vertical foot).
7. Slats: North American Hardwood finished with a wood stain or solid coating selected from Levolor Custom colors, sealed, and lacquered. Maximum slat length is 96". Standard 2" slats are nominally 2" wide x 1/8" high.
8. Bottomrail: Nominally 2" wide x 5/8" high and finished to coordinate with slats.

PART III EXECUTION

3.01 INSPECTION:

A. Window treatment subcontractor shall be responsible for inspection of site, field measurements, and approval of mounting surfaces and installation conditions.

B. Subcontractor shall verify that site is free of conditions that interfere with blind installation and operation, and shall begin installation only when any unsatisfactory conditions have been rectified.

3.02 INSTALLATION :

A. Installation shall comply with Levolor specifications, standards, and procedures.

B. Provide support brackets per Levolor’s installation instructions.

C. Provide adequate clearance to permit unencumbered operation of blind and hardware.

D. Demonstrate blinds to be in uniform and smooth working order.

3.03 CLEANING :

A. Clean soiled blinds with a mild soap solution only. Do not use cleaning methods involving heat, bleach, abrasives, or solvents. Do not use window cleaner or cloths with paper content.

B. Ensure proper drying following cleaning by providing adequate ventilation.

End of Section

SECTION 12 35 30- KITCHEN CASEWORK

PART I GENERAL

1.01 SCOPE:

A Furnish all labor, materials, equipment and supervision necessary to provide and install pre-manufactured kitchen casework as shown on the drawings and specified herein.

1.02 RELATED DOCUMENTS:

A Applicable provisions of the General Conditions, Supplementary Conditions, and Division 1, General Requirements, apply to the work under this section.

1.03 SUBMITTALS:

A Submit the following according to Section 01 33 00:

1. Product data for each casework type specified including manufacturer's specifications and installation instructions, details of construction relative to materials, dimensions of individual components, profiles, and finishes.

2. Shop drawings showing layout and types of counter tops, full scale sections of typical installations, details of patterns or designs, and colors.

3. 12 inch square samples of plastic laminate for verification of color selection.

4. Product certificates signed by the manufacturer certifying that materials furnished comply with specified requirements.

5. Maintenance data for kitchen casework to include in the Operating and Maintenance Manual specified in Division 1.

1.04 PROJECT CONDITIONS:

A Field Measurements: Check actual area for casework by accurate field measurements before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of the work.

B Comply with casework manufacturer's written requirements for temperature and humidity conditions during storage and installation. Do not install casework until these conditions have been attained and stabilized.

C Verify countertop size and shape prior to fabrication by field measurements taken after base units are installed.

1.05 QUALITY ASSURANCE:

A Plastic Laminate Countertops: Comply with ANSI A161.2.

B Single Source Responsibility: Obtain kitchen casework from one source of a single manufacturer.

PART II PRODUCTS

2.01 MANUFACTURERS:

A Subject to compliance with requirements, provide products of the following.

1. Kitchen Casework:Cardell Kitchen & Bath Cabinetry, 3215 N. Pan Am Expressway, San Antonio, Texas 78220, Ph: 210-225-0290, Fax: 210-212-5823

or equal by Kraftmaid Cabinetry, Mid Continent Cabinetry, Imperial Cabinet Co., Inc., Merillat Industries, Inc. or United Cabinet Corporation of Nashville Tennessee

2. Plastic Laminate for Countertops shall be of the manufacturer scheduled on the drawings. Where not scheduled on the drawings, Architect shall select from manufacturer's full range by Nevamar (or Pionite) by Panolam Industries, Formica Corporation or Wilsonart International, Inc.

2.02 MATERIALS:

A Cabinetry: Cabinet specification is based on "Spectrum 360 Series" Classic Style cabinet line as manufactured by Cardell Kitchen & Bath Cabinetry. Other cabinets will be approved based on examination of a sample and manufacturer's literature submitted for approval and comparison of the sample and manufacturer's literature with the specified product.

2.03 CONSTRUCTION:

A Face Frame: Constructed of 3/4" kiln-dried select red oak, maple, or hickory grooved to accept the cabinet box. All face frame joints are reinforced and precisely aligned with self boring screws and bonded with adhesive.

B End Panel: Constructed of 3/8" 45 lb. Industrial grade particleboard laminated with a chemical embossed 30 mm industrial grade paper with "DuraTec" top coat.

C Top and Bottom Panel: 1/2" 45 lb. industrial grade particleboard laminated with 30mm industrial grade paper with double smoothing melamine top coat.

D Back Panels: 3/8" 45 lb industrial grade particleboard trapped between end panels. The interior surface is laminated with 30 mm industrial grade paper with double smoothing melamine topcoat.

E Hangers Rails: Wall cabinet top and bottom rails are 1/2" 34 lb. industrial grade particleboard glued and stapled behind the back panel.

F Shelves: Shelves are constructed of 1/2/" 45 lb. industrial grade particleboard coated with 30 mm industrial grade paper with double smoothing melamine top coat on both sides. The front edges of shelves have a color matched PVC edge-banding applied. All shelves are adjustable and are held in place with locking shelf clips. Shelves are designed to support 15 lbs. per square foot.

G Hinges: Fully concealed 110 degree self-closing cup hinges use an easy single screw mounting hinge plate that allows vertical adjustments.

H Drawers: 5/8" solid hardwood dovetail construction. Front is attached to the drawer box with four 1" screws. Slides are an epoxy coated wrap-around slide attached to the drawer side with screws. Cabinet tracks are precisely positioned and secured to the face frame; the rear of the slide is secured in a self-aligning socket precision-bored into the back of the cabinet. Slides have a 75 lb test weight.

I Base Cabinet Stretchers: All base cabinets have 3/8" x 3" 45 lb. Industrial grade particleboard stretchers captured by grooves in the frame, end panels, and back panel to provide reinforcement to the base cabinet construction.

J Toe Kick: Toe Kicks are 1/2" 45 lb. industrial grade particleboard laminated with 30 gm industrial grade paper with a chemical embossed "DuraTec" top coat. The toe kick fully enclosed the underside of the cabinet box.

2.04 COUNTERTOPS, PLASTIC LAMINATE:

A Comply with ANSI A161.2

B Particleboard: Comply with ANSI A208.1 45 lb. Density, not less than 3/4" thick.

C Countertop, Backsplash, and end splash Plastic Laminate: GP 50.

PART III EXECUTION

3.01 INSTALLATION:

A Install casework with no variations in flushness of adjoining surfaces using concealed shims. Where casework abuts other work, scribe and cut for accurate fit. Provide filler strips, scribe strips, and moldings in finish to match casework face.

B Install casework without distortion so that doors and drawers fit openings properly and are aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessories as indicated.

C Install casework and countertop level and plumb to a tolerance of 1/8" in 8 feet.

D Fasten unit of casework to adjacent unit and into structural support members of wall construction with #10 sheet metal or wood screws with washer head or washer.

E Fasten plastic laminate countertops by screwing through corner blocks in base units into the underside of countertop. Spline and glue joints in countertops and provide concealed mechanical clamping of joint.

3.02 ADJUSTING AND CLEANING:

A Adjust hardware to center doors and drawers in openings and lubricate to provide unencumbered operation.

B Clean casework on exposed and semi-exposed surfaces. Touch-up factory-applied finishes to restore damaged or soiled areas.

3.03 PROTECTION:

A Cover countertops with non-staining paper until time of Substantial Completion for Project.

B Protect cabinets from damage. Replace damaged cabinets at completion of Project.

End of Section

SECTION 31 10 00 – SITE PREPARATION

PART I GENERAL

1.01 SCOPE:

A Work shall include, but not be limited to: Protection of existing trees to remain, removal of trees and other vegetation scheduled to be removed, topsoil stripping, clearing, grubbing, and removal of above and below grade improvements.

1.02 RELATED DOCUMENTS:

A Applicable provisions of the General Conditions, Supplementary Conditions, and Division 1, General Requirements, apply to the work under this section.

Section 31 20 00 Earthwork

1.03 PROJECT CONDITIONS:

A Traffic: Conduct site clearing operations to ensure minimum interference with roads, streets, walks, or other occupied or used facilities without permission from authorities having jurisdiction.

B Protection of Existing Improvements:

1. Provide protections necessary to prevent damage to existing improvements indicated to remain.
2. Protect improvements on adjoining properties and on the Owner's property.
3. Restore damaged improvements to their original condition, as acceptable to property owners and other parties having jurisdiction

C Protection of Existing Trees and Vegetation:

1. Protect existing trees and other vegetation indicated to remain in place, against unnecessary cutting, breaking or skinning of roots, skinning or bruising of bark, smothering or trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within the drip line. Provide temporary guards to protect trees and vegetation to be left standing.
2. Water trees and other vegetation to remain within the limits of the contract work as required to maintain their health during the course of construction operations.
3. Provide protection for roots over 1-1/2" in diameter which are cut during construction operations. Coat the cut faces with an emulsified asphalt, or other acceptable coating, formulated for use on damaged plant tissues. Temporarily cover exposed roots with wet burlap to prevent roots from drying out. Cover with earth as soon as possible.
4. Repair or replace trees and vegetation indicated to remain which are damaged by construction operations, in a manner acceptable to the Architect. Employ a licensed arborist to repair damages to trees and shrubs. Replace trees which cannot be repaired and restored to full growth status, as determined by the arborist.

D Salvageable Improvements: Carefully remove items indicated to be salvaged, and store on the Owner's premises where indicated or directed.

PART II PRODUCTS

NOT USED

PART III EXECUTION

3.01 SITE CLEARING:

A General:

1. Remove trees, shrubs, grass, and other vegetation, improvements, or obstructions as required to permit installation of new construction. Remove similar items elsewhere on the site or premises unless specifically indicated to remain. Removal includes digging out and off-site disposing of roots and stumps.

2. Carefully and cleanly cut minor roots and branches of trees indicated to be left standing, where such roots and branches obstruct new construction.

B Topsoil:

1. Topsoil is defined as friable clay loam surface soil found in depth of not less than 4 inches. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects over 2 inches in diameter, and without weeds, roots, and other objectionable material.
2. Strip topsoil to whatever depths encountered in a manner to prevent intermingling with underlying subsoil or other objectionable material.
3. Remove heavy growths of grass from areas before stripping.
4. Where existing trees are indicated to remain, leave existing topsoil in place within drip lines to prevent damage to root system.
5. Stockpile topsoil in storage piles in areas shown, or where otherwise directed. Construct storage piles to freely drain surface water. Cover storage piles if required to prevent windblown dust.

C Clearing and Grubbing:

1. Clear site of trees, shrubs and other vegetation, except for those specifically indicated to be left standing.
2. Completely remove stumps, roots, and other debris protruding through the ground surface.
3. Use only hand methods for grubbing inside the drip lines of trees indicated to be left standing.
4. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.
5. Place fill material in horizontal layers not exceeding 6 inches loose depth, and thoroughly compact to a density equal to adjacent original ground.

D Removal of Improvements:

1. Remove above-ground and below-grade improvements as indicated and as necessary to facilitate new construction.

2. Abandonment or removal of certain underground pipe or conduits may be shown on mechanical or electrical drawings, and is included under work of related Division 15 and 16 Sections. Removal of abandoned underground piping or conduit interfering with construction is included in this Section.

3.02 DISPOSAL OF WASTE MATERIALS:

A Burning is not permitted on the Owner's property.

B Remove waste materials and unsuitable or excess topsoil from Owner's property and dispose of legally.

End of Section

31 25 00 - EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.01 SUMMARY

A. Work shall include, but not be limited to temporary and permanent erosion control systems and slope protection systems.

1.02 RELATED DOCUMENTS

A. Applicable provisions of the General Conditions, Supplementary Conditions, and Division 1, General Requirements, apply to the work under this section.

B. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents, including but not limited to the project Storm Water Pollution Prevention Plan (SWPPP).

1.02 SUBMITTALS

A. Environmental Permit Requirements: Show compliance with all requirements of the Tennessee General NPDES Permit (TNR 100000) for Storm Water Discharges Associated with Construction Activity (CGP) and the project Storm Water Pollution Prevention Plan (SWPPP). Provide Architect and the local Tennessee Department of Environment and Conservation (TDEC) Environmental Field Office (EFO) with copies of all required paperwork during and at the conclusion of the project. The Contractor is responsible for all maintenance, inspections, record keeping, and reporting.

1.03 QUALITY ASSURANCE

A. Personnel Qualifications: Inspections by the Contractor will be performed by personnel certified in the TDEC Level 1 Erosion Control Course.

B. Performance: Protect adjacent properties and water resources from erosion and sediment damage throughout Work. Ensure compliance with applicable Federal, State, and local regulations related to erosion and sedimentation control.

PART 2 - PRODUCTS

2.01 MATERIALS

A. All materials used for sediment and erosion control measures shall conform to the recommendations of the TDEC Erosion and Sediment Control Handbook, latest edition or the requirements of the local governing code agency; whichever is more stringent.

B. See drawings for specific structural erosion control measures. The measures shown on the plans are a minimum. Contractor is to add, adjust and maintain structural controls as required to keep silt and dust from leaving the construction site.

PART 3 - EXECUTION

3.01 PREPARATION

A. Examine the Storm Water Pollution Prevention Plan (SWPPP) and the Site Erosion and Sedimentation Control Drawings.

B. Notify Architect of deficiencies or changes in the SWPPP or Drawings required by current site conditions. Revisions of the Documents will be made as determined by the Architect.

3.02 EROSION CONTROL AND SLOPE PROTECTION IMPLEMENTATION

A. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to the Site Erosion and Sedimentation Control Drawings as well as the CGP and the SWPPP.

1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.

2. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from the project site during the course of the project.

4. After final stabilization of the site, remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

B. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

C. Contractor shall limit where practical surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and embankment operations. Contractor shall provide immediate permanent or temporary pollution control measures.

D. Provide permanent erosion control measures at earliest practical time to minimize requirement for temporary erosion controls. Permanently seed and mulch cut slopes as excavation proceeds.

E. Maintain temporary erosion control systems installed by Contractor to control siltation at all times throughout Work. Provide maintenance or additional Work within 48 hours of notification by Architect or other governing entities.

F. Seed and mulch slopes that may be easily eroded. Application of temporary or permanent stabilization must be initiated within 14 days (7 days for slopes greater than 35%) to disturbed areas of a site where construction activities have temporarily or permanently ceased.

End of Section

SECTION 31 31 16 – TERMITE CONTROL

PART I GENERAL:

1.01 SCOPE:

A Furnish all labor, materials, tools, equipment, supervision, coordination, services, etc., required for complete execution of soil treatment for termite control as specified herein.

B Furnish all labor, materials, tools, equipment, supervision, coordination, services, etc., required for complete execution of borate treatment for any new and existing structural wood members for termite control as specified herein.

1.02 RELATED DOCUMENTS:

A Applicable provisions of the General Conditions, Supplementary Conditions, and Division 1, General Requirements, apply to the work under this section.

1.03 SUBMITTALS:

A. Product Data: Submit general information, MSDS and EPA-Registered Label for all products.

B. Product Certificates: For termite control products, signed by product manufacturer.

C. Qualification Data: For Installer of termite control products.

D. Soil Treatment Application Report: After application of termiticide is completed, submit report for Owner's record information, including the following:

1. Date and time of application.
2. Moisture content of soil before application.
3. Brand name and manufacturer of termiticide.
4. Quantity of undiluted termiticide used.
5. Dilutions, methods, volumes, and rates of application used.
6. Areas of application.
7. Water source for application.

E. Wood Treatment Application Report: After application of borate is completed, submit report for Owner's record information, including the following:
1. Date and time of application.
2. Brand name and manufacturer of borate.
3. Quantity of undiluted borate used.
4. Dilutions, methods, volumes, and rates of application used.
5. Areas of application.

1.04 QUALITY ASSURANCE:

A. Installer Qualifications: A specialist who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment and products in jurisdiction where Project is located**,** and who employs workers trained and approved by bait-station system manufacturer to install manufacturer's products.

B. Regulatory Requirements: Formulate and apply termiticides according to the EPA-Registered Label.

C. Source Limitations: Obtain termite control products from a single manufacturer for each product.

1.05 PROJECT CONDITIONS:

A. Environmental Limitations: To ensure penetration, do not treat soil that is water saturated or frozen. Do not treat soil while precipitation is occurring. Comply with requirements of the EPA-Registered Label and requirements of authorities having jurisdiction.

1.06 COORDINATION:

A. Coordinate soil treatment application with excavating, filling, grading, and concreting operations. Treat soil under footings, grade beams, and ground-supported slabs before construction.

B. Apply borate treatment after framing, sheathing, and exterior weather protection is completed but before electrical and mechanical systems are installed.

1.07 WARRANTY:

A. Special Warranty: Manufacturer's standard form, signed by Applicator and Contractor certifying that termite control work, consisting of applied soil termiticide treatment, will prevent infestation of subterranean termites. If subterranean termite activity or damage is discovered during warranty period, re-treat soil and repair or replace damage caused by termite infestation.

1. Warranty Period: **Five** years from date of Substantial Completion.

1.08 MAINTENANCE SERVICE:

A. Continuing Service: Beginning at Substantial Completion, provide 12 months' continuing service including monitoring, inspection, and re-treatment for occurrences of termite activity. Provide a standard continuing service agreement. State services, obligations, conditions, and terms for agreement period; and terms for future renewal options.

PART II PRODUCTS

2.01 MANUFACTURERS:

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

1. Termiticides:

a. Aventis Environmental Science USA LP; Termidor.
b. Bayer Corporation; Premise 75 / Centerfire 75 WSP.
c. Dow AgroSciences LLC; Dursban TC orEquity.
d. FMC Corporation, Agricultural Products Group; Talstar, Prevail FT, Torpedo.
e. Syngenta; Demon TC.

2. Borates:

a. Nisus Corp.; Bora-Care, Jecta.
b. NovaGuard Technologies, Inc.; Armor-Guard, Shell-Guard.
c. U.S. Borax Inc.; Tim-Bor.

2.02 SOIL TREATMENT:

A. Termiticide: Provide an EPA-registered termiticide complying with requirements of authorities having jurisdiction, in an aqueous solution formulated to prevent termite infestation. Provide quantity required for application at the label volume and rate for the maximum termiticide concentration allowed for each specific use, according to product's EPA-Registered Label.

2.03 WOOD TREATMENT:

A. Borate: Provide an EPA-registered borate complying with requirements of authorities having jurisdiction, in an aqueous solution for spray application and a gel solution for pressure injection, formulated to prevent termite infestation in wood. Provide quantity required for application at the label volume and rate for the maximum diffusible borate concentration allowed for each specific use, according to product's EPA-Registered Label.

PART III EXECUTION

3.01 GENERAL:

A Perform application only after excavation, filling and grading operations are completed except as otherwise required in construction operations.

B Do not perform soil treatment to frozen or excessively wet soil, or during inclement weather.

3.02 EXAMINATION:

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for moisture content of soil**,** interfaces with earthwork, slab and foundation work, landscaping, and other conditions affecting performance of termite control.

1. Proceed with application only after unsatisfactory conditions have been corrected.

3.03 PREPARATION:

A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's written instructions for preparation before beginning application of termite control treatment. Remove all extraneous sources of wood cellulose and other edible materials such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil within and around foundations.

B. Soil Treatment Preparation: Remove foreign matter and impermeable soil materials that could decrease treatment effectiveness on areas to be treated. Loosen, rake, and level soil to be treated except previously compacted areas under slabs and footings. Termiticides may be applied before placing compacted fill under slabs if recommended in writing by termiticide manufacturer.

1. Fit filling hose connected to water source at the site with a backflow preventer, complying with requirements of authorities having jurisdiction.

3.04 APPLICATION, GENERAL:

A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's EPA-Registered Label for products.

3.05 APPLYING SOIL TREATMENT:

A. Application: Mix soil treatment termiticide solution to a uniform consistency. Provide quantity required for application at the label volume and rate for the maximum specified concentration of termiticide, according to manufacturer's EPA-Registered Label, to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction. Distribute treatment evenly.

1. Slabs-on-Grade and Basement Slabs: Under ground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.

2. Foundations: Adjacent soil including soil along the entire inside perimeter of foundation walls, along both sides of interior partition walls, around plumbing pipes and electric conduit penetrating the slab, and around interior column footers, piers, and chimney bases; also along the entire outside perimeter, from grade to bottom of footing. Avoid soil washout around footings.

3. Crawlspaces: Soil under and adjacent to foundations as previously indicated. Treat adjacent areas including around entrance platform, porches, and equipment bases. Apply overall treatment only where attached concrete platform and porches are on fill or ground.

4. Masonry: Treat voids.

5. Penetrations: At expansion joints, control joints, and areas where slabs will be penetrated.

B. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.

C. Protect termiticide solution, dispersed in treated soils and fills, from being diluted until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.

D. Post warning signs in areas of application.

E. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

3.06 APPLYING BORATE TREATMENT:

A. Application: Mix wood treatment borate solution to a uniform consistency. Provide quantity required for application at the label volume and rate for the maximum specified concentration of borate, according to manufacturer's EPA-Registered Label, so that wood framing, sheathing, siding, and structural members subject to infestation receive treatment.

1. Framing and Sheathing: Apply borate solution by spray to bare wood for complete coverage.

2. Wood Members Thicker Than 4 Inches (100 mm): Inject borate gel solution under pressure into holes of size and spacing required by manufacturer for treatment.

End of Section

SECTION 33 10 00 – WATER DISTRIBUTION

PART I GENERAL:

1.01 SUMMARY:

A. This Section includes water-distribution piping and specialties outside the building for the following:

1. Water services.
2. Combined water service and fire-service mains.
3. Utility-furnished products include water meters that will be furnished to the site, ready for installation.

1.02 RELATED DOCUMENTS:

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

1.03 DEFINITIONS:

A. Combined Water Service and Fire-Service Main: Exterior water piping for both domestic-water and fire-suppression piping.

B. Water Service: Exterior domestic-water piping

C. PVC: Polyvinyl chloride plastic

D. DIP: Ductile Iron Pipe

1.04 SUBMITTALS:

A. Product Data: For the following:

1. Piping materials and fittings.
2. Piping specialties.
3. Valves and accessories.
4. Water meters and accessories.
5. Backflow preventers and assemblies.
6. Protective enclosures.
7. Fire hydrants.
8. Flushing hydrants.
9. Post hydrants.

B. Shop drawings for precast concrete vaults, including frames and covers, ladders, and drains.

C. Shop drawings for power, signal, and control wiring diagrams.

D. Coordination Drawings: For piping and specialties including relation to other services in same area. Show piping and specialty sizes and valves, meter and specialty locations, and elevations.

E. Field Quality-Control Test Reports.

F. Operation and Maintenance Data: For specialties to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 1 Section 013300,"Submittals" include the following:

1. Water meters.
2. Valves.

3. Backflow preventers.
4. Protective enclosures.
5. Fire hydrants.
6. Flushing hydrants.
7. Post hydrants.

1.05 QUALITY ASSURANCE:

A. Product Options: Drawings indicate sizes, profiles, and dimensional requirements of piping and specialties and are based on specific system indicated.

B. Regulatory Requirements:

1. Comply with requirements of utility company supplying water. Include tapping of water mains and backflow prevention.
2. Comply with standards of authorities having jurisdiction for potable-water-service piping, including materials, installation, testing, and disinfection.
3. Comply with standards of authorities having jurisdiction for fire-suppression water-service piping, including materials, hose threads, installation, and testing.

C. Piping materials shall bear label, stamp, or other markings of specified testing agency.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

E. Comply with ASTM F 645 for selection, design, and installation of thermoplastic water piping.

F. Comply with FM's "Approval Guide" or UL's "Fire Protection Equipment Directory" for fire-service-main products.

G. Comply with NFPA 24 for materials, installations, tests, flushing, and valve and hydrant supervision for fire-service-main piping for fire suppression. Comply with NSF 14 for plastic potable-water-service piping. Include marking "NSF-pw" on piping. Comply with NSF 61 for materials for water-service piping and specialties for domestic water.

1.06 DELIVERY, STORAGE, AND HANDLING:

A. Preparation for Transport: Prepare valves, including fire hydrants, according to the following:

1. Ensure that valves are dry and internally protected against rust and corrosion.
2. Protect valves against damage to threaded ends and flange faces.
3. Set valves in best position for handling. Set valves closed to prevent rattling.

B. During Storage: Use precautions for valves, including fire hydrants, according to the following:

1. Do not remove end protectors unless necessary for inspection; then reinstall for storage.
2. Protect from weather. Store indoors and maintain temperature higher than ambient dew-point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.

C. Handling: Use sling to handle valves and fire hydrants if size requires handling by crane or lift. Rig valves to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

D. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.

E. Protect stored piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.

F. Protect flanges, fittings, and specialties from moisture and dirt.

G. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

1.07 PROJECT CONDITIONS:

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Architect not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Architect's written permission.

1.08 COORDINATION:

A. Coordinate connection to water main with utility company.

PART II PRODUCTS

2.01 MANUFACTURERS:

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.
2. Products: Subject to compliance with requirements, provide one of the products specified.
3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.
4. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.02 DUCTILE-IRON PIPE AND FITTINGS:

A. Push-on-Joint, Ductile-Iron Pipe: AWWA C151, with push-on-joint, bell- and plain-spigot end unless grooved or flanged ends are indicated.

B. Push-on-Joint, Ductile-Iron Fittings: AWWA C153, ductile-iron compact pattern.

C. Gaskets: AWWA C111, rubber.

D. Ductile-Iron Expansion Joints: Three-piece, ductile-iron assembly consisting of telescoping sleeve with gaskets and restrained-type, ductile-iron, bell-and-spigot end sections complying with AWWA C110 or AWWA C153. Select and assemble components for expansion indicated. Include AWWA C111, ductile-iron glands, rubber gaskets, and steel bolts.

2.03 COPPER TUBE AND FITTINGS:

A. Soft Copper Tube: ASTM B 88, Type K (ASTM B 88M, Type A), water tube, annealed temper.

B. Copper Fittings: ASME B16.22, wrought-copper, solder-joint pressure type. Furnish only wrought-copper fittings.

C. Bronze Flanges: ASME B16.24, Class 150, with solder-joint end. Furnish Class 300 flanges if required to match piping.

D. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body with ball-and-socket, metal-to-metal seating surfaces, and solder-joint or threaded ends.

2.04 PVC PIPE AND FITTINGS

A. PVC, Schedule 40 Pipe: ASTM D 1785. Socket Fittings: ASTM D 2466.

B. PVC, AWWA Pipe: AWWA C900, Class 200, with bell end with gasket, and with spigot end.

1. Comply with UL 1285 for fire-service mains if indicated.
2. Push-on-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
3. Gaskets: AWWA C111, rubber.
4. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.

2.05 JOINING MATERIALS:

A. Refer to Division 2 Section "Utility Materials" for commonly used joining materials.

B. Transition Couplings:

1. Underground Piping, NPS 1-1/2 (DN 40) and Smaller: Manufactured fitting or coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
2. Underground Piping, NPS 2 (DN 50) and Larger: AWWA C219, metal, sleeve-type coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
3. Aboveground or Vault Piping: Pipe fitting same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.

C. Brazing Filler Metals: AWS A5.8, BCuP Series.

D. Soldering Flux: ASTM B 813, water-flushable type.

E. Solder Filler Metal: ASTM B 32, lead-free type with 0.20 percent maximum lead content.

F. Plastic Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

2.06 JOINING MATERIALS:

A. Refer to Division 2 Section "Utility Materials" for commonly used joining materials.

B. Transition Couplings:

1. Underground Piping, NPS 1-1/2 (DN 40) and Smaller: Manufactured fitting or coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
2. Underground Piping, NPS 2 (DN 50) and Larger: AWWA C219, metal, sleeve-type coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
3. Aboveground or Vault Piping: Pipe fitting same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.

C. Brazing Filler Metals: AWS A5.8, BCuP Series.

D. Soldering Flux: ASTM B 813, water-flushable type.

E. Solder Filler Metal: ASTM B 32, lead-free type with 0.20 percent maximum lead content.

F. Plastic Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

2.07 PIPING SPECIALTIES:

A. Flexible Connectors:

1. Nonferrous-Metal Piping: Bronze hose covered with bronze wire braid; with copper-tube, pressure-type, solder-joint ends or bronze flanged ends brazed to hose.
2. Ferrous Piping: Stainless-steel hose covered with stainless-steel wire braid; with ASME B1.20.1, threaded steel pipe nipples or ASME B16.5, steel pipe flanges welded to hose.

B. Transition Fittings: Manufactured fitting or coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.

C. Tubular-Sleeve Pipe Couplings:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Cascade Waterworks Manufacturing.
    b. Dresser, Inc.; Dresser Piping Specialties.
    c. Ford Meter Box Company, Inc. (The); Pipe Products Div.
    d. Hays Fluid Controls; a division of ROMAC Industries Inc.
    e. JCM Industries.
    f. Smith-Blair, Inc.
    g. Viking Johnson.

2. Description: Metal, bolted, sleeve-type, reducing or transition coupling, with center sleeve, gaskets, end rings, and bolt fasteners and with ends of same sizes as piping to be joined.

    a. Standard: AWWA C219.
    b. Center-Sleeve Material: Manufacturer's standard.
    c. Gasket Material: Natural or synthetic rubber.
    d. Pressure Rating: 200 psig (1380 kPa) minimum.
    e. Metal Component Finish: Corrosion-resistant coating or material.

D. Split-Sleeve Pipe Couplings:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Victaulic Depend-O-Lok.

2. Description: Metal, bolted, split-sleeve-type, reducing or transition coupling with sealing pad and closure plates, O-ring gaskets, and bolt fasteners.

    a. Standard: AWWA C219.
    b. Sleeve Material: Manufacturer's standard.
    c. Sleeve Dimensions: Of thickness and width required to provide pressure rating.

d. Gasket Material: O-rings made of EPDM rubber, unless otherwise indicated.
e. Pressure Rating: 200 psig (1380 kPa) minimum.
f. Metal Component Finish: Corrosion-resistant coating or material.

E. Dielectric Fittings:

1. Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.

2. Dielectric Unions:

a. Standard: ASSE 1079.
b. Pressure Rating: 250 psig (1725 kPa).
c. End Connections: Solder-joint copper alloy and threaded ferrous.

3. Dielectric Flanges:

a. Standard: ASSE 1079.
b. Factory-fabricated, bolted, companion-flange assembly.
c. Pressure Rating: 300 psig (2070 kPa).
d. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.

4. Dielectric-Flange Insulating Kits:

a. Nonconducting materials for field assembly of companion flanges.
b. Pressure Rating: 150 psig (1035 kPa).
c. Gasket: Neoprene or phenolic.
d. Bolt Sleeves: Phenolic or polyethylene.
e. Washers: Phenolic with steel backing washers.

5. Dielectric Nipples:

a. Standard: IAPMO PS 66
b. Electroplated steel nipple. complying with ASTM F 1545.
c. Pressure Rating: 300 psig (2070 kPa) at 225 deg F (107 deg C).
d. End Connections: Male threaded or grooved.
e. Lining: Inert and noncorrosive, propylene.

2.08 CORROSION-PROTECTION ENCASEMENT FOR PIPING:

A. Encasement for Underground Metal Piping: ASTM A 674 or AWWA C105, PE film, 0.008-inch (0.20-mm) minimum thickness, tube or sheet.

2.09 CAST IRON GATE VALVES:

A. Available Manufacturers:

1. American AVK Co.; Valves & Fittings Div.
2. American Cast Iron Pipe Co.; American Flow Control Div.
3. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
4. Crane Co.; Crane Valve Group; Stockham Div.
5. East Jordan Iron Works, Inc.
6. Grinnell Corporation; Mueller Co.; Water Products Div.
7. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
8. McWane, Inc.; Kennedy Valve Div.
9. McWane, Inc.; Tyler Pipe; Utilities Div.
10. NIBCO INC.

11. United States Pipe and Foundry Company.

B. Nonrising-Stem, Resilient-Seated Gate Valves: AWWA C509, gray- or ductile-iron body and bonnet; with bronze or gray- or ductile-iron gate, resilient seats, bronze stem, and stem nut.

1. Minimum Working Pressure: 200 psig (1380 kPa).
2. End Connections: Mechanical joint.
3. Interior Coating: Complying with AWWA C550.

C. OS&Y, Rising-Stem, Resilient-Seated Gate Valves: Cast- or ductile-iron body and bonnet, with bronze or gray- or ductile-iron gate, resilient seats, and bronze stem.

1. Standard: AWWA C509.
2. Minimum Pressure Rating: 200 psig (1380 kPa).
3. End Connections: Flanged.

2.10 GATE VALVE ACCESSORIES AND SPECIALTIES:

A. Tapping-Sleeve Assemblies: Comply with MSS SP-60. Include sleeve and valve compatible with drilling machine.

1. Available Manufacturers:

a. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
b. East Jordan Iron Works, Inc.
c. Grinnell Corporation; Mueller Co.; Water Products Div.
d. International Piping Services Company.
e. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
f. McWane, Inc.; Kennedy Valve Div.
g. McWane, Inc.; M & H Valve Company Div.
h. United States Pipe and Foundry Company.

2. Tapping Sleeve: Ductile-iron two-piece bolted sleeve with flanged outlet for new branch connection. Include sleeve matching size and type of pipe material being tapped and with recessed flange for branch valve.

3. Valve: AWWA, cast-iron, nonrising-stem, resilient-seated gate valve with one raised face flange mating tapping-sleeve flange.

B. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," bottom section with base of size to fit over valve, and approximately 5-inch- (125-mm-) diameter barrel.

1. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.

2.11 CORPORATION VALVES AND CURB VALVES:

A. Available Manufacturers:

1. Amcast Industrial Corporation; Lee Brass Co.
2. Ford Meter Box Company, Inc. (The).
3. Grinnell Corporation; Mueller Co.; Water Products Div.
4. Jones, James Company.
5. Master Meter, Inc.
6. McDonald, A. Y. Mfg. Co.
7. Red Hed Manufacturing Co.

B. Service-Saddle Assemblies: Comply with AWWA C800. Include saddle and valve compatible with tapping machine.

1. Service Saddle: Copper alloy with seal and AWWA C800, threaded outlet for corporation valve.
2. Corporation Valve: Bronze body and ground-key plug, with AWWA C800, threaded inlet and outlet matching service piping material.
3. Manifold: Copper fitting with two to four inlets as required, with ends matching corporation valves and outlet matching service piping material.

2.12 WATER METERS:

A. Water meters will be furnished by utility company.

B. Description: AWWA C700, displacement-type, bronze main case. Register flow in gallons unless cubic feet are indicated.

2.13 WATER-METER BOXES:

A. Description: Cast-iron body and cover for disc-type water meter with lettering "WATER METER" in cover; and slotted, open-bottom base section of length to fit over service piping.

1. Option: Base section may be cast-iron, PVC, clay, or other pipe.

B. Description: For traffic areas - Polymer-concrete body and cover for disc-type water meter with lettering "WATER" in cover; and slotted, open-bottom base section of length to fit over service piping. Include vertical and lateral design loadings of 15,000 lb. minimum over 10 by 10 inches (6800 kg minimum over 254 by 254 mm) square.

2.14 BACKFLOW PREVENTERS:

A. Reduced-Pressure-Principle Backflow Preventers:

1. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

a. Ames Fire & Waterworks; a division of Watts Regulator Co.
b. Conbraco Industries, Inc.
c. FEBCO; SPX Valves & Controls.
d. Flomatic Corporation.
e. Watts Water Technologies, Inc.
f. Wilkins; a Zurn company.

2. Standard: AWWA C511.

3. Operation: Continuous-pressure applications.

4. Pressure Loss: 12 psig (83 kPa) maximum, through middle 1/3 of flow range.

5. Size: Per utility plan.

6. Body: Bronze for NPS 2 (DN 50) and smaller; cast iron with interior lining complying with AWWA C550 or that is FDA approved stainless steel for NPS 2-1/2 (DN 65) and larger.

7. End Connections: Threaded for NPS 2 (DN 50) and smaller; flanged for NPS 2-1/2 (DN 65) and larger.

8. Configuration: Designed for vertical inlet, horizontal center section, and vertical outlet flow.

9. Accessories: Ball type with threaded ends on inlet and outlet of NPS 2 (DN 50) and smaller; OS&Y gate type with flanged ends on inlet and outlet of NPS 2-1/2 (DN 65) and larger. Air-Gap Fitting: ASME A112.1.2, matching backflow preventer connection.

B. Double-Check, Backflow-Prevention Assemblies:

1. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

a. Ames Fire & Waterworks; a division of Watts Regulator Co.
b. Conbraco Industries, Inc.
c. FEBCO; SPX Valves & Controls.
d. Flomatic Corporation.
e. Watts Water Technologies, Inc.
f. Wilkins; a Zurn company.

2. Standard: AWWA C510.

3. Operation: Continuous-pressure applications, unless otherwise indicated.

4. Pressure Loss: 5 psig (35 kPa) maximum, through middle 1/3 of flow range.

5. Size: Per utility plan.

6. Body: Bronze for NPS 2 (DN 50) and smaller; cast iron with interior lining complying with AWWA C550 or that is FDA approved stainless steel for NPS 2-1/2 (DN 65) and larger.

7. End Connections: Threaded for NPS 2 (DN 50) and smaller; flanged for NPS 2-1/2 (DN 65) and larger.

8. Configuration: Designed for horizontal, straight through flow.

9. Accessories: Ball valves with threaded ends on inlet and outlet of NPS 2 (DN 50) and smaller; OS&Y gate valves with flanged ends on inlet and outlet of NPS 2-1/2 (DN 65) and larger.

10. Backflow Preventer Test Kits: Factory calibrated, with gages, fittings, hoses, and carrying case with test-procedure instructions. Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

a. Conbraco Industries, Inc.
b. FEBCO; SPX Valves & Controls.
c. Flomatic Corporation.
d. Watts Water Technologies, Inc.
e. Wilkins; a Zurn company.

2.15 CONCRETE VAULTS:

A. Description: Precast, reinforced-concrete vault, designed for A-16 load designation according to ASTM C 857 and made according to ASTM C 858.

B. Ladder: ASTM A 36/A 36M, steel or polyethylene-encased steel steps.

C. Manhole: ASTM A 48, Class No.35 (ASTM A48M, Class No.250) minimum tensile strength, gray-iron traffic frame and cover, 24-inch (610-mm) diameter or greater, unless otherwise indicated.

D. Drain: ASME A112.21.1M, cast-iron floor drain with outlet of size indicated. Include body anchor flange, light-duty cast-iron grate, bottom outlet, and integral or field-installed clapper-type backwater valve.

2.16 PROTECTIVE ENCLOSURES:

A. Available Manufacturers:

1. G&C Enclosures, Inc.
2. Hot Box, Inc.
3. HydroCowl, Inc.
4. Watts Industries, Inc.; Water Products Div.

B. Freeze-Protection Enclosures: Insulated and with heat source to maintain minimum internal temperature of 40° F (4° C) when external temperatures reach as low as -34° F (-36° C).

1. Class I: For equipment or devices other than pressure or atmospheric vacuum breakers.

2. Class I-V: For pressure or atmospheric vacuum breaker equipment or devices. Include drain opening in housing.

a. Housing: Reinforced -fiberglass construction.

i. Drain opening for units with drain connection.
ii. Access doors with locking devices.
iii. Insulation inside housing.
iv. Anchoring devices for attaching housing to concrete base.

3. Electric heating cable or heater with self-limiting temperature control.

C. Precast concrete base of dimensions required to extend at least 6 inches (150 mm) beyond edges of enclosure housings. Include openings for piping.

2.17 FREESTANDING FIRE HYDRANTS:

A. Dry-Barrel, High-Pressure Fire Hydrants: AWWA C502, one NPS 4-1/2 (DN 115) and two NPS 2-1/2 (DN 65) outlets, 5-1/4 inch (133 mm) main valve, drain valve, and NPS 6 (DN 150) mechanical-joint inlet. Include interior coating according to AWWA C550. Hydrant shall have cast-iron body, compression-type valve opening against pressure and closing with pressure, and 250-psig (1725-kPa) minimum working-pressure design.

1. Available Manufacturers:

a. American AVK Co.; Valves & Fittings Div.
b. American Cast Iron Pipe Co.; American Flow Control Div.
c. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
d. American Foundry Group, Inc.
e. East Jordan Iron Works, Inc.
f. Grinnell Corporation; Mueller Co.; Water Products Div.
g. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
h. McWane, Inc.; Kennedy Valve Div.
i. McWane, Inc.; M & H Valve Company Div.
j. Troy Valve.
k. United States Pipe and Foundry Company.

2. Outlet Threads: NFPA 1963, with external hose thread used by local fire department. Include cast-iron caps with steel chains.

3. Operating and Cap Nuts: Pentagon, 1-1/2 inches (40 mm) point to flat.

4. Operation: Open hydrant valve by turning operating nut to left or counterclockwise.

5. Exterior Finish: Red alkyd-gloss enamel paint, unless otherwise indicated. Verify color requirements with jurisdiction having authority.

2.18 FIRE DEPARTMENT CONNECTIONS

A. Fire Department Connections:

1. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

a. Elkhart Brass Mfg. Co., Inc.
b. Fire End & Croker Corporation.
c. Guardian Fire Equipment, Inc.
d. Kidde Fire Fighting.
e. Potter Roemer.
f. Reliable Automatic Sprinkler Co., Inc.

2. Description: Freestanding, with cast-bronze body, thread inlets according to NFPA 1963 and matching local fire department hose threads, and threaded bottom outlet. Include lugged caps, gaskets, and chains; lugged swivel connection and drop clapper for each hose-connection inlet; 18-inch- (460-mm-) high brass sleeve; and round escutcheon plate.

a. Standard: UL 405.
b. Connections: Two NPS 2-1/2 (DN 65) inlets and one NPS 4 (DN 100) outlet.
c. Inlet Alignment: Inline, horizontal.
d. Finish Including Sleeve: Polished bronze.
e. Escutcheon Plate Marking: "AUTO SPKR."

2.19 ALARM DEVICES

A. Alarm Devices, General: UL 753 and FMG approved, of types and sizes to mate and match piping and equipment.

B. Supervisory Switches: Single pole, double throw; designed to signal valve in other than fully open position.

PART III EXECUTION

3.01 EARTHWORK:

A. Refer to Division 31 Section for excavating, trenching, and backfilling.

3.02 PIPING APPLICATIONS:

A. General: Use pipe, fittings, and joining methods for piping systems according to the following applications.

B. Transition couplings and special fittings with pressure ratings at least equal to piping pressure rating may be used in applications below, unless otherwise indicated.

C. Do not use flanges, unions, or keyed couplings for underground piping.

D. Flanges, unions, keyed couplings, and special fittings may be used, instead of joints indicated, on aboveground piping and piping in vaults.

E. Underground Water-Service Piping NPS ¾ to NPS 3. Use the following piping materials for each size range unless otherwise indicated on the drawings:

1. Soft copper tube, ASTM B 88, Type K (ASTM B 88M, Type A); wrought-copper, solder-joint fittings; and brazed joints; or

2. PVC, Schedule 40 pipe; PVC, Schedule 40 socket fittings; and solvent-cemented joints.

F. Underground water-service piping NPS 4 to NPS 8. Use the following piping materials for each size range unless otherwise indicated on the drawings:

1. Ductile-iron, push-on-joint pipe; ductile-iron, push-on-joint fittings; and gasketed mechanical-joint pipe; ductile-iron, mechanical-joint fittings; and mechanical joints; or

2. PVC, AWWA Class 200 pipe; mechanical-joint, ductile-iron fittings; and gasketed joints.

G. Water Meter Box Water-Service Piping NPS 3/4 to NPS 3 shall be same as underground water-service piping.

H. Underground Fire-Service-Main Piping NPS 4 to NPS 12. Use the following piping materials for each size range unless otherwise indicated on the drawings:

1. Ductile-iron, push-on-joint pipe; ductile-iron, push-on-joint fittings; and gasketed mechanical-joint pipe; ductile-iron, mechanical-joint fittings; and mechanical joints; or

2. PVC, AWWA Class 200 pipe listed for fire-protection service; mechanical-joint, ductile-iron fittings; and gasketed joints.

I. Underground Combined Water-Service and Fire-Service-Main Piping NPS 6 to NPS 12. Use the following piping materials for each size range unless otherwise indicated on the drawings:

1. Ductile-iron, push-on-joint pipe; ductile-iron, push-on-joint fittings; and gasketed mechanical-joint pipe; ductile-iron, mechanical-joint fittings; and mechanical joints.
2. PVC, AWWA Class 200 pipe listed for fire-protection service; mechanical-joint, ductile-iron fittings; and gasketed joints.

3.03 VALVE APPLICATIONS:

A. General Application: Use mechanical-joint-end valves for NPS 3 (DN 80) and larger underground installation. Use flanged-end valves for installation in vaults. Use UL/FM, nonrising-stem gate valves for installation with indicator posts. Use corporation valves and curb valves with ends compatible with piping, for NPS 2 (DN 50) and smaller installation.

B. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:

1. Underground Valves, NPS 3 (DN 80) and Larger: AWWA, cast-iron, nonrising-stem, resilient seated gate valves with valve box.

3.04 JOINT CONSTRUCTION:

A. Make pipe joints according to the following:

1. Ductile-Iron Piping, Gasketed Joints for Water-Service Piping: AWWA C600 and AWWA M41.
2. Ductile-Iron Piping, Gasketed Joints for Fire-Service-Main Piping: UL 194.
3. Copper Tubing Soldered Joints: ASTM B 828. Use flushable flux and lead-free solder.
4. PVC Piping Gasketed Joints: Use joining materials according to AWWA C900. Construct joints with elastomeric seals and lubricant according to ASTM D 2774 or ASTM D 3139 and pipe manufacturer's written instructions.

5. Dissimilar Materials Piping Joints: Use adapters compatible with both piping materials, with OD, and with system working pressure. Refer to Division 2 Section "Utility Materials" for joining piping of dissimilar metals.

3.05 PIPING INSTALLATION:

A. Water-Main Connection: Arrange with utility company for tap of size and in location indicated in water main.

B. Water-Main Connection: Tap water main according to requirements of water utility company and of size and in location indicated.

C. Make connections larger than NPS 2 (DN 50) with tapping machine according to the following:

1. Install tapping sleeve and tapping valve according to MSS SP-60.
2. Install tapping sleeve on pipe to be tapped. Position flanged outlet for gate valve.
3. Use tapping machine compatible with valve and tapping sleeve; cut hole in main. Remove tapping machine and connect water-service piping.
4. Install gate valve onto tapping sleeve. Comply with MSS SP-60. Install valve with stem pointing up and with valve box.

D. Make connections NPS 2 (DN 50) and smaller with drilling machine according to the following:

1. Install service-saddle assemblies and corporation valves in size, quantity, and arrangement required by utility company standards.
2. Install service-saddle assemblies on water-service pipe to be tapped. Position outlets for corporation valves.
3. Use drilling machine compatible with service-saddle assemblies and corporation valves. Drill hole in main. Remove drilling machine and connect water-service piping.
4. Install corporation valves into service-saddle assemblies.
5. Install manifold for multiple taps in water main.
6. Install curb valve in water-service piping with head pointing up and with service box.

E. Comply with NFPA 24 for fire-service-main piping materials and installation.

1. Install PE corrosion-protection encasement according to ASTM A 674 or AWWA C105.

F. Install ductile-iron, water-service piping according to AWWA C600 and AWWA M41.

1. Install PE corrosion-protection encasement according to ASTM A 674 or AWWA C105.

G. Install copper tube and fittings according to CDA’s "Copper Tube Handbook."

H. Install PVC, AWWA pipe according to AWWA M23 and ASTM F 645.

I. Unless otherwise indicated on drawings, bury piping with depth of cover over top at least 36 inches, with top at least 12 inches below level of maximum frost penetration, and according to the following:

1. Under Driveways and Roads: With at least 36 inches cover over top.
2. Under Railroad Tracks: With at least 48 inches cover over top.
3. In Loose Gravelly Soil and Rock: With at least 12 inches additional cover.
4. Under Roads: With at least 36 inches cover over top.

J. Install piping by tunneling, jacking, or combination of both, under streets and other obstructions that cannot be disturbed.

K. Extend water-service piping and connect to water-supply source and building water piping systems at outside face of building wall in locations and pipe sizes indicated.

1. Terminate water-service piping at building wall until building water piping systems are installed. Terminate piping with caps, plugs, or flanges as required for piping material. Make connections to building water piping systems when those systems are installed.

L. Sleeves and mechanical sleeve seals are specified elsewhere.

M. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and other supports.

N. Anchor service-entry piping to building wall.

O. See Division 22 sections for potable-water piping inside the building.

P. See Division 21 sections for fire-suppression water piping inside the building.

Q. Install water-supply piping with shutoff valve in water supply to each and any post hydrant and drinking fountain indicated. Use curb valve and service box.

R. Install trap below frost line on drain outlet of each and any drinking fountain indicated.

3.06 ANCHORAGE INSTALLATION:

A. Install anchorages for tees, plugs and caps, bends, crosses, valves, and hydrant branches. Include anchorages for the following piping systems:

1. Gasketed-Joint, Ductile-Iron, Water-Service Piping: According to AWWA C600.
2. Gasketed-Joint, PVC Water-Service Piping: According to AWWA M23.

B. Apply full coat of asphalt or other acceptable corrosion-resistant material to surfaces of installed ferrous anchorage devices.

3.07 VALVE INSTALLATION:

A. AWWA Gate Valves: Comply with AWWA C600 and AWWA M44. Install each underground valve with stem pointing up and with valve box.

B. Corporation Valves and Curb Valves: Install each underground curb valve with head pointed up and with service box.

3.08 WATER-METER INSTALLATION:

A. Install water meters, piping, and specialties according to utility company's written requirements.

B. Water Meters: Install displacement-type water meters, NPS 2 (DN 50) and smaller, in meter boxes with shutoff valves on water-meter inlets. Include valves on water-meter outlets and valved bypass around meters unless prohibited by authorities having jurisdiction.

3.09 ROUGHING-IN FOR WATER METERS:

A. Rough-in piping and specialties for water-meter installation according to utility company's written instructions and requirements.

3.10 BACKFLOW-PREVENTER INSTALLATION:

A. Install backflow preventers of type, size, and capacity indicated. Include valves and test cocks. Install according to requirements of plumbing and health department and authorities having jurisdiction.

B. Do not install backflow preventers with relief drain in vault or other space subject to flooding.

C. Do not install bypass piping around backflow preventers.

D. Support NPS 2-1/2 (DN 65) and larger backflow preventers, valves, and piping near floor and on brick or concrete piers.

3.11 VAULT CONSTRUCTION /INSTALLATION:

A. See Section 03 30 00 "Concrete Work" for concrete vaults.

B. Install precast concrete vaults according to ASTM C 891.

C. Connect drain outlet to storm drainage piping. Refer to Division 33 41 00 for Storm Drainage

3.12 PROTECTIVE ENCLOSURE INSTALLATION:

A. Install concrete base level and with top approximately 2 inches (50 mm) above grade.

B. Install protective enclosure over valves and equipment.

C. Anchor protective enclosure to concrete base.

3.13 FIRE HYDRANT INSTALLATION:

A. General: Install each fire hydrant with separate gate valve in supply pipe, anchor with restrained joints or thrust blocks, and support in upright position.

B. AWWA-Type Fire Hydrants: Comply with AWWA M17.

3.14 POST HYDRANT INSTALLATION:

A. Install post hydrants in pavement or with concrete anchor.

3.15 FIRE DEPARTMENT CONNECTION INSTALLATION

A. Install ball drip valves at each check valve for fire department connection to mains.

B. Install protective pipe bollards on two sides of each fire department connection. Pipe bollards are specified in Division 05 Section "Metal Fabrications."

3.16 ALARM DEVICE INSTALLATION

A. General: Comply with NFPA 24 for devices and methods of valve supervision. Underground valves with valve box do not require supervision.

B. Supervisory Switches: Supervise valves in open position.

1. Valves: Grind away portion of exposed valve stem. Bolt switch, with plunger in stem depression, to OS&Y gate-valve yoke.
2. Indicator Posts: Drill and thread hole in upper-barrel section at target plate. Install switch, with toggle against target plate, on barrel of indicator post.

C. Locking and Sealing: Secure unsupervised valves as follows:

1. Valves: Install chain and padlock on open OS&Y gate valve.

2. Post Indicators: Install padlock on wrench on indicator post.

D. Pressure Switches: Drill and thread hole in exposed barrel of fire hydrant. Install switch.

E. Connect alarm devices to building fire alarm system. Wiring and fire-alarm devices are specified in Division 28 Section "Fire Detection and Alarm."

3.17 CONNECTIONS:

A. Piping installation requirements are specified in other Sections. Drawings indicate general arrangement of piping and specialties.

B. See Plumbing Sections for piping connections to valves and equipment.

C. Connect water-distribution piping to utility water main. Use tapping sleeve and tapping valve or to local utility specifications.

D. Connect water-distribution piping to interior domestic-water and fire-suppression piping.

E. Connect waste piping from drinking fountains to sanitary sewerage system. See Section 33 30 00 "Sanitary Sewerage" for connection to sanitary-sewer piping.

F. Ground equipment according to Division 26 requirements for Grounding.

G. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.18 FIELD QUALITY CONTROL:

A. Piping Tests: Conduct piping tests before joints are covered and after thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.

B. Hydrostatic Tests: Test at not less than 1-1/2 times working pressure for 2 hours.

1. Increase pressure in 50-psig (350-kPa) increments and inspect each joint between increments. Hold at test pressure for 1 hour; decrease to 0 psig (0 kPa). Slowly increase again to test pressure and hold for 1 more hour. Maximum allowable leakage is 2 quarts (1.89 L) per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within allowed limits.

C. Prepare reports of testing activities.

3.19 IDENTIFICATION:

A. Install continuous underground detectable warning tape during backfilling of trench for underground water-service piping. Locate below finished grade, directly over piping. See Earthwork Section for underground warning tapes.

B. Permanently attach equipment nameplate or marker, indicating plastic water-service piping, on main electrical meter panel. See Plumbing Specifications for additional identification requirements.

3.20 CLEANING:

A. Clean and disinfect water-distribution piping as follows:

1. Purge new water-distribution piping systems and parts of existing systems that have been altered, extended, or repaired before use.

2. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in NFPA 24 for flushing of piping. Flush piping system with clean, potable water until dirty water does not appear at points of outlet.

3. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in AWWA C651 or as described below:

    a. Fill system or part of system with water/chlorine solution containing at least 50 ppm of chlorine; isolate and allow to stand for 24 hours.
    b. Drain system or part of system of previous solution and refill with water/chlorine solution containing at least 200 ppm of chlorine; isolate and allow to stand for 3 hours.
    c. After standing time, flush system with clean, potable water until no chlorine remains in water coming from system.
    d. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedure if biological examination shows evidence of contamination.

B. Prepare reports of purging and disinfecting activities.

C. After completing drinking fountain installation, inspect unit. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish. Clean drinking fountains, on completion of installation, according to manufacturer's written instructions.

End of Section

SECTION 33 30 00 – SANITARY SEWERAGE

PART I GENERAL

1.01 SUMMARY:

A. This Section includes sanitary sewerage outside the building.

1.02 RELATED DOCUMENTS:

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

Division 22 Plumbing
Section 03 30 00 Concrete Work

1.03 DEFINITIONS:

A. ABS: Acrylonitrile-butadiene-styrene plastic.

B. EPDM: Ethylene-propylene-diene-monomer rubber.

C. PE: Polyethylene plastic.

D. PVC: Polyvinyl chloride plastic.

1.04 PERFORMANCE REQUIREMENTS:

A. Gravity-Flow, Nonpressure-Piping Pressure Ratings: At least equal to system test pressure.

B. Force-Main Pressure Ratings: At least equal to system operating pressure, but not less than 150 psig.

1.05 SUBMITTALS:

A. Product Data: For the following:

1. Stainless-steel drainage systems.
2. Backwater valves and cleanouts.
3. Manhole cover inserts.

B. Shop Drawings: Include plans, elevations, details, and attachments for the following:

1. Precast concrete manholes, including frames and covers.
2. Cast-in-place concrete manholes and other structures, including frames and covers.

C. Coordination Drawings: Show manholes and other structures, pipe sizes, locations, and elevations. Include details of underground structures and connections. Show other piping in same trench and clearances from sewerage system piping. Indicate interface and spatial relationship between piping and proximate structures.

D. Coordination Profile Drawings: Show system piping in elevation. Draw profiles at horizontal scale of not less than 1 inch equals 50 feet and vertical scale of not less than 1 inch equals 5 feet. Indicate underground structures and pipe. Show types, sizes, materials, and elevations of other utilities crossing system piping.

E. Design Mix Reports and Calculations: For each class of cast-in-place concrete.

F. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.

1.06 DELIVERY, STORAGE, AND HANDLING:

A. Do not store plastic structures, pipe, and fittings in direct sunlight.

B. Protect pipe, pipe fittings, and seals from dirt and damage.

C. Handle precast concrete manholes and other structures according to manufacturer's written rigging instructions.

1.07 PROJECT CONDITIONS:

A. Site Information: Perform site survey, research public utility records, and verify existing utility locations.

B. Locate existing structures and piping to be closed and abandoned.

C. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Architect not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Architect's written permission.

PART II PRODUCTS

2.01 MANUFACTURERS:

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

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

1. Stainless-Steel Drainage Systems:

   a. Josam Co.; Blucher-Josam Div.

2. Gray-Iron Backwater Valves and Cleanouts:

   a. Josam Co.
   b. McWane, Inc.; Tyler Pipe; Wade Div.
   c. Smith: Jay R. Smith Mfg. Co.
   d. Watts Industries, Inc.; Ancon Drain Div.
   e. Watts Industries, Inc.; Enpoco, Inc. Div.
   f. Zurn Industries, Inc.; Hydromechanics Div.

3. PVC Backwater Valves and Cleanouts:

   a. Canplas, Inc.
   b. IPS Corp.
   c. NDS, Inc.
   d. Plastic Oddities, Inc.
   e. Sioux Chief Manufacturing Co., Inc.

4. Manhole Cover Inserts:

a. FRW Industries, Inc.
b. Knutson Manufacturing Co.
c. Parson Environmental Products, Inc.

2.02 PIPING MATERIALS:

A. Ductile-Iron Sewer Pipe: ASTM A 746, for push-on joints.

1. Compact-Pattern, Ductile-Iron Fittings: AWWA C153, for push-on joints.
2. Gaskets: AWWA C111, rubber.

B. PVC Sewer Pipe and Fittings: According to the following:

1. PVC Sewer Pipe and Fittings, NPS 15 and Smaller: ASTM D 3034, SDR 35, for solvent-cemented or gasketed joints.

a. Gaskets: ASTM F 477, elastomeric seals.

2.03 SPECIAL PIPE COUPLINGS AND FITTINGS:

A. Sleeve-Type Pipe Couplings: ASTM C 1173, rubber or elastomeric sleeve and band assembly fabricated to mate with OD of pipes to be joined, for nonpressure joints.

1. Sleeve Material for Concrete Pipe: ASTM C 443, rubber.
2. Sleeve Material for Cast-Iron Soil Pipe: ASTM C 564, rubber.
3. Sleeve Material for Plastic Pipe: ASTM F 477, elastomeric seal.
4. Sleeve Material for Dissimilar Pipe: Compatible with pipe materials being joined.
5. Bands: Stainless steel, at least one at each pipe insert.

B. Bushing-Type Pipe Couplings: ASTM C 1173, rubber or elastomeric bushing fabricated to mate with OD of smaller pipe and ID of adjoining larger pipe, for nonpressure joints.

1. Material for Concrete Pipe: ASTM C 443 , rubber.
2. Material for Cast-Iron Soil Pipe: ASTM C 564, rubber.
3. Material for Plastic Pipe: ASTM F 477, elastomeric seal.
4. Material for Dissimilar Pipe: Compatible with pipe materials being joined.

C. Pressure-Type Pipe Couplings: AWWA C219, iron-body sleeve assembly matching OD of pipes to be joined, with AWWA C111 rubber gaskets, bolts, and nuts. Include PE film, pipe encasement.

D. Ductile-Iron Expansion Joints: Three-piece assembly of telescoping sleeve with gaskets and restrained-type, ductile-iron, bell-and-spigot end sections complying with AWWA C110 or AWWA C153. Include rating for 250 psig minimum working pressure and for expansion indicated. Include PE film, pipe encasement.

2.04 PE FILM, PIPE ENCASEMENT:

A. ASTM A 674 or AWWA C105; PE film, tube, or sheet; 8 mil thickness.

2.05 MANHOLES:

A. Normal-Traffic Precast Concrete Manholes: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for rubber gasketed joints.

1. Diameter: 48 inches minimum, unless otherwise indicated.
2. Ballast: Increase thickness of precast concrete sections or add concrete to base section, as required to prevent flotation.

3. Base Section: 6 inch minimum thickness for floor slab and 4 inch minimum thickness for walls and base riser section, and having separate base slab or base section with integral floor.
4. Riser Sections: 4 inch minimum thickness, and lengths to provide depth indicated.
5. Top Section: Eccentric-cone type, unless concentric-cone or flat-slab-top type is indicated. Top of cone of size that matches grade rings.
6. Gaskets: ASTM C 443 , rubber.
7. Grade Rings: Include two or three reinforced-concrete rings, of 6 to 9 inch total thickness, that match 24 inch diameter frame and cover.
8. Steps: Fiberglass, individual steps or ladder. Include width that allows worker to place both feet on one step and is designed to prevent lateral slippage off step. Cast or anchor into base, riser, and top section sidewalls with steps at 12 to 16 inch intervals. Omit steps for manholes less than 60 inches deep.
9. Steps: ASTM C 478 (ASTM C 478M), individual steps or ladder. Omit steps for manholes less than 60 inches (1500 mm) deep.
10. Pipe Connectors: ASTM C 923 , resilient, of size required, for each pipe connecting to base section.

B. Cast-in-Place Concrete Manholes: Construct of reinforced-concrete bottom, walls, and top; designed according to ASTM C 890 for A-16, heavy-traffic, structural loading; of depth, shape, dimensions, and appurtenances indicated.

1. Ballast: Increase thickness of concrete, as required to prevent flotation.
2. Grade Rings: Include two or three reinforced-concrete rings, of 6 to 9 inch (150 to 229 mm) total thickness, that match 24 inch (610 mm) diameter frame and cover.
3. Steps: Fiberglass, individual steps or ladder. Include width that allows worker to place both feet on one step and is designed to prevent lateral slippage off step. Cast or anchor into sidewalls with steps at 12 to 16 inch intervals. Omit steps for manholes less than 60 inches deep.
4. Steps: Manufactured from deformed, 1/2 inch (13 mm) steel reinforcement rod complying with ASTM A 615/A 615M and encased in polypropylene complying with ASTM D 4101. Include pattern designed to prevent lateral slippage off step. Cast or anchor into sidewalls with steps at 12 to 16 inch (300 to 400 mm) intervals. Omit steps for manholes less than 60 inches (1,500 mm) deep.

C. Manhole Frames and Covers: ASTM A 536, Grade 60-40-18, ductile-iron castings designed for heavy-duty service. Include 24 inch ID by 7 to 9 inch riser with 4 inch minimum width flange, and 26 inch diameter cover. Include indented top design with lettering "SANITARY SEWER" cast into cover.

D. Manhole Cover Inserts: Manufactured, plastic form, of size to fit between manhole frame and cover and designed to prevent stormwater inflow. Include handle for removal and gasket for gastight sealing.

1. Type: Solid.
2. Type: With drainage and vent holes.
3. Type: With valve.

2.06 CONCRETE:

A. General: Cast-in-place concrete according to ACI 318, ACI 350R, and the following:

1. Cement: ASTM C 150, Type II.
2. Fine Aggregate: ASTM C 33, sand.
3. Coarse Aggregate: ASTM C 33, crushed gravel.
4. Water: Potable.

B. Portland Cement Design Mix: 4,000 psi minimum, with 0.45 maximum water-cementitious materials ratio.

1. Reinforcement Fabric: ASTM A 185, steel, welded wire fabric, plain.
2. Reinforcement Bars: ASTM A 615/A 615M, Grade 60 , deformed steel.

C. Structure Channels and Benches: Factory or field formed from concrete. Portland cement design mix, 4,000 psi minimum, with 0.45 maximum water-cementitious materials ratio. Include channels and benches in manholes.

1. Channels: Concrete invert, formed to same width as connected piping, with height of vertical sides to three-fourths of pipe diameter. Form curved channels with smooth, uniform radius and slope.

   a. Invert Slope: 2 percent through manhole.

2. Benches: Concrete, sloped to drain into channel.

   a. Slope: 4 percent.

D. Ballast and Pipe Supports: Portland cement design mix, 3,000 psi minimum, with 0.58 maximum water-cementitious materials ratio.

1. Reinforcement Fabric: ASTM A 185, steel, welded wire fabric, plain.
2. Reinforcement Bars: ASTM A 615/A 615M, Grade 60, deformed steel.

2.07 PROTECTIVE COATINGS:

A. Description: One- or two-coat, coal-tar epoxy; 15 mil minimum thickness, unless otherwise indicated; factory or field applied to the following surfaces:

1. Concrete Manholes: On interior surface.
2. Manhole Frames and Covers: On surfaces that will be exposed to sewer gases.

2.08 CLEANOUTS:

A. Gray-Iron Cleanouts: ASME A112.36.2M, round, gray-iron housing with clamping device and round, secured, scoriated, gray-iron cover. Include gray-iron ferrule with inside caulk or spigot connection and countersunk, tapered-thread, brass closure plug. Use units with top-loading classifications according to the following applications:

1. Light Duty: In earth or grass foot-traffic areas.
2. Medium Duty: In paved foot-traffic areas.
3. Heavy Duty: In vehicle-traffic service areas.
4. Extra-Heavy Duty: In roads.
5. Sewer Pipe Fitting and Riser to Cleanout: ASTM A 74, Service class, cast-iron soil pipe and fittings.

B. PVC Cleanouts: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping.

PART III EXECUTION

3.01 EARTHWORK:

A. Excavating, trenching, and backfilling are specified in Division 31 Section "Earthwork."

3.02 IDENTIFICATION:

A. Materials and their installation are specified in Division 31 Section "Earthwork." Arrange for installing green warning tapes directly over piping and at outside edges of underground structures.

1. Use warning tape or detectable warning tape over ferrous piping.
2. Use detectable warning tape over nonferrous piping and over edges of underground structures.

3.03 PIPING APPLICATIONS:

A. General: Include watertight joints.

B. Refer to Part 2 of this Section for detailed specifications for pipe and fitting products listed below. Use pipe, fittings, and joining methods according to applications indicated.

C. Gravity-Flow Piping: Use the following:

1. NPS 3: Ductile-iron sewer pipe; standard-pattern, ductile-iron fittings; gaskets; and gasketed joints, unless otherwise indicated on the drawings.

2. NPS 4 and NPS 6: Ductile-iron sewer pipe; standard-pattern, ductile-iron fittings; gaskets; and gasketed joints, unless otherwise indicated on the drawings.

3. NPS 4 and NPS 6: ABS, SDR 35, sewer pipe and fittings; gaskets and gasketed joints, only where indicated on the drawings.

4. NPS 8 and NPS 10: Ductile-iron sewer pipe; standard-pattern, ductile-iron fittings; gaskets; and gasketed joints, unless otherwise indicated on the drawings.

5. NPS 8 and NPS 10 (DN200 and DN250): PVC sewer pipe and fittings, gaskets and gasketed joints, only where indicated on the drawings.

6. NPS 12 to NPS 16 (DN300 to DN400): Ductile-iron sewer pipe, standard-pattern, ductile-iron fittings, gaskets; d gasketed joints, unless otherwise indicated on the drawings.

7. NPS 12 and NPS 15: PVC sewer pipe and fittings, gaskets and gasketed joints, only where indicated on the drawings.

8. Pipe Sizes NPS 18 to NPS 24 (DN450 to DN600): Ductile-iron sewer pipe; standard-pattern, ductile-iron fittings; gaskets; and gasketed joints.

3.04 SPECIAL PIPE COUPLING AND FITTING APPLICATIONS:

A. Special Pipe Couplings: Use where required to join piping and no other appropriate method is specified. Do not use instead of specified joining methods.

1. Use the following pipe couplings for nonpressure applications:

a. Sleeve type to join piping, of same size, or with small difference in OD.
b. Increaser/reducer-pattern, sleeve type to join piping of different sizes.
c. Bushing type to join piping of different sizes where annular space between smaller piping's OD and larger piping's ID permits installation.

2. Use pressure-type pipe couplings for force-main joints. Include PE film, pipe encasement.

B. Special Pipe Fittings: Use where indicated. Include PE film, pipe encasement.

3.05 INSTALLATION, GENERAL:

A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground sanitary sewerage piping. Location and arrangement of piping layout take design considerations into account. Install piping as indicated, to extent practical.

B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for using lubricants, cements, and other installation requirements. Maintain swab or drag in line, and pull past each joint as it is completed.

C. Use manholes for changes in direction, unless fittings are indicated. Use fittings for branch connections, unless direct tap into existing sewer is indicated.

D. Use proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.

E. Install gravity-flow piping and connect to building's sanitary drains, of sizes and in locations indicated. Terminate piping as indicated.

1. Install piping pitched down in direction of flow, at minimum slope of 2 percent, unless otherwise indicated.
2. Install piping with 36 inch minimum cover, unless otherwise indicated on the drawings.

F. Extend sanitary sewerage piping and connect to building's sanitary drains, of sizes and in locations indicated. Terminate piping as indicated.

3.06 PIPE JOINT CONSTRUCTION AND INSTALLATION:

A. General: Join and install pipe and fittings according to installations indicated.

B. Refer to Division 2 Section "Utility Materials" for basic piping joint construction and installation.

C. Ductile-Iron Sewer Pipe with Ductile-Iron Fittings: According to AWWA C600.

1. Install PE film, pipe encasement over ductile-iron sewer pipe and ductile-iron fittings according to ASTM A 674 or AWWA C105.

D. PVC Sewer Pipe and Fittings: As follows:

1. Join pipe and gasketed fittings with gaskets according to ASTM D 2321.
2. Join profile sewer pipe fittings with gaskets according to ASTM D 2321 and manufacturer's written instructions.
3. Install according to ASTM D 2321.

E. System Piping Joints: Make joints using system manufacturer's couplings, unless otherwise indicated.

F. Join piping made of different materials or dimensions with couplings made for this application. Use couplings that are compatible with and that fit both systems' materials and dimensions.

G. Install with top surfaces of components, except piping, flush with finished surface.

3.07 MANHOLE INSTALLATION:

A. General: Install manholes, complete with appurtenances and accessories indicated.

B. Form continuous concrete channels and benches between inlets and outlet.

C. Set tops of frames and covers flush with finished surface of manholes that occur in pavements. Set tops 3 inches above finished surface elsewhere, unless otherwise indicated.

D. Install precast concrete manhole sections with gaskets according to ASTM C 891.

E. Construct cast-in-place manholes as indicated.

3.08 CONCRETE PLACEMENT:

A. Place cast-in-place concrete according to ACI 318 and ACI 350R.

3.09 CLEANOUT INSTALLATION:

A. Install cleanouts and riser extension from sewer pipe to cleanout at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts and cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.

B. Set cleanout frames and covers in earth in cast-in-place concrete block, 18 x 18 x 12 inches deep. Set with tops 1 inch above surrounding grade.

C. Set cleanout frames and covers in concrete pavement with tops flush with pavement surface.

3.10 TAP CONNECTIONS:

A. Make connections to existing piping and underground structures so finished Work complies as nearly as practical with requirements specified for new Work.

B. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe; install wye fitting into existing piping; and encase entire wye fitting, plus 6 inch overlap, with not less than 6 inches of concrete with 28 day compressive strength of 3,000 psi .

C. Make branch connections from side into existing piping, NPS 4 to NPS 20 . Remove section of existing pipe; install wye fitting into existing piping; and encase entire wye with not less than 6 inches of concrete with 28 day compressive strength of 3,000 psi .

D. Make branch connections from side into existing piping, NPS 21 or larger, or to underground structures by cutting opening into existing unit large enough to allow 3 inches of concrete to be packed around entering connection. Cut end of connection pipe passing through pipe or structure wall to conform to shape of and be flush with inside wall, unless otherwise indicated. On outside of pipe or structure wall, encase entering connection in 6 inches of concrete for minimum length of 12 inches to provide additional support of collar from connection to undisturbed ground.

1. Use concrete that will attain minimum 28 day compressive strength of 3,000 psi, unless otherwise indicated.
2. Use epoxy-bonding compound as interface between new and existing concrete and piping materials.

E. Protect existing piping and structures to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.

3.11 CLOSING ABANDONED SANITARY SEWERAGE SYSTEMS:

A. Abandoned Piping: Close open ends of abandoned underground piping indicated to remain in place. Include closures strong enough to withstand hydrostatic and earth pressures that may result after ends of abandoned piping have been closed. Use either procedure below:

1. Close open ends of piping with at least 8 inch- thick, brick masonry bulkheads.
2. Close open ends of piping with threaded metal caps, plastic plugs, or other acceptable methods suitable for size and type of material being closed. Do not use wood plugs.

B. Abandoned Structures: Excavate around structure as required and use one procedure below:

1. Remove structure and close open ends of remaining piping.
2. Remove top of structure down to at least 36 inches below final grade. Fill to within 12 inches of top with stone, rubble, gravel, or compacted dirt. Fill to top with concrete.
3. Backfill to grade according to Division 2 Section "Earthwork."

3.12 FIELD QUALITY CONTROL:

A. Clear interior of piping and structures of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed.

1. Place plug in end of incomplete piping at end of day and when work stops.
2. Flush piping between manholes and other structures to remove collected debris, if required by authorities having jurisdiction.

B. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.

1. Submit separate reports for each system inspection.

2. Defects requiring correction include the following:

a. Alignment: Less than full diameter of inside of pipe is visible between structures.
b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
c. Crushed, broken, cracked, or otherwise damaged piping.
d. Infiltration: Water leakage into piping.
e. Exfiltration: Water leakage from or around piping.

3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.

4. Reinspect and repeat procedure until results are satisfactory.

C. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.

1. Do not enclose, cover, or put into service before inspection and approval.

2. Test completed piping systems according to authorities having jurisdiction.

3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.

4. Submit separate reports for each test.

5. If authorities having jurisdiction do not have published procedures, perform tests as follows:

a. Sanitary Sewerage: Perform hydrostatic test.

i. Allowable leakage is maximum of 50 gal. per inch of nominal pipe size per mile of pipe, during 24 hour period.
ii. Close openings in system and fill with water.
iii. Purge air and refill with water.
iv. Disconnect water supply.
v. Test and inspect joints for leaks.

vi. Option: Test ductile-iron piping according to AWWA C600, Section "Hydrostatic Testing." Use test pressure of at least 10 psig .

b. Sanitary Sewerage: Perform air test according to UNI-B-6.

c. Option: Test concrete piping according to ASTM C 924 .

d. Force Main: Perform hydrostatic test after thrust blocks, supports, and anchors have hardened. Test at pressure not less than one and one-half times maximum system operating pressure, but not less than 150 psig (1,035 kPa).

i. Ductile-Iron Piping: Test according to AWWA C600, Section "Hydraulic Testing."
ii. PVC Piping: Test according to AWWA M23, "Testing and Maintenance" Chapter.

6. Manholes: Perform hydraulic test according to ASTM C 969 (ASTM C 969M).

7. Leaks and loss in test pressure constitute defects that must be repaired.

8. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

End of Section