PROJECT SPECIFICATIONS

FOR:

ADVENTURE AQUARIUM
KALEIDOSCOPE COVE

1 Riverside Drive
Camden, New Jersey 08103

PREPARED FOR

HERSCHEND FAMILY ENTERTAINMENT
5445 Triangle Parkway, Suite 200
Peachtree Corners, Georgia 30092

PREPARED BY

BACH Associates, PC
ENGINEERS • ARCHITECTS • PLANNERS

304 White Horse Pike, Haddon Heights, NJ 08035
(856) 546-8611 • Fax (856) 546-8612

December 16, 2024

Steven M. Bach, PE, RA, PP, CME
NJ Registered Architect No. AI 14872
Bach Project No. 2856-3

PROJECT DIRECTORY

OWNER

Herschend Family Entertainment
5445 Triangle Parkway, Suite 200
Peachtree Corners, Georgia 30092
Telephone: (770) 441-1940

ARCHITECT

Bach Associates, PC
304 White Horse Pike
Haddon Heights, New Jersey 08035
Telephone: (856) 546-8611
Fax: (856) 546-8612

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NOTICE TO BIDDERS

NOTICE IS HEREBY GIVEN that sealed bids will be received by **Bach Associates, PC** for the **Adventure Aquarium, Kaleidoscope Cove,** in **Camden, Camden County, New Jersey**.

Bid forms, contracts and specifications are on file at the office of Bach Associates, PC, 304 White Horse Pike, Haddon Heights, New Jersey 08035.

> Said Bids will be received, opened and read aloud in public in the first floor conference room at the office of **Bach Associates, PC, 304 White Horse Pike, Haddon Heights, New Jersey 08035** on **Friday, January 17, 2025 at 10:00 AM** prevailing time.

A site visit is scheduled for **Thursday, December 19, 2024 at 10:15 AM** prevailing time in the main lobby of the Adventure Aquarium, located at 1 Riverside Drive, Camden, New Jersey 08103. Visitors may enter through the service lot. This site visit is not mandatory but is highly recommended.

Deadline for submission of bidder questions to Bach Associates is 4:00 PM on Thursday, January 2, 2025.

Project must be substantially completed by May 8, 2025, and must be fully completed by May 23, 2025.

Bid forms, contracts and specifications can be reviewed at no charge at the office of Bach Associates PC, 304 White Horse Pike, Haddon Heights, NJ 08035. Copies of the bid forms, contracts and specifications may be purchased from Bach Associates, PC, by prospective bidders upon request, upon payment of the sum of $50.00 (nonrefundable) for each set, payable to Bach Associates, PC. If shipping of Bid Documents is requested, bidders shall provide a direct shipping account number and provide a $25.00 (nonrefundable) fee for postage and handling. Digital copies of the bid forms, contracts and specifications maybe requested by emailing Bids@bachdesigngroup.com, provide **Adventure Aquarium Kaleidoscope Cove** in the subject line.

PAYMENT MUST BE RECEIVED PRIOR TO OBTAINING SAID SPECIFICATIONS, EITHER BY MAIL OR IN PERSON.

NO BIDS ARE TO BE DROPPED OFF AT ADVENTURE AQUARIUM.

Herschend Family Entertainment reserves the right to consider the bids for sixty (60) days after the receipt thereof, during which time no bids may be withdrawn, and further reserves the right to reject any or all bids, either in whole or in part and also to waive any informality and make such awards or take action as may be in the best interest of Herschend Family Entertainment**.**

Bids must be on the bid form prepared by Bach Associates, PC, in the manner designated therein and required by the specifications, must be enclosed in sealed envelopes bearing the name and address of the bidder on the outside and also bearing on the outside reference to the particular work bid upon. Said bids shall be addressed to **Mr. Dirk Muits III, AIA, NCARB, Bach Associates, PC, 304 White Horse Pike, Haddon Heights, New Jersey 08035.**

Each bid shall be accompanied by a certified check, cashier's check or bid bond duly executed by the bidder as principal and having as surety thereon a surety company approved by Herschend Family Entertainment in an amount not less than ten percent (10%) but in no case in excess of $20,000.00 of the amount bid, naming as payee or obligee, as applicable, Herschend Family Entertainment to be applied in the event that the bidder would default on the bid or in providing the required bonds and insurance certificates. Any such bid bond shall be without endorsement or conditions. Bid shall also be accompanied by a certificate letter from a surety company stating that it will provide the bidder with the completion bond.

The award of the contract shall be made subject to the necessary moneys to do the work being provided by Herschend Family Entertainment in a lawful manner. The contract to be executed by the successful bidder will provide that it shall not become effective until the necessary moneys to do the work have been provided by Herschend Family Entertainment in a lawful manner. The award shall further be subjected to the securing of necessary State, Federal or Local permits governing the work.

The contractor is further notified that he must submit a Disclosure Statement listing stockholders with his bid.

The contractor is also further notified that he must submit proof of business registration and submit proof of business registration for any named subcontractor's in accordance with the act.

This contract is subject to the provisions of P.L. 1975, Chapter 127, NJAC 17:27 Laws Against Discrimination.

The right is reserved to reject any or all proposals, in whole or in part, or to make awards to such bidder or bidders who, in the judgment of Herschend Family Entertainment, is the lowest responsible bidder and to waive such informalities as may be permitted by law.

By Order of Herschend Family Entertainment

Dated: December 16, 2024

ADVENTURE AQUARIUM
KALEIDOSCOPE COVE
1 RIVERSIDE DRIVE, CAMDEN, NEW JERSEY 08103

DATE December 16, 2024

Bid No. and Title: Adventure Aquarium, Kaleidoscope Cove

BIDS MUST BE RETURNED NO LATER THAN 10 O'CLOCK AM, PREVAILING TIME

ON FRIDAY, JANUARY 17, 2025 TO BACH ASSOCIATES, PC, 304 WHITE HORSE PIKE, HADDON HEIGHTS, NEW JERSEY 08035.

1. PRICES MUST INCLUDE DELIVERIES TO ALL SITES SET FORTH HEREIN.

2. Quotations must be made on these sheets. Herschend Family Entertainment and/or Adventure Aquarium is not responsible for any expenses incurred by any firm in preparing or submitting a bid proposal.

3. Prices may be submitted on any or all of the items listed unless otherwise specified. Award will be made on the basis of the lowest responsible bid on each item or on an aggregate basis, whichever is in the best interest of Herschend Family Entertainment.

4. Bids must be firm for a minimum of 60 days. Contract prices may not be increased during the term of the contract.

5. Herschend Family Entertainment is not exempt from sales tax.

6 Herschend Family Entertainment reserves the right to accept or reject any part or parts of the responses to this bid in accordance with law.

7. To the extent that any of these instructions directly contradict the bid specifications, the bid specifications shall prevail.

8. Regardless of any language to the contrary, Herschend Family Entertainment shall not be responsible for the payment of any interest or late fees.

9. Copies of the bid documents may be obtained at the office of the Architect / Engineer, Bach Associates, 304 White Horse Pike, Haddon Heights, New Jersey 08035, upon payment of Fifty ($50.00), which is non-refundable, for each set thereof issued to any one prospective bidder. Payment for copies of the plans and specifications must be made by check or money order made payable to Bach Associates, PC. If Shipping of Bid Documents is required, bidders may provide their direct shipping account number to Bach Associates, PC or include a non-refundable $25.00 mailing fee. Digital copies of the bid forms, contracts and specifications maybe requested by emailing Bids@bachdesigngroup.com,

provide **Adventure Aquarium Kaleidoscope Cove** in the subject line.

All questions shall be submitted in writing to the office of the Architect / Engineer, Bach Associates, PC, 304 White Horse Pike, Haddon Heights, New Jersey to the attention of:

Dirk Muits, III, AIA
Vice President of Architecture
Tel: (856) 5456-8611
Fax: (856) 546-8611

All addenda are issued by the Architect / Engineer. Potential bidders are cautioned that they are bidding at their own risk if a third party supplied the bid specifications. Such specifications may or may not be complete. Herschend Family Entertainment is not responsible for third party supplied bid specifications.

10. Bidders are hereby noticed that Herschend Family Entertainment shall correct certain types of clerical errors if found in submitted bids. For example, if the quantity needed or the standard unit of measurement used, times the unit price, is incorrectly calculated in reaching a total or final price, Herschend Family Entertainment will correct the computational mistake.

WE SUBMIT HEREWITH our prices as indicated on the following bid.

Submitted on_____, 20_____ BY_____
(Name of Company)

Fax No._____ PER_____
(Signature and Title of
Authorized Representative)

E-Mail: _____ Phone No._____

BIDDER'S CHECKLIST

THIS BIDDER'S CHECKLIST MUST BE COMPLETED, SIGNED AND SUBMITTED WITH YOUR BID PACKAGE.

1. Bid Guarantee deposit in the form of a certified check, cashier's check or bid bond. See Paragraph 4.1 and **Exhibit A**. (Must be submitted with bid) _____

2. Certificate from a Surety Company or Financial Institution stating that if bid is accepted they will provide the required performance bond or Letter of Credit. See Paragraphs 4.2, 8.1 and 8.2, and **Exhibits B, C, and D**. (Must be submitted with bid) _____

3. Statement of Corporate Ownership listing the names and addresses of all individuals owning ten percent (10%) or more of corporation or partnership stock. See **Exhibit E**. (Must be submitted prior to or with bid) _____

4. Non-collusion Affidavit properly notarized. See **Exhibit F**. _____

5. <u>Construction Subcontractor Disclosure Requirements</u>

   a. Disclosure of subcontractors. See Paragraph 24 and **Exhibit G**. (Must be submitted with bid) _____

6. Proof of compliance with the State Contractor Business Registration Program. See Paragraph 28. _____

7. Acknowledgement of Receipt of Addenda, whether or not issued. See Paragraph 29 and **Exhibit H**. (Form must be submitted with bid). _____

8. Background Questionnaire. See **Exhibit I.** _____

SIGNATURE: The undersigned hereby acknowledges and has submitted the above listed requirements.

Name of Bidder: _____

By Authorized Representative:

Signature: _____

Print Name and Title: _____

Date: _____

INSTRUCTIONS TO BIDDERS

1. RECEIPT, OPENING, WITHDRAWAL OF BIDS, AND FAILURE TO RESPOND

1.1 Sealed Bids will be received by the Herschend Family Entertainment on the date, time, location and in the manner as listed in the advertisement.

1.2 Bids must be received at Bach Associates, PC no later than the due date and time indicated therein. It is recommended that bids be hand delivered to the office. Bach Associates, PC assumes no responsibility for delays in any form of courier or mail order delivery service causing the bid to be received at the office later than the due date and time. All late bids will be rejected in accordance with the law.

1.3 Any bid may be withdrawn prior to the time for openings of bids or the authorized postponement thereof. Any bid received after the opening of bids will not be considered. No bidder may withdraw a bid within sixty (60) days after the actual opening thereof.

2. QUALIFICATION OF BIDDERS

2.1 Herschend Family Entertainment may make such investigation as it deems necessary to determine the ability of the bidder to perform the work and the bidder shall furnish to Herschend Family Entertainment all such information and data for this purpose as Herschend Family Entertainment may request. Herschend Family Entertainment reserves the right to reject any bids if the evidence submitted by, or investigation of such bidder, fails to satisfy Herschend Family Entertainment that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated herein.

3. PREPARATION OF BID

3.1 **Bids must be submitted on the prescribed form.** The bidder shall fill in all blank spaces in ink or by typewriter, both in words and figures. Bids must be signed in ink by authorities with capacity to legally bind the bidder to its bid proposal.

3.2 Each bid shall be based upon the specifications prepared by Bach Associates, PC. The bidder accepts the obligation to become familiar with the project specifications.

3.3 Each bid must give the full business address of the bidder and be signed by an authorized representative. Bids by partnerships must furnish the full name of all partners and must be signed in the partnership name by one of the members of the partnership or by an authorized representative, followed by the signature and designation of the person signing. Bids by corporations must be signed in the legal name of the corporation, followed by the name of the State of Incorporation and must contain the signature and designation of the President, Secretary or other person authorized to bind the corporation in the matter. When requested by Herschend Family Entertainment, satisfactory evidence of the authority of the officer signing on behalf of the corporation shall be furnished.

3.4 Bids containing any conditions, omissions, unexplained erasures or alterations, items not called for in the proposal form, attachment of additive information not required by the bid documents, or irregularities of any kind, may be rejected by Herschend Family Entertainment. Any changes, white-outs, strike-outs, etc. on the proposal page must be clear as to meaning and initialed by the person responsible for signing the bid.

3.5 Herschend Family Entertainment reserves the right to reject any or all bids or to waive any informalities in the bids received as permitted by law.

3.6 All bids must be submitted in sealed envelopes bearing on the outside the name of the bidder, address and subject and title of the specifications. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope, addressed as set forth in the advertisement. Bach Associates, PC assumes no responsibility for mailings not received on time at the office as stipulated in the advertisement to receive bids. It is therefore recommended that bids be hand delivered.

3.7 Bidders must insert prices for furnishing all of the materials and/or labor required by these specifications whether or not such requirement is specifically set forth. Prices shall be net, including any charges for packing, crating, containers, etc. and all transportation charges fully pre-paid by the contractor F.O.B. destination and placement at locations specified by Herschend Family Entertainment. No additional charges will be allowed for any transportation costs resulting from partial shipments made at the contractor's convenience when single shipment is ordered.

3.8 Payments will be made upon the approval of vouchers submitted by the successful bidder in accordance with the requirements of Herschend Family Entertainment and subject to the Herschend Family Entertainment's customary billing procedures.

3.9 Herschend Family Entertainment reserves the right to grant up to three (3) business days additional time to bidders after the bid opening to provide the following documents required by the bid specifications:

a. Non-collusion affidavit. See **Exhibit F**;

Such additional time may not in any way affect the price or cost of the bid. All other documents required by the bid specifications must be submitted at the time of the bid opening specified herein or in accordance with law.

4. BID BOND/CONSENT OF SURETY OR LETTER OF CREDIT

4.1 BID BOND

Each bid must be accompanied by the Certified Check of the bidder or by a Cashier's Check, or by a Bid Bond prepared on the form of bid bond attached hereto as **Exhibit A** (or similar form), duly executed by the bidder as principal and

having surety thereon, a surety company approved by Herschend Family Entertainment, in an amount not less than ten percent (10%) of the amount of the base bid submitted, said 10% not to exceed $20,000.00, payable to Herschend Family Entertainment.

4.2 CONSENT OF SURETY OR LETTER OF CREDIT

In addition, the bid must also be accompanied by a Certificate (Consent of Surety) from a Surety Company stating that it will provide said bidder with a Performance Bond in the full amount of the bid and substantially similar to the Herschend Family Entertainment's form of performance bond. A form of Consent of Surety is attached hereto as **Exhibit B**. A form of Performance Bond is attached hereto as **Exhibit C**. As an alternative to the aforementioned consent of surety, bidders may provide a letter from a bank or similar financial institution stating that it will issue a Letter of Credit in the full amount of the bid and pursuant to the terms of the Letter of Credit in the specifications (See **Exhibit D**). **This Letter of Credit option is not available on bids exceeding $100,000. Such bids require a Consent of Surety/Performance Bond.**

4.3 Such checks or bid bonds shall be returned to all bidders except the three lowest bidders within three (3) days after the formal opening of bids. The remaining checks or bid bonds will be returned to the three lowest bidders within forty-eight (48) hours after Herschend Family Entertainment and the accepted bidder have executed the contract or, if no contract has been so executed, within thirty (30) days after the date of the opening of bids, upon demand of the bidder at any time thereafter so long as he has not been notified of the acceptance of his bid.

5. THIS SECTION NOT IN USE

6. ADDENDA AND INTERPRETATIONS

6.1 No interpretation of the meaning of any bid document will be made to any bidder orally. Any request for interpretation shall be in writing, addressed to the Herschend Family Entertainment's representative stipulated in the bid and must be received at least ten (10) days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications, and will be distributed to all prospective bidders in accordance with statute. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the contract documents.

7. MISCELLANEOUS

7.1 At the time of the opening of bids, each bidder will be presumed to have read and to be thoroughly familiar with the specifications and all other bid documents (including addenda). The failure or omission of any bidder to receive or examine any form, instrument or document shall in no way relieve any bidder from any obligation in respect to his bid.

7.2 In case of default by the successful bidder, Herschend Family Entertainment may procure the articles or services from other sources and hold the successful bidder responsible for any excess cost occasioned thereby.

7.3 Herschend Family Entertainment is NOT exempt from any State sales tax and Federal excise tax.

7.4 For purposes of evaluation where an equivalent is being furnished, the bidder must indicate any variation to the Herschend Family Entertainment's specifications no matter how slight. If no variations are indicated, it will be construed that the bid fully and exactly complies with the Herschend Family Entertainment's specifications.

7.5 All bids submitted shall include in price any applicable permits, or fees required by any other government entity that has jurisdiction to require the same.

7.6 In submitting its bid, the bidder certifies that the merchandise to be furnished will not infringe upon any valid patent or trademark and that the successful bidder shall, at its own expense, defend any and all actions or suits charging such infringement, and will save Herschend Family Entertainment harmless from any damages resulting from such infringement.

7.7 The bidder understands and agrees that, if awarded any contract by Herschend Family Entertainment, it shall be responsible for insuring that it and any and all subcontractors meet minimum safety, health and equipment requirements including provisions for protecting employees and the public from any hazards encountered in performing its obligations pursuant to this bid.

8. SECURITY FOR FAITHFUL PERFORMANCE

8.1 Simultaneously with his delivery of the executed contract, the successful bidder shall deliver to Herschend Family Entertainment an executed bond in the amount of one hundred percent (100%) of the accepted bid as security for the faithful performance of this contract and for the payment of all persons performing labor or furnishing materials in connection therewith, prepared in the form of contract bond attached hereto and having a surety thereon such surety company or companies as are acceptable on bonds approved by Herschend Family Entertainment, and as are authorized to transact business in this State.

8.2 In the event that the successful bidder chooses to supply a Letter of Credit in lieu of the performance bond required by Section 8.1 above, said Letter of Credit shall be delivered to Herschend Family Entertainment simultaneously with the delivery of the executed contract. The Letter of Credit shall be for the full amount of the bid and shall conform to the terms set forth in the terms of Letter of Credit in these specifications. **This Letter of Credit option is <u>not</u> available on construction projects exceeding $100,000. Such projects require a Performance Bond.**

9. INSURANCE REQUIREMENTS

9.1 Workers Compensation and Employer's Liability Insurance

This insurance shall be maintained in force during the life of the contract and shall cover all employees engaged in the performance of the contract. This insurance shall comply with all applicable statutes and regulations. Minimum Employer's Liability insurance of $500,000.00.

9.2 General Liability Insurance

This insurance shall have limits of not less than $1,000,000.00 per occurrence and $3,000,000.00 aggregate for bodily injury and property damage, and shall be maintained in force during the life of the contract. Deptford Township shall be named as an Additional Insured on this policy.

9.4 Automobile Liability Insurance

This insurance shall cover the Contractor for claims arising from owned, hired and non-owned vehicles and shall have limits of not less than $1,000,000.00 per occurrence for bodily injury and property damage. Coverage shall be maintained in force during the life of the contract.

9.5 Insurance Requirements for Subcontractors

On any construction, reconstruction, alteration, or similar project, the Contractor shall require each Subcontractor to carry insurance coverage equal to or exceeding the type and level of coverage required to be carried by the Contractor. This coverage shall be in addition to the coverage carried by the Contractor and shall list Herschend Family Entertainment as Additional Insured on the policy.

9.6 Certificates of the Required Insurance

Certificates for the above listed insurance shall be submitted along with the contract as evidence that such insurance is in force. Such coverage shall be with acceptable insurance companies operating on an admitted basis in the State of New Jersey and shall carry a financial rating of "A" or better.

9.7 Cancellation

Certificates for the above-listed insurance shall contain a provision that coverage afforded under the policies will not be cancelled without at least thirty (30) days prior written notice to Herschend Family Entertainment.

10. INDEMNIFICATION

10.1 The successful bidder shall defend, indemnify and hold harmless Herschend Family Entertainment, its officers, agents and employees from any and all claims, suits, actions, damages or costs, of any nature whatsoever, whether for personal

injury, property damage or other liability, arising out of or in any way connected with the successful bidder's acts or omissions in connection with this agreement.

11. AWARD

11.1 Award of contract will be made by Herschend Family Entertainment within sixty (60) days after the bid opening or within the time allowed by law.

11.2 Upon award of the contract, appropriate documents shall be forwarded to the successful bidder. The return of the executed contracts and the bonds required by law within thirty (30) days is an element essential to the bid. At the expiration of such time, Herschend Family Entertainment may elect to award the bid to the second bidder and accept as liquidated damages the bid security.

12. QUANTITIES

12.1 Quantities shown are approximate and the Board reserves the right to increase or decrease them to the extent of twenty percent (20%) at the unit price bid. If the number of units in the total is less than ten (10), Herschend Family Entertainment shall have the right to increase or decrease the quantity to not more than ten (10) or less than one at same unit price. Such change, however, will only be upon the written order of Herschend Family Entertainment.

13. THIS SECTION NOT IN USE

14. METHOD OF AWARD

14.1 Herschend Family Entertainment may award the work on the basis of the Base Bid, combined with such Alternates as selected, until a net amount is reached which is within the funds available.

14.2 If the award is to be made on the basis of Base Bids only, it will be made to that responsible bidder or bidders whose Base Bid is the lowest. If the award is to be made on the basis of a combination of a Base Bid with Alternates, it will be made to that responsible or bidders whose net bid on such combination is the lowest.

15. TERM OF CONTRACT

15.1 The time to complete the work under the contract to be awarded as the result of this bid shall be May 23, 2025. The time for substantial completion shall be May 8, 2025.

16. TERMINATION

16.1 Herschend Family Entertainment may terminate the agreement for any reason upon thirty (30) days written notice to the contractor. Herschend Family Entertainment shall only be responsible for payment up to the effective date of termination.

17. AMERICAN GOODS AND PRODUCTS TO BE USED WHERE AVAILABLE

17.1 Only manufactured and farm products of the United States wherever available, shall be used in the execution of the work or supply of goods as specified herein.

18. THIS SECTION NOT IN USE

19. THIS SECTION NOT IN USE

20. BRAND NAMES AND/OR PRODUCT DESCRIPTION

20.1 Brand names and/or descriptions used in this specification for bid proposal are to acquaint prospective bidders with the type of equipment (or commodity) described and will be used as a standard by which alternate or competitive materials offered will be judged. Competitive items must be equal to the standard described and be of the same reputation for quality and workmanship. Variations between the equipment described and material offered are to be fully explained by the bidder in an accompanying letter. In the absence of any changes by the bidder, it will be presumed and required that materials as described in these specifications be delivered.

21. WORKER AND COMMUNITY RIGHT TO KNOW

21.1 The successful bidder shall comply with all provisions of the Worker And Community Right To Know Act.

22. THIS SECTION NOT IN USE

23. REQUEST FOR TAXPAYER IDENTIFICATION NUMBER AND CERTIFICATION

Upon execution of the contract with Herschend Family Entertainment, the successful bidder shall be required to complete and submit IRS Form W-9, Request For Taxpayer Identification Number And Certification. <u>This requirement shall only apply to the successful bidder. Failure by the successful bidder to meet this requirement shall result in Herschend Family Entertainment withholding such funds as required by IRS regulations.</u>

24. BIDS FOR CONSTRUCTION/DISCLOSURE OF SUBCONTRACTORS

24.1 Definition of Construction Bid.

"Construction" means construction, alteration or repair of any building when the entire cost of the work will exceed the bid threshold. In addition to construction bids, Herschend Family Entertainment specifically requires that bidders identify all subcontractors in specialty trade categories for all bids where such specialty trades

may be required.

24.2 Disclosure of Subcontractors.

a. Bidders must list in **Exhibit G**, all subcontractors that they intend to use in the specialty trade categories of: Plumbing and Gas Fitting, and All Kindred Work; Steam Power Plants, Steam and Hot Water Heating and Ventilating Apparatus, and All Kindred Work; Electrical Work; and Structural Steel and Ornamental Iron Work. **FAILURE TO LIST THESE REQUIRED SUBCONTRACTORS SHALL BE CAUSE FOR REJECTION OF BID.** Bidders with questions regarding this process should consult their counsel.

b. Substitution of subcontractors shall be permitted only in cases of impossibility, e.g., the death of the subcontractor or where the subcontractor goes out of business.

c. The bidder's proposal will be rejected if the subcontractors listed do not comply with the requirements for the designated work tasks.

d. A general contractor that intends to utilize a specific subcontractor to perform work in one or more of the above-referenced specialty trade categories shall provide the required information with regard to that subcontractor in the appropriate spaces for each specialty trade category applicable to the contract.

A general contractor that intends to perform work in one or more of the above-referenced specialty trade categories through the use of its own employees or the general contractor himself rather than through utilization of a subcontractor shall write the word "**In-House**" next to each applicable category and then insert the name, and the license number where required, of each such employee of the general contractor or the general contractor himself in the appropriate spaces for each specialty trade category applicable to the contract.

If the contract does not involve any of the above-referenced specialty trade categories, the contractor shall insert the word "**None**" in each appropriate space provided.

25. NO DAMAGES FOR DELAY

Notwithstanding anything to the contrary in the contract documents, any extension of the contract time shall be the sole remedy of the Contractor for any: (1) delay in the commencement, prosecution or completion of the work; (2) hindrance or obstruction in the performance of the work; (3) loss of productivity; or (4) other similar claims whether or not such delays are foreseeable. In no event shall the Contractor be entitled to any compensation or recovery of any damages in connection with any delay including without limitation consequential or special damages, lost opportunity cost, impact damages or other remuneration. The aforementioned condition shall apply to any contract awarded as the result of this bid including but not limited to contracts for construction, goods, or services.

26. ALTERNATIVE DISPUTE RESOLUTION

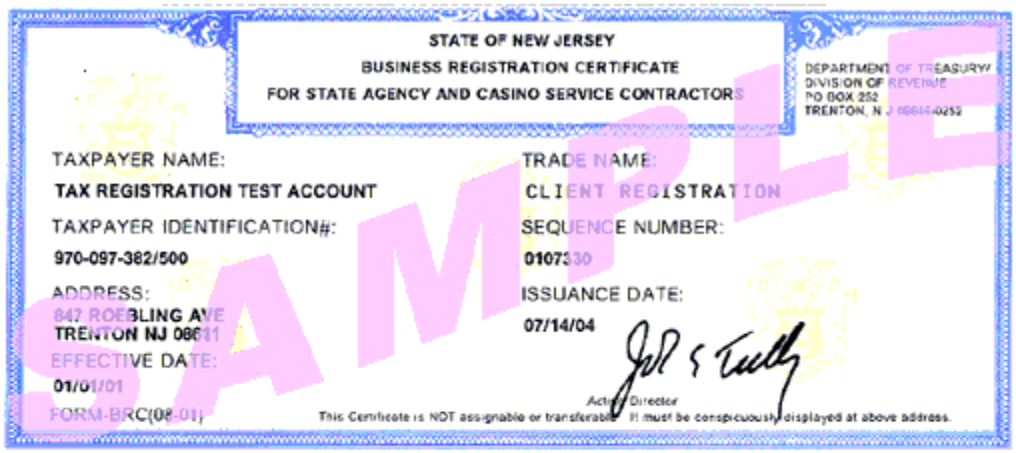
For construction contracts, disputes arising under the contract shall be submitted to mediation or non-binding arbitration pursuant to industry standards prior to being submitted to a court for adjudication.

27. THIS SECTION NOT IN USE

28. COMPLIANCE WITH CONTRACTOR BUSINESS REGISTRATION PROGRAM

General contractor and all sub-contractors shall provide a copy of their State Contractor Business Registration Program Certificate (BRC). ALL BIDDERS (AND THEIR SUBCONTRACTORS) COMPETING FOR the CONTRACT MUST PROVIDE A COPY OF THEIR BUSINESS REGISTRATION CERTIFICATE **BY THE DATE THE BID IS AWARDED. FAILURE TO DO SO WILL RESULT IN A REJECTION OF YOUR BID.** Questions regarding this law may be directed to the New Jersey Department of Taxation. To obtain a Business Registration Certificate go to: www.state.nj.us/treasury/revenue Click on: Business Registration & Formation. Click on: Obtain a certificate of registration. Click on: Obtain a certificate online.

Herschend Family Entertainment strongly recommends that all vendors provide their BRC (and BRC's for each subcontractor) with submission of bids.



STATE OF NEW JERSEY
BUSINESS REGISTRATION CERTIFICATE
FOR STATE AGENCY AND CASINO SERVICE CONTRACTORS

DEPARTMENT OF TREASURY
DIVISION OF REVENUE
PO BOX 252
TRENTON, NJ 08646-0252

TAXPAYER NAME:
TAX REGISTRATION TEST ACCOUNT

TRADE NAME:
CLIENT REGISTRATION

TAXPAYER IDENTIFICATION#:
970-097-382/500

SEQUENCE NUMBER:
0107330

ADDRESS:
847 ROEBLING AVE
TRENTON NJ 08611

ISSUANCE DATE:
07/14/04

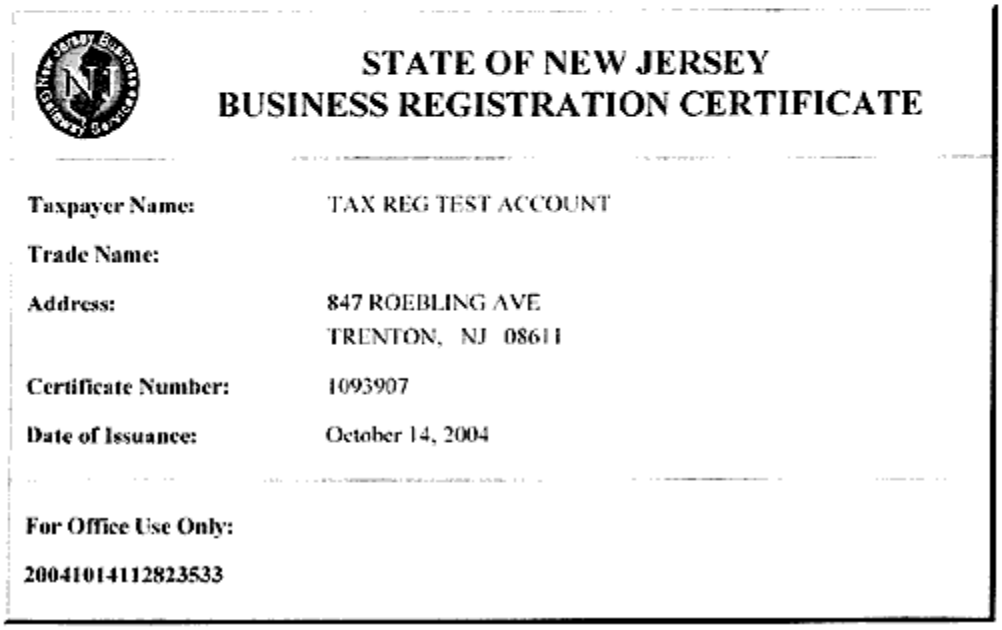
EFFECTIVE DATE:
01/01/01

Acting Director

FORM-BRC(08-01)

This Certificate is NOT assignable or transferable. It must be conspicuously displayed at above address.

SAMPLE



STATE OF NEW JERSEY
BUSINESS REGISTRATION CERTIFICATE

Taxpayer Name: TAX REG TEST ACCOUNT

Trade Name:

Address: 847 ROEBLING AVE
TRENTON, NJ 08611

Certificate Number: 1093907

Date of Issuance: October 14, 2004

For Office Use Only:

20041014112823533

29. ACKNOWLEDGEMENT OF RECEIPT OF ADDENDA

The bidder shall complete, sign and return with bid **Exhibit H** attached hereto. Form must be completed and returned with bid regardless of whether addenda were issued by Herschend Family Entertainment.

30. APPROVAL AND CERTIFICATION OF BILLING

Authorization for payment of periodic billing, final payments or retainage monies require approval and certification by Herschend Family Entertainment. Approved and certified amounts due will be paid during Herschend Family Entertainment 's subsequent payment cycle.

END OF INSTRUCTIONS TO BIDDERS
EXHIBITS BEGIN ON NEXT PAGE

EXHIBIT A

SAMPLE FORM OF BID BOND

A. We, the undersigned

_____ as Principal and

_____ as Surety, are hereby held and firmly bound unto

_____ in the penal sum of _____Dollars

($_____), lawful money of the United States for the payment of which well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns. Signed this _____ day of _____, 20 _____.

B. THE CONDITION of the above obligation is such that whereas the Principal has submitted to the_____,
a certain bid attached hereto and hereby made a part of hereto and hereby made a part of hereof, to enter into a contract in writing for the (insert type of work)
_____.

C. **NOW THEREFORE:**

If said bid shall be rejected, or in the alternate, if said bid shall be accepted and the Principal shall execute and deliver a contract in the form of Agreement required by the Bid Documents and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all respects perform the agreement created by the acceptance of said bid. Then this obligation shall be void, otherwise the same shall remain in force and effect, it being expressly understood and agreed that the liability of the surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

D. THE SURETY for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall in no way be impaired or affected by an extensions of the time within the "OBLIGEE" may accept such bid. And said Surety does hereby waive notice of any such extension.

E. IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as corporations have caused their corporate seals to be hereto fixed and these presents to be signed by their proper officers, the day and year set forth above.

_____(L.S.)
PRINCIPAL

_____
SURETY

(SEAL)

_____
BY

NOTE: **Bid Bond must be signed by an authorized agent or representative of a surety company and not by the individual or company submitting the bid.**

EXHIBIT B

SAMPLE FORM OF CONSENT OF SURETY

BOND NO._____
(INSERT YOUR BOND NO. HERE)

The _____, a Corporation organized and (NAME OF YOUR INSURANCE COMPANY)
existing under the laws of the State of _____

and licensed to do business in the State of New Jersey, hereby consents and agrees that if the contract for the _____
(INSERT BID NO.
_____AND
ITEMS WHICH YOU ARE BIDDING).

be awarded to _____.
(NAME OF YOUR COMPANY)

the undersigned Corporation agrees with the said Herschend Family Entertainment, 5445 Triangle Parkway, Suite 200, Peachtree Corners, Georgia 30092 to execute the final bond as required by the specifications and to become the surety in the full amount of the price bid for the faithful performance of the contract.

In Witness Whereof, the undersigned Corporation has caused this agreement to be signed by its duly authorized representative and its Corporate Seal to be hereto affixed this_____ day of _____, 20 ____.

The_____
(NAME OF INSURANCE COMPANY)

By _____
(ATTORNEY-IN-FACT)

Countersigned by:

NOTE: Consent of Surety must be signed by an authorized agent or representative of a surety company and not by the individual or company submitting the bid.

EXHIBIT C

SAMPLE FORM OF PERFORMANCE BOND

We, the Undersigned

_____

as Principal, and_____

_____

a Corporation organized and existing under the laws of the State of_____ and authorized to do business in the State of New Jersey as surety are held and firmly bound unto _____hereinafter called the Owner as hereinafter set forth, in the full and just several sums of

(a)_____

_____Dollars($_____)
for faithful performance of the contract as hereinafter designated in Paragraph "A" and

(b)_____

_____Dollars($_____)
for payment of labor and material as hereinafter designated in Paragraph "B" and

(c)_____

_____Dollars($_____)
for maintenance as hereinafter designated in Paragraph "C"; lawful money of the United States of America; to be paid to the Owner, or its Assigns, to which payment well and truly to be made and done, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

Sealed with our respective seals and dated this _____day of _____, 20 .

WHEREAS, the above bonded Principal has entered into a contract with the

Owner dated the _____day of _____, 20

for_____

_____

upon certain terms and conditions in said contract more particularly mentioned; and

(Sample Form of Performance Bond – continued)

WHEREAS, it is one of the conditions of the award of the Owner pursuant to which said contract is about to be entered into, that these presents be executed.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION ARE SUCH:

A. That if the Principal shall faithfully perform the contract on its part to be performed according to the terms of said contract, or any changes or modifications therein made as therein provided; and shall indemnify and save harmless the party of the first part mentioned in the contract aforesaid, its officers, agents and servants, and each and every one of them against and from all suits and costs of every kind and description and from all damages which the said party of the first part in said contract mentioned, or any of its officers, agents or servants may be put by reason of injury to the person or property of others resulting from the performance of said work or through the negligence of the said party of the second part to said contract, or through any improper or defective machinery, implements or appliances used by the said party of the second part in the aforesaid work or through any act or omission on the part of the said party of the second part of its agents, servants or employees, and shall further indemnify and save harmless the party of the first part mentioned in the contract aforesaid its officers, agents and servants from all suits and actions of any kind or character whatsoever, which may be brought or instituted by any subcontractor, materialman or laborer who has performed work or furnished materials in or about the work required to be done pursuant to the said contract or by or on account of, any claims or amount recovered for any infringement of patent, trademark, or copyright; then this part of this obligation designated as part "A" shall be void; otherwise the same shall remain in full force and effect, it being expressly understood and agreed that the liability of the surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

B. That if the said Principal shall pay all lawful claims of subcontractors, materialmen, laborers, persons, firms or corporations for labor performed or materials, provisions, provender or other supplies or items, fuels, oils, implements or machinery furnished, used or consumed in the carrying forward, performing or completing of said contract; we agreeing and assenting that this undertaking shall be for the benefit of any subcontractor, materialman, laborer, person, firm or corporation having a just claim, as well as for the obligee herein; whether or not the said material and labor enter into and become component parts of the work or improvement or in any amendment, extension or addition to said contract, then this part of this obligation designated part "B", shall be void, otherwise the same shall remain in full force and effect.

C. That if the said Principal shall well and truly keep and perform all the obligations, agreements, terms, and conditions of such contract, on the Principal's part to be kept and performed and said Principal shall be responsible for poor workmanship done or poor materials furnished under said contract for a period of one year from the date of the completion and final acceptance by the party of the first part and mentioned in the contract, and said Principal shall pay for all labor performed and furnished and for all materials used in correcting any poor workmanship done and replacing any poor materials furnished, then this part of this obligation designated part "C", shall be void; otherwise the same shall remain in full force and effect.

(Sample Form of Performance Bond – continued)

It is further agreed that any alterations which may be made in the terms of the contract or in the work to be done or materials to be furnished or labor to be supplied or performed under it or the giving by the Owner of any extension of time for the performance of the Contract or the reduction of the retained percentages as permitted by the Contract or any other forbearance on the part of either the Owner or the Principal to the other, shall not in any way release the Principal and the

Surety or Sureties or either or any of them, their heirs, executors, administrators, successors or assigns, from their liability hereunder, notice to the Surety or Sureties of any alterations, extension or forbearance being hereby waived.

It is further agreed that in case of default in, and/or any action arising out of rights and liabilities secured by this obligation or any part hereto or any person claiming by or through it, either may use for the purpose of establishing its, or their claim, a copy of this obligation certified by the Owner, and the action, or actions, if any, arising on the within bond, shall not be a bar to any subsequent action that may arise through any liability incurred in any other action herein, and based upon any other part of this obligation.

IN WITNESS WHEREOF, the said Principal and Surety have duly executed this bond under their seals the day and year above written.

If Principal is an individual:

Witness:

_____ By_____(SEAL)

_____
Surety

_____ By_____
Attorney-in-fact
(Corporate Seal)

If Principal is a partnership:

Witness: _____
Principal

_____ _____(SEAL)
Partner

_____ _____(SEAL)
Partner

_____
Surety

By_____
Attorney-in-fact
(Corporate Seal)

(Sample Form of Performance Bond – continued)

If Principal is a corporation:
Attest:

_____
Principal

_____

By_____

Secretary

President

Corporate Seal:
Attest:

_____

_____

_____

By_____
Attorney-in-fact
(Corporate Seal)

Approved as to Form_____,20_____

_____

EXHIBIT D

SAMPLE FORM OF TERMS OF LETTER OF CREDIT

1. **AMOUNT:** The amount of this letter of credit shall be for the sum of _____.

(Amount of Contract)

2. **TERM:** The term of this letter of credit shall be in effect and irrevocable for a period commencing on the date of execution of the agreement between Herschend Family Entertainment and_____.

(Name of Contractor

and terminating one (1) year after the date of completion and final acceptance by Herschend Family Entertainment of the work performed pursuant to Herschend Family Entertainment Bid No.:

_____.

(Bid No. and description of services/material to be provided)

3. **CAUSES FOR PROCEEDING AGAINST LETTER OF CREDIT:** Herschend Family Entertainment shall have the absolute right to proceed against this letter of credit if:

(a) Contractor shall fail to faithfully perform according to the terms of the contract and Herschend Family Entertainment Bid No._____, or any changes or modifications therein made as therein provided; or Contractor shall fail to indemnify and save harmless Herschend Family Entertainment, its officers, agents and servants, and each and every one of them against and from all suits and costs of every kind and description and from all damages which Herschend Family Entertainment, or any of its officers, agents or servants may be put by reason of injury to the person or property of others resulting from the performance of said work or through the negligence of Contractor, or through any improper or defective machinery, implements or appliances used by contractor in the aforesaid work or through any act or omission on the part of Contractor, its agents, servants or employees; or contractor shall fail to further indemnify and save harmless Herschend Family Entertainment, its officers, agents and servants from all suits and

actions of any kind or character whatsoever, which may be brought or instituted by any subcontractors, materialman or laborer who has performed work or furnished materials in or about the work required to be done pursuant to said contract, or by or on account of, any claims or amount recovered for any infringement of patent, trademark, or copyright; or

_____

(Name of Bank)

agreeing and assenting that this undertaking shall be for the benefit of any subcontractor, materialman, laborer, person, firm or corporation having a just claim, as well as for Herschend Family Entertainment, whether or not the said material and labor enter into and become component parts of the work or improvement or in any amendment, extension or addition to said contract; or

(b) Contractor shall fail to pay all lawful sums of subcontractors, materialman, laborers, persons, firms or corporations for labor performed or materials, provisions, provender or other supplies or teams, fuels, oils, implements or machinery furnished, used or consumed in the carrying forward, performing or completing of said contract; or

(c) Contractor shall fail to well and truly keep and perform all the obligations, agreements, terms and conditions of such contract, on its part to be kept and performed and Contractor shall be responsible for poor workmanship done or poor materials furnished under said contract for a period of one (1) year from the date of the completion and final acceptance by Herschend Family Entertainment, and Contractor shall pay for all labor performed and furnished and for all materials used in correcting any poor workmanship done and replacing any poor materials furnished.

It is further agreed that any alterations which may be made in the terms of the contract or in the work to be done or materials to be furnished or labor to be supplied or performed under it or the giving by Herschend Family Entertainment of any extension of time for the performance of the contract shall not in any way release Contractor, its heirs, executors, administrators, successors or assigns, from its liability hereunder.

NOTE: Letter of Credit must be signed by an authorized agent or representative of a bank or similar financial institution and not by the individual or company submitting the bid.

EXHIBIT E

STATEMENT OF CORPORATE OWNERSHIP

The Bidder must **complete and sign one** of the following statements:

1. Stockholders or Partners owning 10% or more of the company submitting the bid:

NAME ADDRESS

_____

_____

_____

_____

(If additional space is needed, please attach a separate sheet of paper)

Signature_____ Date_____

2. No Stockholder or Partner owns 10% or more of the company submitting the bid:

Signature_____ Date_____

3. This bid is being submitted by an individual who operates as a sole proprietorship:

Signature_____ Date_____

4. This bid is being submitted by a corporation or partnership that operates as a (check one of the following):

_____ Limited Partnership _____ Limited Liability Corporation

_____ Limited Liability Partnership _____ Subchapter S Corporation

Stockholders or Partners owning 10% or more of the form of corporation or partnership checked above shall provide the following information:

NAME ADDRESS

_____

_____

(If additional space is needed, please attach a separate sheet of paper)

Signature_____ Date_____

EXHIBIT F

NON-COLLUSION AFFIDAVIT

STATE OF NEW JERSEY)
COUNTY OF)

I, of the City of in the County of,

and the State of of full age, being dully sworn according to law on my oath depose and say that: I am of the firm of the bidder making this Proposal for the above named project, and that I executed the said Proposal with full authority to do so; that said bidder had not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free, competitive bidding in connection with the above named project; and that all statements contained in said Proposal and in this affidavit are true and correct, and made with full knowledge that the State of New Jersey relies upon the truth of the statements contained in said Proposal and in the statements contained in this affidavit in awarding the contract for the said project.

I further warrant that no person or selling agency has been employed or retained to solicit or secure such contract upon an agreement or understanding for a commission, percentage, brokerage or contingent fee, except bona fide employees or bona fide established commercial or selling agencies maintained by_____

(Name of Contractor)

Subscribed and sworn to
before me this day
of , 20

_____
Notary Public

_____
(Also type or print name of bidder
under signature)

EXHIBIT G

BIDS FOR CONSTRUCTION
DISCLOSURE OF SUBCONTRACTORS

Please list the subcontractors for the specialty trade categories listed below. If you intend to perform the work through your own employees or by yourself rather than through utilization of a subcontractor, write the word "**In-House**" next to each applicable category and insert the name, and license number where required, of each person in the appropriate spaces. If the contract does not involve a specialty trade listed below, write the word "**None**" in the appropriate space. For further instructions, see Paragraph 26 herein. **DO NOT LEAVE ANY SPACE BLANK.**

1. **Plumbing and Gas Fitting and All Kindred Work:**

   Name: _____

   Address: _____

   License Number: _____

2. **Steam Power Plants, Steam and Hot Water Heating and Ventilating Apparatus, and All Kindred Work:**

   Name: _____

   Address: _____

   License Number: Not Applicable

3. **Electrical Work:**

   Name: _____

   Address: _____

   License Number: _____

4. **Structural Steel and Ornamental Iron Work:**

   Name: _____

   Address: _____

   License Number: Not Applicable

EXHIBIT H

ACKNOWLEDGEMENT OF RECEIPT OF ADDENDA

BIDDER REQUIRED TO COMPLETE AND RETURN FORM WITH BID REGARDLESS OF WHETHER ADDENDA WAS ISSUED.
FAILURE TO COMPLETE AND RETURN FORM IS A FATAL DEFECT WHICH CANNOT BE CURED AND BID WILL BE REJECTED.

A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Dated	Initial
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

OR:

B. Bidder acknowledges to the best of his/her knowledge no addendum has been issued by Herschend Family Entertainment: Dated _____ Initial _____

Bidder is required to complete, sign and submit form with bid regardless of whether addenda were issued. Failure to complete and return form is a fatal defect which cannot be cured and bid will be rejected.

By: _____
(Print or Type Name of Authorized Individual)

Signature: _____

Title: _____

EXHIBIT I

BACKGROUND QUESTIONNAIRE

In accordance with paragraph entitled "Qualifications of Bidders" of "Information for Bidders", provide the following information:

Date of Organization of Company _____
Name and address of officers:_____

President_____
Vice President_____
Secretary_____
Treasurer_____

EXPERIENCE

1. How many years has your organization been in business as a general contractor under your present business name? _____

2. How many years experience in this type of construction work has your organization had? _____

3. What are the latest projects (within the last five years) your organization has completed? (Attach additional pages if necessary)

	Contract Amount	Date Work Completed	For Whom
A.	$_____	_____	_____
B.	$_____	_____	_____
C.	$_____	_____	_____
D.	$_____	_____	_____
E.	$_____	_____	_____

Names, Addresses and Telephone Numbers of Reference for items listed above:

	Name and Address	Telephone No.
A.	_____	_____
B.	_____	_____
C.	_____	_____
D.	_____	_____
E.	_____	_____

4. Have you ever failed to complete any work awarded to you (within the last ten years)? _____
If so, where and why?_____
_____

5. Have you or has any officer of your organization ever been an officer or partner of some other contracting organization that failed to complete any work (within the last ten years)?__ _____

If so, state the name of individual, position and the name of the other organization

_____

_____

Did this other contracting organization ever fail to complete any work awarded it (within the last ten years)? _____
If so, where and why?_____

6. Give list of uncompleted contracts at present held by you:

Name of Contract	Contracting Agency	Amount
_____		$_____
_____		$_____
_____		$_____
_____		$_____
_____		$_____

7. State approximately the largest amount of work you have done in any one year (within the last five years) of a similar nature to the work being bid on.

_____

_____

8. List the equipment available for the performance of work under the proposed contract (attach additional sheets if necessary)

_____

_____

_____

_____

_____

BID FORM

The Bidder has carefully examined the specifications, plans and form of contract for the project named above. The Bidder has made himself familiar with the site, and will contract to carry out and complete said project as specified and delineated at the price per unit measure or lump sum for each scheduled item of work stated in the following proposal.

It is understood that the Total Price for the entire contract stated by the undersigned in the Schedule is based on the estimated quantities and will control in the awarding of the contract. It is further understood that the quantities stated in this Schedule of Prices for the various items are estimated only and may be increased or decreased. Payment will be made only for the actual quantity of authorized work done under each scheduled item.

The Bidder agrees that the price bid shall apply to actual quantities required, approved and used during the Work, including Addenda. He further agrees to complete the entire work for this Contract within **SIXTY (60) CALENDAR DAYS** from the date specified in the Notice-to-Proceed but in no case later than May 23, 2025. He further agrees that the work will be substantially completed for this Contract within **FORTY-FIVE (45) CALENDAR DAYS** from the date specified in the Notice-to-Proceed but in no case later than May 8, 2025.

The Bidder hereby agrees to be bound by the award of the Bid, and if awarded the Contract on this Bid, to execute the Contract and the required Bonds and Insurance Certificates, and to furnish all other information and documents required by the Contract Documents within the time limits specified.

The Bidder understands that Owner reserves the right to reject any or all Bids, or to waive any informality or technicality of any Bid, in the interest of the Owner.

If this Bid shall be accepted by Owner, and the Bidder shall fail to execute the Contract as aforesaid, then Owner shall be entitled to recover from the Bidder the Bid Bond, and any other penalty specified in the Contract Documents.

The signer of this Proposal as Bidder declares:

That he has received and examined the Contract Documents, including the Advertisement for Bidders, Instructions to Bidders, Contract Agreement, General Conditions, Supplementary Conditions, Specifications, and Addenda, if any.

That he has examined the site of the work.

In submitting this Proposal, Bidder agrees:

To accept the provisions of the Instructions for Bidders including disposition of Bid Security.

BID FORM (CONTINUED)

To enter into and execute a Contract, if awarded on the basis of this Proposal, and to furnish the Surety Bonds required by the General and Supplementary Conditions.

To accomplish the work in accordance with the Contract Documents and to complete the work in the time stipulated in the Information for Bidders.

The bidder understands that a detailed and balanced schedule of values will be required under this contract. Bidder understands and agrees that not all items under the Owner approved schedule of values will be necessary under this contract and that the Owner may elect not to authorize the Contractor to perform work under an individual item(s). The bidder also understands that the Owner may increase or decrease the quantity of work to be done under any item and that the Contractor will only be paid for actual quantity of work provided based on the prices delineated under the Owner approved schedule of values.

It is recognized that no two pieces of equipment and no two products are engineered or designed exactly the same. Trade names, brand names and models specified herein are provided to establish a minimum standard of quality acceptable to the Owner for this bid. Substitute brands, makes and models shall be considered and reviewed on the basis of their ability to perform the specified tasks or provide the same quality of goods as specified in the Owner's bid. This is known as an "Equivalent".

If the bidder seeks to provide an Equivalent product or good, the bidder shall with its bid submission include specifications or cut sheets for such proposed Equivalent product or good. The Owner's Architect/Engineer for the bid shall review the submission provided by the bidder to determine whether the product or good is an Equivalent to the bid specification. The Owner's Architect/Engineer for the bid shall have the final decision on whether a bidder's submitted product specifications are an Equivalent to the named product(s) or good(s) in this bid.

Should any requirements in the contract documents be found to conflict with the Owner’s general bid boilerplate (the ITB pages) the general bid boilerplate provisions and language shall prevail.

If the Contractor fails to complete the project and each and every part and appurtenance thereof fully, entirely and in conformity with the provisions of the contract within the times stated in the contract, or within such further time as may have been granted in accordance with the provisions of the contract, then the Owner may withhold permanently from the Contractor’s total compensation the appropriate amount of $500 for each and every day that the work remains incomplete, which said amount shall not be considered a penalty, but liquidated damages for the loss, inconvenience and extra expense to the Owner by such delays.

The Bidder proposes to furnish all labor, materials and equipment required to complete the work in every detail, in accordance with the plans, specifications and other contract documents prepared by Bach Associates, at and for the following Prices:

Base Bid

The below (in numbers) and the following (in words) lump sum base bid includes all labor, superintendence, materials, tools, transportation, plant and equipment and all means of construction necessary and reasonably incidental to complete all the work and improvements to be performed under the Base Bid as specified in the Bid Documents and Specifications for "Adventure Aquarium Kaleidoscope Cove" as prepared by Bach Associates, PC and dated December 16, 2024.

Materials and labor obviously a part of the work and necessary for the proper installation and/or operation of same, although not specifically indicated on the Contract Drawings, the specifications, and /or listed on this Proposal bid form and will be provided as if called out in detail at no additional cost to the Owner.

SUBMITTED BID PAKCAGE MUST INCLUDE IDENTIFICATION OF SUBCONTRACTORS AS LISTED IN CORRESPONDING EXHIBIT IN INSTRUCTIONS TO BIDDERS DOCUMENT.

TOTAL BID PRICE (In Numbers) $_____

(In words)_____

_____

Amount shall be shown in both words and figures. In case of discrepancy, the amount shown in words shall govern).

BID FORM (CONTINUED)

BIDDER'S SIGNATURE:

A. If a Corporation:

Name of Bidder: _____

Authorized Signature: _____

Name of Person Signing: _____

Title of Person Signing: _____

Dated: _____

Business Address: _____

Business Telephone Number: _____

Incorporated under the laws of the State of: _____

B. If a Partnership, Individual, or Non-Incorporated Organization:

Name of Business Entity: _____

Authorized Signature: _____

Name of Person Signing: _____

Title of Person Signing: _____

Dated: _____

Business Address: _____

Business Telephone Number: _____

END OF DOCUMENT

APPENDIX

A101 STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR	7 pages
A201 GENERAL CONDITIONS	54 pages
PREVAILING WAGE RATES	1 page

A101 STANDARD FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR

AIA® Document A101™ – 2007

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the day of January in the year 2024
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

Herschend Family Entertainment
5445 Triangle Parkway, Suite 20
Peachtree Corners, Georgia 30092
Telephone Number : (770) 441-1940
.

and the Contractor:
(Name, legal status, address and other information)

Contractor
Contractor Address
Contractor Adress

for the following Project:
(Name, location and detailed description)

Adventure Aquarium Kaleidoscope Cove
1 Riverside Drive
Camden, New Jersey 08103

The Architect:
(Name, legal status, address and other information)

Bach Associates, PC, Professional Corporation
304 White Horse Pike
Haddon Heights, New Jersey 08035
Telephone Number: (856) 546-8611
Fax Number: (856) 546-8612

The Owner and Contractor agree as follows.

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.

AIA Document A201™–2007, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

TABLE OF ARTICLES

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner.
(Insert the date of commencement if it differs from the date of this Agreement or, if applicable, state that the date will be fixed in a notice to proceed.)

Shop drawings, submittals, etc can be commenced after Notice to Proceed has been given by Owner or Architect.

3.2 The Contract Time shall be measured from the date established in the Notice to Proceed.

(Paragraph deleted)

§ 3.3 The Contractor shall achieve Substantial Completion of the entire Work not later than forty-five (45) days from the date of commencement, or as follows:
(Insert number of calendar days. Alternatively, a calendar date may be used when coordinated with the date of commencement. If appropriate, insert requirements for earlier Substantial Completion of certain portions of the Work.)

Portion of Work	Substantial Completion Date
All work	May 8, 2025

, subject to adjustments of this Contract Time as provided in the Contract Documents.
(Insert provisions, if any, for liquidated damages relating to failure to achieve Substantial Completion on time or for bonus payments for early completion of the Work.)

Liquidated damages shall be $500.00 per calendar day.

ARTICLE 4 CONTRACT SUM

4.1 § The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be ($0,000,000.00), subject to additions and deductions as provided in the Contract Documents.

2.4 § The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:
(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

N/A

§ 4.3 Unit prices, if any:
(Identify and state the unit price; state quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price Per Unit ($0.00)
NA	NA	NA

§ 4.4 Allowances included in the Contract Sum, if any:
(Identify allowance and state exclusions, if any, from the allowance price.)

Item	Price
N/A	-

ARTICLE 5 PAYMENTS

§ 5.1 PROGRESS PAYMENTS

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

The exact schedule of Application for Payment submittals will be established at the Pre-Construction Meeting.

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than two weeks prior to the first Tuesday of a month, the Owner shall authorize same payment of the certified amount to the Contractor not later than the first day of the next month. If an Application for Payment is received by the Architect after the application date fixed above, payment shall be made by the Owner not later than sixty (60) days after the Architect receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract

Sum among the various portions of the Work. The schedule of values shall be 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.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

.1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of two percent (2 %). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 7.3.9 of AIA Document A201™–2007, General Conditions of the Contract for Construction;

.2 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less retainage of two percent (2 %);

.3 Subtract the aggregate of previous payments made by the Owner; and

.4 Subtract amounts, if any, for which the Architect has withheld or nullified a Certificate for Payment as provided in Section 9.5 of AIA Document A201–2007.

§ 5.1.7 The progress payment amount determined in accordance with Section 5.1.6 shall be further modified under the following circumstances:

.1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the Architect shall determine for incomplete Work, retainage applicable to such work and unsettled claims; and
(Section 9.8.5 of AIA Document A201–2007 requires release of applicable retainage upon Substantial Completion of Work with consent of surety, if any.)

.2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Section 9.10.3 of AIA Document A201–2007.

§ 5.1.8 Reduction or limitation of retainage, if any, shall be as follows:
(If it is intended, prior to Substantial Completion of the entire Work, to reduce or limit the retainage resulting from the percentages inserted in Sections 5.1.6.1 and 5.1.6.2 above, and this is not explained elsewhere in the Contract Documents, insert here provisions for such reduction or limitation.)

§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 FINAL PAYMENT

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Section 12.2.2 of AIA Document A201–2007, and to satisfy other requirements, if any, which extend beyond final payment; and

.2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner's final payment to the Contractor shall be made as follows:

The Contractor shall submit a separate voucher for the full amount of the retainage along with the Consent of Surety, A.I.A. Form G707A and the Contractor shall be required to furnish a Maintenance Bond for 100% of the Project Cost for a period of two (2) years from the Date of Final Acceptance.

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 INITIAL DECISION MAKER

The Architect will serve as Initial Decision Maker pursuant to Section 15.2 of AIA Document A201–2007, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 6.2 NON-BINDING DISPUTE RESOLUTION

For any Claim subject to, but not resolved by, mediation pursuant to Section 15.3 of AIA Document A201–2007, the method of binding dispute resolution shall be as follows:
(Check the appropriate box. If the Owner and Contractor do not select a method of binding dispute resolution below, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.)

[X] Arbitration pursuant to Section 15.4 of AIA Document A201–2007

[ ] Litigation in a court of competent jurisdiction

[ ] Other *(Specify)*

THE PARTIES WAIVE THEIR RIGHT TO A JURY TRIAL IN ANY SUCH LITIGATION AND CONSENT TO ANY LITIGATION BEING TRIED BY A JUDGE SITTING WITHOUT A JURY.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2007.

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2007.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2007 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.
(Insert rate of interest agreed upon, if any.)

No interest

§ 8.3 The Owner's representative:
(Name, address and other information)

Herschend Family Entertainment
5445 Triangle Parkway, Suite 200
Peachtree Corners, Georgia 30092
Telephone Number: (770) 441-1940
.

§ 8.4 The Contractor's representative:
(Name, address and other information)

A person named by the Contractor and approved by the Owner/Architect

§ 8.5 Neither the Owner's nor the Contractor's representative shall be changed without ten days written notice to the other party.

§ 8.6 Other provisions:

The Drawings, Specifications and any addendums shall be considered as part of this Contract.

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated in the sections below.

§ 9.1.1 The Agreement is this executed AIA Document A101–2007, Standard Form of Agreement Between Owner and Contractor.

§ 9.1.2 The General Conditions are AIA Document A201–2007, General Conditions of the Contract for Construction.

§ 9.1.3 The Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

9.1.4 § The Specifications:
(Either list the Specifications here or refer to an exhibit attached to this Agreement.)

See Specification Section 003002 TABLE OF CONTENTS in Volume 1 of the Project Specifications for the Adventure Aquarium Kaleidoscope Cove project, dated December 16, 2024, for a complete list of project specifications.

§ 9.1.5 The Drawings:
(Either list the Drawings here or refer to an exhibit attached to this Agreement.)

See Specification Section 003003 SCHEDULE OF DRAWINGS in Volume 1 of the Project Specifications for the Adventure Aquarium Kaleidoscope Cove project, dated December 16, 2024 for a complete list of drawings.

§ 9.1.6 The Addenda, if any:

Number	Date	Pages
NA	NA	NA

§ 9.1.7 Additional documents, if any, forming part of the Contract Documents:

.1 The Drawings, Specifications and any addendums shall be considered as part of this Contract.

.2 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201–2007 provides that bidding requirements such as advertisement or invitation to bid, Instructions to Bidders, sample forms and the Contractor's bid are not part of the Contract Documents unless enumerated in this Agreement. They should be listed here only if intended to be part of the Contract Documents.)

N/A

ARTICLE 10 INSURANCE AND BONDS

The Contractor shall purchase and maintain insurance and provide bonds as set forth in Article 11 of AIA Document A201–2007.
(State bonding requirements, if any, and limits of liability for insurance required in Article 11 of AIA Document A201–2007.)

Type of insurance or bond	Limit of liability or bond amount ($0.00)
Performance and Payment Bond	100% Contract Value
Maintenance Bond	100% Contract Value - 2 years

This Agreement entered into as of the day and year first written above.

OWNER*(Signature)*	**CONTRACTOR** (*Signature)*
Owner's Name, Title	Contractor's Name, Title
(Printed name and title)	*(Printed name and title)*

A201 GENERAL CONDITIONS

AIA® Document A201™ – 2007

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)
Adventure Aquarium Kaleidoscope Cove
1 Riverside Drive
Camden, New Jersey 18103

THE OWNER:
(Name, legal status and address)
Herschend Family Entertainment
5445 Triangle Parkway, Suite 200
Peachtree Corners, Georgia 30092

THE ARCHITECT:
(Name, legal status and address)
Bach Associates, PC
304 White Horse Pike
Haddon Heights, New Jersey 08035

TABLE OF ARTICLES

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.

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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.

§ 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.

§ 1.7 EXECUTION OF CONTRACT DOCUMENTS

§ 1.7.1 The Contract Documents shall be signed by the Owner and Contractor. If either the Owner or Contractor or both do not sign all the Contract Documents, the Architect shall identify such unsigned Documents upon Request. ***The Agreement shall be signed in not less than quadruplicate by the Owner and Contractor.***

§ 1.7.2 Execution of the contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with the local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents. ***Execution of the contract by the Contractor is a representation that said Contract Documents are full and complete, are sufficient to have enabled the Contractor to determine the cost of the Work therein to enter into the Contract and that the Contract Documents are sufficient to enable it to construct the Work outlined therein, and otherwise to fulfill all its obligations hereunder, including, but not limited to, Contractor's obligation to construct the Work for an amount not in excess of the Contract Sum on or before the date(s) of Substantial Completion established in the Agreement. The Contractor further acknowledges and declares that it has visited and examined the site, examined all physical, legal, and other conditions affecting the Work and is fully familiar with all of the conditions thereon and thereunder affecting the same. In connection therewith, Contractor specifically represents and warrants to Owner that it has, by careful examination, satisfied itself as to: (1) the nature, location and character of the Project and the site, including, without limitation, the surface and subsurface conditions of the site and all structures and obstructions thereon and thereunder, both natural and man-made, and all surface and subsurface water conditions of the site and the surrounding area; (2) the nature, location, and character of the general area in which the Project is located, including without limitation, its climatic conditions, available labor supply and labor costs, and available equipment supply and equipment costs; and (3) the quality and quantity of all materials, supplies, tools, equipment, labor, and professional services necessary to complete the Work in the***

manner and within the cost and time frame required by the Contract Documents, In connection with the foregoing, and having carefully examined all Contract Documents, as aforesaid, and having visited the site, the contractor acknowledges and declares that it has no knowledge of any discrepancies, omissions, ambiguities, or conflicts in said Contract Documents and that if it becomes aware of any such discrepancies, omissions, ambiguities, or conflicts, it will promptly notify Owner and Architect of such fact.

§ 1.7.3 ***The Contract Documents include all items necessary for the proper execution and completion of the Work by the Contractor. The Work shall consist of all items specifically included in the Contract Documents as well as all additional items of work which are reasonably inferable from that which is specified in order to complete the Work in accordance with the Contract Documents, The Contract Documents are complementary, and what is required by any one Contract Document shall be as binding as if required by all. Any differences between the requirements of the Drawings and the Specifications or any differences noted within the Drawings themselves or within the Specifications themselves have been referred to the Owner and Architect by Contractor prior to the submission of bids and have been clarified by an Addendum issued to all bidders.***

If any such differences or conflicts were not called to the Owner's and Architect's attention prior to submission of bids, the Architect shall decide which of the conflicting requirements will govern based upon the most stringent of the requirements, and, subject to the approval of the Owner, the Contractor shall perform the Work at no additional cost and/or time to the Owner in accordance with the Architect's decision. Work not covered in the Contract Documents will not be required unless it is consistent therewith and is reasonably inferable therefrom as being necessary to produce the intended results.

§ 1.7.3.1 The term "reasonably inferable" includes work necessary to "provide" work indicated or specified, as defined in section: Definitions and Standards; that is: furnish and install, complete, in place and ready for use.

§ 1.7.3.2 Details referenced to portions of the Work shall apply to other like portions of the Work not otherwise details.

§ 1.7.3.3 The Contractor shall request the Architect/Engineer's interpretation of apparent discrepancies, conflicts, or omissions in the Specifications and Drawings. Subcontractors shall forward such requests through the Contractor. Such requests, and the Architect/Engineer's interpretation, shall be in written form; other forms of communications shall be used to expedite resolution of concerns, but will not be binding.

§ 1.7.4 Explanatory notes shall take precedence over conflicting drawn note indications. Large scale drawings shall take precedence over small scale drawings. Figured dimensions shall take precedence over scaled measurements. Should contradictions be found, the Architect shall determine which indication is correct.

§ 1.7.5 When more than one material, brand, or process is specified for a particular item of Work, the choice shall be the Contractor's. Contractor may, after notifying the Architect and Owner, select the one it considers to be the best. Approval by Architect or Owner of materials, suppliers, processes, or Subcontractors does not imply a waiver of any Contract requirements including, without limitation, Contractor's warranty.

§ 1.7.6 In all cases, the details, drawings, and specifications shall be checked with existing conditions and with work in place, and variations, if any, shall be referred by the Contractor to the Architect for adjustment, as the Contractor will be responsible for the fit or work in place.

§ 1.7.7 When a profile, section or other finished condition is shown, furring or other method of obtaining such finished conditions shall be provided. The drawings may show work fully drawn out or only a portion thereof, the remainder being in outline, the drawn out portions apply to other like or similar places.

§ 1.7.8 Where it is required in the specifications that materials, products, processes, equipment, or the like be installed or applied in accordance with manufacturer's instructions, directions, or specifications, or words to this effect, it shall be construed to mean that said application or installation shall be in strict accordance with printed material concerned for use under conditions similar to those at the job site. Three copies of such instructions shall be furnished to the Architect and his written approval thereof obtained before work is begun.

§ 1.7.9 Any material specified by reference to the number, symbol, or title of a Commercial Standard, Federal Specification, ASTM Specification, trade association standard, or other similar standards, shall comply with the requirements in the latest revision thereof and any amendments or supplements thereto in effect one month prior to the date on which bids are opened and read except as limited to type, class, or grade, or modified in such reference. The standards referred to, except as modified in the specifications, shall have full force and effect as through printed in the specifications. The Architect will furnish upon request information as to how copies of the standards referred to may be obtained.

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.

(Paragraph deleted)

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 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.

§ 2.2.2 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.

(Paragraphs deleted)

§ 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 fails to carry out Work in accordance with the Contract Documents, *or fails or refuses to provide a sufficient amount of properly supervised and coordinated labor, materials, or equipment so as to be able to complete the Work within the Contract Time or fails to remove and discharge (within ten days) any lien filed upon Owner's property by anyone claiming by, through, or under Contractor, or disregards the instructions of Architect or Owner when based on the requirements of 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.

§ 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

(Paragraph deleted)

§ 3.1.1.1 The term "Contractor" shall mean the respective Prime Contract person or entity identified as such in the Owner Contractor Agreement, for each respective Prime Construction Contract, as responsible for the supervisory control over allocation, coordination of all SubContractors or trades, performance and completion of all portions of the Work, including cooperation with those doing portions of the Work under Separate Contract with the Owner.

§ 3.1.1.2The term "Contractor" shall mean and apply with equal force to each respective Prime Contractor and all other Contractors having a direct Contract with the Owner, or with each respective Contractor or other Prime Contractor for other branches of the Work, or his authorized representative.

§ 3.1.2 The Contractor shall not be relived 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 other than the Contractor.

§ 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 In addition to and not in derogation of Contractor's duties under Paragraph 1.7.2 and 1.7.3, the Contractor shall carefully study and compare the Contract Documents with each other and shall at once report to the Architect errors, inconsistencies or omissions discovered. The Contractor shall not be liable to the Owner or Architect for damage resulting from errors, inconsistencies or omissions in the Contract Documents that could not have been discovered by a prudent and experienced contractor in advance and that are not in the nature of items described in and intended to be covered in Paragraph 1.7.2 and 1.7.3 unless the Contractor recognized or reasonably should have recognized such error, inconsistency or omission and failed to report it to the Architect. If the Contractor performs any construction activity involving an error, inconsistency or omission in the Contract Documents that the Contractor recognized or reasonably should have recognized without such notice to the Architect, the Contractor shall Assume Complete Responsibility for such performance and shall bear the full amount of the attributable costs for correction.

§ 3.2.1.1 If any errors, inconsistencies, or omissions in Contract Documents are recognized or reasonably should have been recognized by the Contractor, any member of its organization, or any of its Subcontractors, the Contractor shall be responsible for notifying the Architect in writing of such error, inconsistency, or omission before proceeding with the Work. The Architect will take such notice under advisement and within a reasonable time commensurate with job progress render a decision. If Contractor fails to give such notice and proceeds with such Work, it shall correct any such errors, inconsistencies, or omissions at no additional cost to the Owner.

§ 3.2.1.2 Deviations from the Construction documents must be noted by the Prime Contractor at the time of shop drawing submission. Failure to do so will result in the implication of Section 3.2 of the General Conditions and Paragraph 3.2.1 and 3.2.1.1 above.

§ 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.

§ 3.3.4 The Contractor, when requested by the Architect, shall meet with representative of the Architect at all times and furnish all information requested; he shall allow the Architect to inspect the work at all times. Neither the Owner, nor the Architect shall be liable to the Contractor for extra compensation or damages for interference or delays on account of any such meetings, information, or inspections so requested or other acts of the Architect done in good faith and within the scope of their employment by the Owner.

§ 3.3.4.1 In addition the Contractor is entrusted with the oversight, management control, and general direction of this project to insure that all contract completion dates are met. In the event that there are any delays caused to any subcontractor on this project, liability shall lie with the Contractor and not with the Owner.

§ 3.3.5 The contractor has the responsibility to ensure that all material suppliers and Subcontractors, their agents, and employees adhere to the Contract Documents, and that they order materials on time, taking into account the current market and delivery conditions and that they provide materials on time. The Contractor shall coordinate its Work with that of all others on the Project including deliveries, storage, installations, and construction utilities. The contractor shall be responsible for the space requirements, locations, and routing of its equipment. In areas and locations where the proper and most effective space requirements, locations and routing cannot be made ad indicated, the Contractor shall meet with all others involved, before installation, to plan the most effective and efficient method of overall installation.

§ 3.3.6 The Contractor shall establish and maintain bench marks and all other grades, lines and levels necessary for the Work, report errors or inconsistencies to the Architect before commencing Work, and review the placement of the building(s) and permanent facilities on the site with the Owner and Architect after all lines are staked out and

before foundation Work is started. Contractor shall provide access to the Work for the Owner, the Architect, other persons designated by Owner, and governmental inspectors. Any encroachments made by contractor or its Subcontractor (of any tier) on adjacent properties due to construction as revealed by an improvement survey, except for encroachments arising from errors or omissions not reasonably discoverable by Contractor in the Contract Documents, shall be the sole responsibility of the Contractor, and Contractor shall correct such encroachments within thirty (30) days of the improvement survey (or as soon thereafter as reasonably possible), at contractor's sole cost and expense, either by the removal of the encroachment (and subsequent reconstruction on the Project site) or agreement with the adjacent property owner(s) (in form and substance satisfactory to Owner in its sole discretion) allowing the encroachments to remain.

§ 3.3.7 **Coordination:**

§ 3.3.7.1 In the case of a single prime Contract, the General Contractor becomes the sole responsible party for the coordination of the entire project, and all other prime contractors shall mean subcontractors; In the case of a multiple Prime Contract, the General Contractor shall also be responsible to coordinate the relationships among the Prime Contractors.

§ 3.3.7.2 The General Contractor shall be responsible to coordinate and expedite the total construction process and all of its parts. The Owner relies upon the organization, management, skill, cooperation and efficiency of the General Contractor to supervise, direct, control and manage the work and to coordinate and expedite the efforts of the other prime contractors and subcontractors so as to deliver the work conforming to the contract within the schedules time. The General Contractor is responsible for Proper sequence and coordination. It shall determine the location of work and resolve conflicts amongst Contractors.

§ 3.3.7.3 The General Contractor and all other prime contractors shall provide a qualified full-time staff member or members (i.e.: project managers, superintendent, or foreman) to oversee their own work and the work of their sub-contractors. Should the Prime contractor be responsible for multiple projects at different sites, then such prime contractor shall provide a separate qualified superintendent for each of the projects. In addition, the General Contractor shall provide a qualified full-time superintendent or members to provide mechanical and electrical coordination and perform coordination with all their subcontractors.

§ 3.3.7.4 The Contractor's superintendent and/or foreman will at all times be subject to the approval of the Architect and Construction manager. The Architect and Construction Manager reserves the right to require the contractor to replace the superintendent and/or foreman if, in the opinion of the Architect and Construction Manager, the superintendent and/or foreman is not performing satisfactorily.

§ 3.3.7.5 Each prime contractor shall coordinate his activities with the activities of other contractors.

§ 3.3.7.6 All questions pertaining to the work are to be made to the Architect/Engineer sufficiently in (via an RFI Form) advance of construction to permit comparisons, investigations, or references to drawings and shop drawings as necessary.

§ 3.3.7.7 The General Contractor is required to submit a site logistics plan coordinating all Owner functions with the access and safety of the job site.

§ 3.3.7.8 The Contractor is required to coordinate all the inspection and material testing to meet the contract document specifications.

§ 3.3.7.9 The Contractor has full and sole responsibility for construction methods and implementation of a "quality control system" to insure coordination.

§ 3.3.7.10 The Contractor is responsible for field verification of all dimensions/measurements for the coordination of materials and trades. Check field dimensions, clearances, relationships to available space, and anchors.

§ 3.3.7.11 The Contractor shall make all necessary arrangements to conduct work so that all parts shall be carried harmoniously and simultaneously or sequentially, so as components or increments of the same shall not interfere or retard the progress of others.

§ 3.3.7.12 Minor changes in locations of equipment, parts, etc due to field conditions shall be made, if so directed, at no additional cost.

§ 3.3.7.13 The Contractor shall coordinate the delivery, unloading, movement, relocation, storage and protection of all materials.

§ 3.3.7.14 The Contractor shall examine the drawings and dimensions and is responsible for satisfactory joining and fitting of all parts of the work.

§ 3.3.7.15 Accurate dimensions, sleeved and opening drawings are to submitted prior to placement in the field.

§ 3.3.7.16 Prepare coordination drawings for all above ceiling areas throughout the entire project. Drawings showing all piping, duct, cabletrays, electrical ductbanks, and similar items, but not electrical conduit less than 4 inches in diameter. Complete architectural, mechanical and electrical reflected ceiling layouts, (including ductwork, conduits, piping, lighting, etc,).

§ 3.3.7.17 The Contractor is responsible for any omissions of the subcontractors and is required to provide a complete operating facility.

§ 3.3.7.18 The General Contractor shall be responsible for preserving the integrity of ceiling heights and room sizes.

§ 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.

§ 3.12.11 Detailed requirements are specified in the Division 1 section 01300 relating to "Submittals".

§ 3.12.12 All shop drawings are to include manufacturer's data. All shop drawings and samples are to be submitted by the Contractor to the Architect for review. Each sheet of the shop drawings shall identify the project, contractor, subcontractor, and fabricator or manufacturer and the date of the drawings. All shop drawings shall be numbered in consecutive sequence and each sheet shall indicate the total number of sheets in the set.

§ 3.12.13 Substitutions: All substitutions or deviations from plans and specifications must be clearly noted as such on all shop drawings. Contractor shall identify, coordinate and pay for any additional requirements as a result of substitutions, deviations, etc. including necessary change orders. In addition, substitution submittals shall be made no later than 30 days after Notice to Proceed in order to provide time for comparison review.

§ 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.

§ 3.13.1 Location and weights of all equipment and materials that the Contractor intends to place on the slab shall be submitted to the Architect for review.

§ 3.13.2 Only materials and equipment which are to be used directly in the Work shall be brought to and stored on the Project site by the Contractor. After equipment is no longer required for the Work, it shall be promptly removed from the Project site. Protection of construction materials and equipment stored at the Project site from weather, theft, damage and all other adversity is solely the responsibility of the Contractor.

§ 3.13.3 The contractor and any entity for whom the Contractor is responsible shall not erect any sign on the Project site without the prior written consent of the Owner.

§ 3.13.4 Contractor shall ensure that the Work, at all times, is performed in a manner that affords reasonable access, both vehicular and pedestrian, to the site of the Work and all adjacent areas. The Work shall be performed, to the fullest extent reasonably possible, in such a manner that public areas adjacent to the site of the Work shall free from all debris, building materials and equipment likely to cause hazardous conditions. Without limitation of any provision of the Contract Documents, Contractor shall use its best efforts to minimize any interference with the occupancy or beneficial use of (1) any areas and buildings adjacent to the site of the Work or (2) the Building in the event of partial occupancy, as more specifically described in Paragraph 9.9.

§ 3.13.5 Without prior approval of the Owner, the Contractor shall not permit any workers to use any existing facilities at the Project site, including without limitation, lavatories, toilets, entrances and parking areas other than those designated by the Owner. Without limitation of any other provision of the Contract Documents, the Contractor shall use its best efforts to comply with all rules and regulations promulgated by the Owner in connection with the use and occupancy of the Project site and the Building, as amended from time to time.

§ 3.13.6 The Contractor shall immediately notify the Owner in writing if during the performance of the Work, the Contractor finds compliance with any portion of such rules and regulations to be impracticable, setting forth the problems of such and suggest alternatives through which the same results can be achieved. The Owner may, in the Owner's sole discretion, adopt such suggestions, develop new alternatives or require compliance with the existing requirements and collective bargaining agreements applicable to use and occupancy of the Project site and the Building

§ 3.13.7 The General Contractor shall provide a temporary construction fence whether shown on the Contract Documents or not as required to separate the area or areas under construction from the Owners area or areas used by the public. The temporary fencing shall be approved by the Owner prior to installation.

§ 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.

§ 3.15.3 Each Prime Contractor shall perform all daily clean up and removal of debris from the site including that of his subcontractors. Each Prime Contractor shall maintain an adequate supply of laborers to accomplish daily clean up and removal of debris from the site and work areas. No debris will be allowed to accumulate in or around the building including masonry debris. This building site must be maintained free of all litter and debris on a daily basis. No accumulation of flammable material is permitted. Prior to installation of finishes the floors will be swept and kept free of dust and dirt until turned over to the owner.

§ 3.15.4 Cleaning and debris removal may be considered a safety concern by judgment of the Owner or his agents and as such the work may be stopped to provide time and labor for immediate clean up.

§ 3.15.5 Final Clean-Up: The General Construction Contractor has the responsibility for the final clean-up and policing of the entire site after other contractors have removed their own waste materials, rubbish, equipment, tools and plant. In addition thereto, the General Construction Contractor shall have a professional cleaning company perform the following immediately prior to the Architect's inspection for Substantial Completion:

§ 3.15.5.1 Removal of all manufacturer's temporary labels from materials, equipment and fixtures.

§ 3.15..5.2 Removal of all stains from glass and mirrors; wash, polish, inside and outside.

§ 3.15.5.3 Removal of marks, stains, finger prints, other soil, dust, dirt, from painted, decorated, or stained woodwork, plaster or plasterboard, metal, acoustic tile, and equipment surfaces.

§ 3.15.5.4 Remove spots, paint, soil, from resilient flooring.

§ 3.15.5.5 Remove temporary floor protections; clean, strip and provide three (3) coats of wax on new VCT floors or otherwise treat as directed by the material manufacturer's recommendation, all finished floors. Final vacuum all carpet.

§ 3.15.5.6Clean all interior finished surfaces, including doors and window frames, and hardware required to have a polished finish, of oil, stains, dust, dirt, paint, and the like; leave without finger prints, blemishes.

§ 3.15.5.7 Final site clean-up shall extend beyond the Contract Limit Lines as reasonably required to insure the complete removal of all construction debris from the entire site, including staging areas.

§ 3.16 ACCESS TO WORK

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

§ 3.16.1 The Contractor shall promptly notify the Architect/Engineer and Owner of the presence of hazardous conditions at the site, including the start of hazardous operations or the discovery or exposure of hazardous substances.

§ 3.16.2 Contractor shall be responsible for snow plowing and snow removal as required to maintain access/egress to construction area.

§ 3.16.3 Contractor shall keep only necessary equipment on site and shall cooperate with the Owner regarding location of stored material.

§ 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 that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.1.1 Contractor for itself, its successors and assigns, agrees to indemnify and save Owner, its successors, assigns, employees, agents, architects and engineers, harmless from, and against any and all claims, demands, damages, actions or causes of action, together with any and all losses, costs or expenses in connection therewith or related thereto, including but not limited to attorney fees for costs of suit, for bodily injuries, death or property damage arising in or in any manner growing out of the work performed, or to be performed under this Contract whether or not caused by fault or negligence of Owner. Contractor, for itself, its successors and assigns, hereby expressly agrees to waive any provision of the applicable State's Workers' Compensation Act, including Section 303(b), whereby the contractor could preclude its joinder as an additional defendant or avoid liability for damages, Contribution or Indemnity in any action at law, or otherwise where Contractor's employee or employees, heirs, assigns or anyone otherwise entitled to receive damages by reason of injury or death brings an action at law against the Owner, its successors, assigns employees, agents, engineers or architects, Contractor, of itself, its successors and assign, agrees to indemnify the Owner, its successors, assigns, employees, agents, architects, Construction Manager and engineers against all fines, penalties or losses incurred for, including but not limited to attorney fees and costs of suit, or by reason of the violation by Contractor in the performance of this Contract, of any ordinance, regulation, rule of law of any political subdivision or duly constituted public authority. Without limiting the foregoing, the Contractor, at the request of Owner, its successors, assigns, employees, agents, architect, Construction Manager or engineers, agrees to defend at the Contractor's expense any suit or proceeding brought against Owner, its successors, assigns, employees, agents, architect, Construction Manager or engineers, due to, or arising out of the work performed by the Contractor.

§ 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.

(Paragraph deleted)

§ 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.

§ 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.

§ 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.

(Paragraphs deleted)
§ 5.3.1 The Contractor shall obligate each subcontractor specifically to comply with the New Jersey Plan of Affirmative Action to avoid discriminatory practice in employment.

§ 5.3.2 The Contractor shall obligate each subcontractor to comply with the applicable prevailing wage schedule of the Department of Labor of the State of New Jersey.

§ 5.3.3 The Contractor shall obligate each Subcontractor to comply with the Public Works Contractor Registration Act of the State of New Jersey.

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 CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE ALL WORK. All trades have a mutual obligation to coordinate their work with the other trades and cooperate as necessary with the Contractor, Construction Manager if applicable, and the Construction schedule – to complete the work as required by the Owner. The Construction Manager if applicable will provide assistance to the Contractor for coordination between their work and the Owner. The Contractor is required to have their superintendent or foreman on site at all times when their work or that of their subcontractors is in progress.

§ 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, *should the Contractor be damaged by any other separate Contractor on the work by reason of such other Contractor's failure to perform properly his Contract with the Owner, no action will lie against the Owner and the Owner shall have no liability therefore, but the Contractor may assert his claim for damage against such separate Contractor as a third party beneficiary under the Contract between such other Contractor and the Owner.*

§ 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.

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor causes to completed or partially completed construction or to property of the Owner or separate contractors as provided in Section 10.2.5, *should the Contractor be damaged by any other separate Contractor on the work by reason of such other Contractor's failure to perform properly his Contract with the Owner, no action will lie against the Owner and the Owner shall have no liability therefore, but the Contractor may assert his claim for damage against such separate Contractor as a third party beneficiary under the Contract between such other Contractor and the Owner..*

§ 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 as the Owner determines to be just, based on the recommendation of the Architect.

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.

§ 7.1.1.1 A field directive or field order shall not be recognized as having any impact upon the Contract Sum or the Contract Time and the Contractor shall have no claim therefor unless it shall, prior to complying with same and in no event no later than 10 working days from the date such direction or order was given, submit to the Owner for the Owner's approval its change proposal.

§ 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 in accordance with Section 7.4.1.

§ 7.1.2.1 **"Neither this Contract nor the Work to be performed hereunder can be changed by oral agreement. No course of conduct or dealings between the parties, nor express or implied acceptance of alterations or additions to the Work and no claims that the Owner has been unjustly enriched by any alteration or addition to the Work, whether there is, in fact, any unjust enrichment to the Work, shall be the basis for any alleged implied agreement by the Owner to the change, any alleged waiver of the Owner's rights under this Contract**

or any increase in any amounts due under the Contract or any or a change in any time period provided for in the Contract Documents."

§ 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.

§ 7.1.4 A directive or order from the Owner or the Architect, other than a Change Order, a Construction Change Directive or any Order for a minor change pursuant to this Article 7, shall not be recognized as having any impact on the Contract Sum or the Contract Time and the Contractor shall have no claim therefore. If the Contractor believes that a directive or order would require it to perform work not required by the Contract Documents, the Contractor shall so inform the Owner and Architect in writing prior to complying with the same and in no event any later than five (5) working days from the day such direction or order was given, and shall submit to the Owner and Architect for the Owner's and Architect's approval its change proposal.

§ 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.

§ 7.2.2 Any change in work authorized in writing by the Owner and Architect that will require a change in the cost of the work, whether an additive or deductive change in cost, shall show a complete cost breakdown of labor, material, equipment and insurance, and appropriate overhead and profit in accordance with 7.3.6 and 7.3.6.1.

§ 7.2.3 When a Change Order involves both additions and deletions in material, the net quantity is to be determined and the overhead and profit is to be applied to the net quantity in accordance with 7.3.6 and 7.3.6.1.

§ 7.2.4 When a Change Order involves deletions in materials and labor, the amount of the credit will be equal to the line item on the Schedule of Values or a unit of the value if only a portion of the value is being deleted.

§ 7.2.5 When any change in the Work, regardless of the reason therefore, requires or is alleged to require an adjustment in Contract Time, such request for time adjustment shall be submitted by the Contractor as part of the change proposal. Any Change Order approved by the Owner and for which payment is accepted by the Contractor, in which no adjustment in Contract Time is stipulated, shall be understood to mean that no such adjustment is required by reason of the change, and any and all rights of the Contractor or any subsequent request of adjustment of Contract Time by reason of the change is waived.

§ 7.2.6 Request by the Contractor for adjustment of the Contract Amount regardless of the reason therefore, shall be submitted to the Architect and the Owner with itemized labor and material quantities and unit prices to permit proper evaluation of the request. A submission by the Contractor containing unsubstantiated lump sum requests for adjustment of the Contract Amount will not be considered by the Owner and Architect. The Owner and Architect will not be liable for any delay incurred by reason of the Contractor's failure to submit satisfactory justification and back-up with any request for adjustment to the Contract Amount.

§ 7.2.7 Agreement on any Change Order shall constitute a final settlement of all matters relating to the change in the initial Work which is the subject of the Change Order, including, but not limited to, all direct or indirect costs associated with such change and any and all adjustment to the Contract Sum and the Construction Schedule. The contractor will not be entitled to any compensation for additional work or delays in the Construction Schedule not included in the Change Order

§ 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 a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation as prepared by the Architect;
.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 allowance for overhead in accordance with the schedule set forth in Subparagraph 7.3.7.1 below, or if no such amount is set forth , 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, whether incorporated or consumed;
.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

§ 7.3.7.1 In Subparagraph 7.3.7 the allowance for overhead and profit combined, included in the total cost to the Owner, shall be based upon the following schedule and may only include a Contractor, his Subcontractor and his sub-subcontractor:

7.3.7.1.1 For the Contractor, for any work performed by the Contractor's own forces, 15% of the cost.

7.3.7.1.2 For the Contractor, for any work performed by his Subcontractor, 5% of the amount due the Subcontractor.

7.3.7.1.3 For each Subcontractor or Sub-subcontractor involved, for any Work performed by that contractor's own forces, 10% of the cost.

7.3.7.1.4 For each Subcontractor, for any Work performed by his Sub-subcontractor 10% of the amount due the Subcontractor.

7.3.7.1.5 Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 7.3.7.

7.3.7.1.6 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 subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are subcontractors, they shall be itemized also. In no case will a change involving over $200.00 be approved without such itemization.

§ 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.

(Paragraph deleted)

§ 8.1.2.1 The work to be performed under this Contract shall commence after the required insurance has been obtained and approved and within three days after issuance of the Notice to Proceed by the Owner. The Contract Time shall commence as of the date of the Notice to Proceed unless otherwise specified 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.

§ 8.2.4 Owner, or his representative, in coordination with the Contractor, shall set work hours. Contractor may be required to work nights, weekends or holidays as necessary to complete the work in accordance with the Schedule or in coordination with the Owner's activities. Under no circumstances shall the Contractor begin or continue with work that is adversely impacting activities or operations. All utility shutdowns, interruptions, work in or adjacent to existing buildings will be coordinated through the Owner. Or his representative, and may have to be performed during hours when the Owner's activities are not in operation. All cutting, hammering or other activity that is noisy, produces smoke or fumes or is otherwise disruptive to the Owner's operations may have to be done during hours when the Owner's activities are not in operation. Work required to be performed during non-operating hours, as determined by the Owner or his representative, will be performed at no additional cost to the Owner.

§ 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 occurrences beyond the control and without the fault or negligence of the Contractor and which by the exercise of reasonable diligence the Contractor is unable to prevent or provide against, including labor disputes (other than disputes limited to the work force of, or provided by, the Contractor or its Subcontractors), fire, unusual delay in deliveries not reasonably anticipatable, unavoidable casualties, or by other occurrences which the Architect, subject to the Owner's approval, determines may justify delay, then, provided that the Contractor is in compliance with Subparagraph 4.3.3 hereof, the Contract Time shall be extended by Change Order or Construction Change Directive for the length of time actually and directly caused by such occurrence as determined by the Architect and approved by the Contractor and Owner (such approval not to be unreasonably withheld, delayed or conditioned); provided, however, that such extension of Contract Time shall be net of any delays caused by or due to the fault o negligence of the Contractor or which are otherwise the responsibility of the Contractor and shall also be net of any contingency or "float" time allowance included in the Contractor's construction Schedule. The Contractor shall, in the event of any occurrence likely to cause a delay, cooperate in good faith with the Architect and Owner to minimize and mitigate the impact or any such occurrence and do all things reasonable under the circumstances to achieve this goal.

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(Paragraph deleted)

§ 8.3.2.1 Any claim for extension of time should be made in writing to the Architect not more than five (5) days after the commencement of the delay, otherwise, it should be waived. The Contractor shall provide an estimate of the possible effect of such delay on the progress of the work. No claim made beyond the five (5) days shall be valid.

§ 8.3.2.2 The Contractor agrees that if any delay in the Contractor's works unnecessarily delays the work of any other Contractor of Contractors, the Contractor shall in that case pay all costs and expenses incurred by such parties due to such delays and hereby authorizes the Owner to deduct the amount of such costs and expenses from any moneys due or to become due the Contractor under this Contract. The Architect shall be responsible for ascertaining whether the Contractor is responsible for delaying any of the work of any other Contractor. His decision shall be final.

§ 8.3.2.3 Notwithstanding anything to the contrary in the Contract Documents, any extension of the Contract Time, to the extent permitted under Paragraph 8.3.1, shall be the sole remedy of the Contractor for any (1) delay in the commencement, prosecution or completion of the Work, (2) hindrance or obstruction in the performance of the Work, (3) loss of productivity or (4) other similar claims (collectively referred to in this Paragraph 8.3.2.3 as "delays"), whether or not such delays are foreseeable, unless a delay is caused by acts of the Owner constituting active interference with the Contractor's performance of the Work and only to the extent such acts continue after the Contractor furnishes the Owner with written notice of such interference. In no event shall the Contractor be entitled to any compensation or recovery of any damages in connection with any delay including without limitation consequential damages, lost opportunity cost, impact damages or other similar remuneration. The Owner's exercise of any of its rights or remedies under the Contract Documents (including without limitation ordering changes in the Work or directing suspension, rescheduling or correction of the Work) regardless of the extent or frequency of the

Owner's exercise of such rights or remedies shall not be construed as an act interference with the Contractor's performance of the Work.

§ 8.3.2.4 The Contractor agrees that the Owner can deduct from the Contract Sum, any wages paid by the Owner to any Inspector or Architect or other professional necessarily employed by the Owner for any number of days in excess of the number of days allowed in the specifications for completion of work.

§ 8.3.2.5 Where the cause of delay is due to weather conditions, extension of time shall be granted only for unusually severe weather, as determined by reference to historical data. The term "historical data" as used in the previous sentence shall be construed according to this formula: Average rainfall (or snow or low temperature) for the past five years.

§ 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.

§ 9.1.1 Payment Procedures shall be as follows:

9.1.1.1 Contractor shall submit Schedule of Values to Construction Manager and Architect for review
9.1.1.2 Prior to end of each pay period, Contractor shall submit a rough draft ("pencil copy ") for their payment application for review and approval by the Architect and the Construction Manager.
9.1.1.3 Upon approval of pencil copy, Contractor shall submit at least five copies of their payment application to the Architect for approval along with their certified payrolls and monthly manning reports.
9.1.1.4 Architect and Construction Manager will approve payments and forward to the Owner.

§ 9.2 SCHEDULE OF VALUES

§ 9.2.1 Before the first Application for Payment, the Contractor shall submit to the Architect a schedule of values allocated to various portions of the Work, which in the aggregate equals that total Contract Sum, divided so as to facilitate payments to Subcontractors, supported by such evidence of correctness as the Architect may direct or as required by the Owner. These schedules, when approved by the Architect, Construction Manager (if applicable) and Owner, shall be used to monitor the progress of the Work and as a basis for Certificates for Payment. All items with entered values will be transferred by the Contractor to the "Applications and Certificate for Payment", and shall include the latest approved Change Orders and Construction Change Directives. Change Order values and Construction Change Directive values shall be broken down to show the various subcontracts. The Application for Payment shall be on AIA Document G702 and G703 and the approved Voucher obtainable from the Owner. Each Item shall show its total scheduled value, value of previous applications, value of the application, percentage completed, value completed and value yet to be completed. All blanks and columns must be filled in, including every percentage complete figure.

§ 9.3 APPLICATIONS FOR PAYMENT

The Contractor shall submit to the Architect an itemized Application for Payment for their Contract on AIA Document G702 and G703 and the approved Voucher obtainable from the Owner. Payroll Certification for all employees of all of the workers on the project shall be submitted as well as other such data for the purposes of summarizing the work and tracking the project. The architect and Construction Manager (if applicable) will process the application and forward it with his recommendations to the Owner.

(Paragraphs deleted)

§ 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.

§ 9.3.1.3 Until substantial completion, the Owner will pay 98% of the amount due the Contractor on account of progress payments. The retainage will be held until final acceptance of the project by the Architect and the Owner. The Contractor shall submit a separate voucher for the full amount of the retainage along with the Consent of Surety, AIA Form G707A and the Contractor shall be required to furnish a Maintenance Bond for 100% of the Project Cost for a period of two (2) years from the Date of Final Acceptance.

§ 9.3.1.4 Upon acceptance of the Work performed pursuant to this Contract for which the Contractor has agreed to the withholding of payments pursuant to Article 9 of this Contract, all amounts being withheld by the Owner shall be paid in accordance with Paragraph 9.3.1.3 without further withholding of any amounts for any purposes whatsoever, provided that the Contract has been satisfactorily completed.

§ 9.3.1.5 Each application for payment shall be accompanied by the following, all in form and substance satisfactory to the Owner and Architect:

§ 9.3.1.5.1 A current contractor's lien waiver and duly executed and acknowledged sworn statement by an officer of the Contractor showing all subcontractors and materialmen with whom the Contractor has entered into subcontracts, the amount of each such subcontract, the amount requested for any subcontractor and materialmen in the requested progress payment and the amount to be paid to the Contractor from such progress payment together with similar sworn statements from all such subcontractors and materialmen

§ 9.3.1.5.2 Duly executed waivers of mechanic's and materialmen's liens from all subcontractors and when appropriate, from materialmen and lower tier subcontractors establishing payment or satisfaction of payment of all amounts requested by the Contractor on behalf of such entities or persons in any previous application for payment; and

§ 9.3.1.5.3 All information and materials required to comply with the requirements of the Contract Documents or reasonably requested by the Owner or the Architect.

§ 9.3.2 At the Owner's option, 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 paragraphs 9.3.2.1, 9.3.2.2, 9.3.2.3, and 9.3.2.4 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.

§ 9.3.2.1 With each Application for Payment the Contractor shall submit to the Architect and Owner a written list identifying each location where materials are stored off the Project site and the value of materials at each location. The Contractor shall procure insurance satisfactory to the Owner for materials stored off the Project site in an amount not less than the total value thereof.

§ 9.3.2.2 The consent of any surety shall be obtained to the extent required prior to the payment for any materials stored off the Project site.

§ 9.3.2.3 Representatives of the Owner shall have the right to make inspections of the off site storage areas at any time.

§ 9.3.2.4 Materials stored off site shall be protected from diversion, destruction, theft and damage to the satisfaction of the Owner, shall specifically be marked for use on the Project and shall be segregated from other materials at the storage facility.

§ 9.3.3 The Contractor warrants and agrees that title to all Work will pass to the Owner either by incorporation in the construction or upon receipt of payment therefor by the Contractor, whichever occurs first, free and clear of all liens, claims, security interests, or encumbrances whatsoever, that the vesting of such title shall not impose any obligation on Owner or relieve Contractor of any of its obligations under the Contract, that the Contractor shall remain responsible for damages to or loss of the Work, whether completed or under construction, until responsibility for the Work has been accepted by Owner in the manner set forth in the Contract Documents, and that no Work

covered by an Application for Payment will have been acquired by the Contractor, or by any other person performing Work at the site or furnishing materials and equipment for the Project, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or such other person.

§ 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.

§ 9.4.1.1 The Owner will issue payment to the Contractor pursuant to the Owner's administrative policy at the time that a duly approved Payment Certificate is presented.

§ 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

§ 9.5.1.1 defective Work not remedied;

§ 9.5.1.2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;

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

§ 9.5.1.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;

§ 9.5.1.5 damage to the Owner or a separate contractor;

§ 9.5.1.6 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

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

§ 9.5.1.8 The failure of any Contractors to comply with mandatory requirements for maintaining record drawings. The Contractor shall be required to check record drawings each month. Written confirmation that the record drawings are up-to-date shall be required by the Architect before approval of the Contractors monthly payment requisition will be considered.

§ 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. Notwithstanding Certification by the Architect, the Owner may refuse to make payment based on any default by the Contractor including, but not limited to those defaults set forth in Subparagraphs 9.5.1 through 9.5.1.8. The Owner shall not be deemed in default by reason of withholding payment while any of such defaults by the Contractor remain uncured.

§ 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 for reasons other than a default of the Contract, including but not limited to those defaults set forth in Subparagraphs 9.5.1.1 through 9.5.1.8 pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by a court of law, 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

§ 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 which the Owner agrees to accept separately is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The Work will not be considered substantially complete until all project systems included in the Work are operational as designed and scheduled, all designated or required inspections, certifications, permits, approvals, licenses and other documents from any governmental authority having jurisdiction thereof necessary for the beneficial use and occupancy of the Project are received, designated instruction of Owner's personnel has been completed, and all final finishes within the Contract are in place. In general, the only remaining Work shall be minor in nature, so that the Owner can occupy the building on that date and the completion of the Work by the Contractor would not materially interfere or hamper the Owner's (or those claiming by, through or under the Owner) normal operations. Contractor recognizes that normal operation requires the use and occupancy of the Work by departmental employees without interruption and that any punchlist or corrective work shall be done at times when the Work is not to occupied. As a further condition of substantial completion acceptance, the Contractor shall certify that all remaining Work will be completed within thirty (30) consecutive calendar days or as agreed upon following the date of substantial completion.

§ 9.8.1.1 In addition to the above, the following items must be completed in order to deem the work Substantially Complete:

§ 9.8.1.1.1 All required final inspections have been completed by the authority having jurisdiction resulting in a TCO or CO.

§ 9.8.1.1.2 Air Balancing Reports: Reports can be hand written field notes but must be reviewed and approved via the shop drawing process by the Mechanical engineer. Final Air and Water Balancing Reports certified by the licensed balancer are require fro "Final Acceptance" and the start of the warranty period. (These reports must be submitted in accordance with the shop drawing process to Architect so that they can be tracked and approved and distributed to all applicable parties).

§ 9.8.1.1.3 Equipment Start Up Reports: Reports can be hand written field notes but must be reviewed and approved via the shop drawing process by the Mechanical Engineer. (These reports must be submitted in accordance with the shop drawing process to Architect so that they can be tracked and approved and distributed to all applicable parties).

§ 9.8.1.1.4 Completion of the Owner On-Site ATC Training: Refer to the ATC specifications for training requirements on-site and off-site. The Owner does not have beneficial use of the mechanical system until they can operate it following this training.

§ 9.8.1.1.5 Completion of Commissioning: Refer to the Start-up and Adjustment specifications. This process will require the Owner's Operator, Construction Manager (if applicable) and the Mechanical Engineer on site to witness a demonstration and operation of every mechanical device. The devices shall be operated fro the on-site Owner's ATC Computer and verified by the Mechanical Contractor's field personnel to confirm proper operation. In addition to this demonstration, the contractor shall demonstrate Owner required maintenance of all mechanical equipment to maintain the manufacturer's warranty. This should include but not be limited to belt tension/adjustments, filters, etc. Please schedule several days for the commissioning process.

§ 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 along with all special warranties required by the Contract Documents endorsed by the Contractor 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.

§ 9.8.4.1 The Architects Certificate of Substantial Completion shall be subject to the Owner's final approval.

§ 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 sufficient to increase the total payments to 100% of the Contract Sum, less such amounts as the Architect shall determine for all incomplete work and unsettled claims. 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 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. All warranties and guarantees required pursuant to the Contract Documents shall be assembled and delivered by the Contractor to the Owner as part of the final application for payment. The final Certificate for Payment will not be issued by the Architect until all warranties and guarantees have been received and accepted by the Owner.

§ 9.10.1.1 The Architect's Certificate of Final Completion shall be subject to the Owner's final approval.

§ 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, and (6) evidence of compliance with all requirements of the Contract Documents: notices, certificates, affidavits, other requirements to complete obligations under the Contract Documents: including but not limited to (a) instruction of Owner's representatives in the operation of mechanical, electrical, plumbing and other systems, (b) delivery of keys to Owner with keying schedule: master, sub-master and special keys, (c) delivery to Architect of Contractor's General Warranty (as described in Paragraph 3.5) and each written warranty and assignment thereof prepared in duplicate, certificates of inspections, and bonds for Architect's review and delivery to Owner, (d) delivery to Architect a printed or typewritten operating, servicing, maintenance and cleaning instructions for all Work; parts lists and special tools for mechanical and electrical Work, in approval form, (e) delivery to the Architect of specified Project record documents and (f) delivery to Owner of a Final Waiver of Liens (AIA Document G706 or other form satisfactory to Owner), covering all Work including that of all Subcontractors, vendors, labor, materials and services, executed by an authorized officer and duly notarized. In addition to the foregoing, all other submissions required by other articles and paragraphs of the Specifications including final construction schedule shall be submitted to the Architect before approval of final payment.. 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.

§ 9.11 LIQUIDATED DAMAGES

§ 9.11.1 The Contractor understands and agrees that all work must be performed in an orderly and closely coordinated sequence so that the date for substantial completion is met.

§ 9.11.2 If the Contractor fails to complete his work or fails to complete a portion of his work, he shall pay the Owner, as liquidated damages and not as a penalty, the sum as specified in the technical portion of the Contract Documents. Such amount is agreed upon as a reasonable and proper measure which the Owner will sustain each calendar day by failure of the Contractor to complete work within the stipulated time.

§ 9.11.3 Substantial Completion will be determined by the Architect and shall be deemed to be completion of the whole work for purposes of tolling the Municipal Mechanics Lien Law.

§ 9.11.4 For damage occurring at the time of delay, the Owner may retain the amount due to him under this clause from any payments due to the Contractor.

§ 9.11.5 The Owner will suffer financial loss if the project is not substantially complete on the date set forth in the Contract Documents. The Contractor (and the Contractor's Surety) shall be liable for and pay to the Owner the sum of $500.00 stipulated and fixed, agreed as liquidated damages for each calendar day of delay until the Work is substantially complete.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS

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

§ 10.1.1.1 The Contractor must fully comply with the job safety requirements in addition to all Federal, State and Local safety guidelines. All cost associated with complying with all safety requirements shall be included in each contractors base bid.

§ 10.1.1.2 The General Contractor will serve as the overall Project Safety Coordinator and shall be responsible for all issues of safety and protection. The Contractor shall designate a safety person at the job site while the contractor is working on the project site. The designated safety person shall be responsible for the safety of their work and for their workers and to make continuous inspections for all safety issues relating to his work. The Construction Manager (if applicable) is not responsible for safety on this project but will endeavor to promote safety. Each Contractor must comply with job Safety Requirements in addition to OSHA and local agency requirements. Failure to comply with safety issues will be grounds for withholding of payments.

§ 10.1.1.3 Contractor will comply with all reasonable requests of the Owner and Construction Manager (if applicable) with respect to additional security and protections required for work interfacing with Facility Operations. Safety is of the utmost importance on this project and all issues relative to safety and protection of the Facility, Staff and Occupants will be treated as emergency needs and will not be subject to the 7 day notice requirements of Article 14.

§ 10.1.1.3.1 General Contractor to provide, maintain, relocate and remove in coordination with Construction Manager if applicable, a 6 foot high, perimeter security fence. Fence will surround the building and proposed parking areas and will have signage attached at 100' intervals advising "Construction Area – Please Keep Out". General Contractor to be responsible for opening and securing site each day.

§ 10.1.1.3.2 Orange safety fencing will be installed around the entire area of any and all earthwork, excavations, etc. and will be maintained until the work is complete.

§ 10.1.1.3.3 This is a hard hat job. Identifying hard hats shall be worn at all times.

§ 10.1.1.3.4 Hot work permits will be issued by foreman for all activities involving open flames, Construction Manager (if applicable) will provide copy of Hot Work Permit Forms.

§ 10.1.1.4 The proper execution of the required safety provisions is directly related to the general condition safety line item on the schedule of values.

§ 10.1.1.5 The Contractor shall be responsible for the immediate investigation and resolution of all safety and environmental complaints / issues generated by contractor employees, owners, owner's representatives or members of the public.

§ 10.1.1.6 Contractor shall be maintain all egress routes throughout building. Contractor shall post exit signs as coordinated with Construction Manager (if applicable). Contractor shall provide wall hung fire extinguishers throughout building as deemed necessary by Construction Manager (if applicable) and fire officials.

§ 10.1.1.7 Contractor's safety representative shall perform a daily safety inspection walk through to ensure that all requirements of the OSHA Standards, Fire Protection Standards and Safe Work Practices are being complied with

and/or corrected. The responsibility of the Contractor is to provide a safe and healthy work environment for construction personnel. Owner's personnel and representative, and the public.

§ 10.1.1.8 Upon written receipt of safety concerns and/or issues, the Contractor shall respond in writing addressing how the safety concerns or issues were resolved. The Construction Manager (if applicable) shall be copied on all safety related correspondence.

§ 10.1.1.9 Prime Contractor's response and compliance with Construction manager's Project Manager (if applicable) and correction of deficiencies noted in Construction Manager's Safety Report is mandatory. Failure to comply will be grounds for withholding of progress payments until the conditions are acceptable to Construction Manager and OSHA.

§ 10.1.1.10 The Contractor shall submit to Construction Manager (if applicable) a copy of all licenses (welding, power nailer, asbestos, etc,) as required by applicable agencies.

§ 10.1.1.11 Contractor shall have all required personal protective equipment and materials available for and used by each employee as required by Federal, State and Local guidelines.

§ 10.1.1.12 Contractor shall supply proper equipment and crew sizes as necessary to safely complete the work.

§ 10.1.1.13 Contractor shall provide documented safety training for each of their employees and subcontractor's employees no later than the first day they arrive on site. The training shall be documented and signed by the trainer and employee. A copy of all safety-training documents is to be provided to Construction Manager (if applicable) and updated as manpower loading increases.

§ 10.1.1.14 The Contractor shall supply two (2) OSHA approved means of access / egress to each floor and roof for the course of the entire project for use by all applicable parties. The Contractor shall erect and maintain OSHA approved pedestrian walking bridges, for emergency access / egress and as necessary to protect personnel from overhead work. The number of protected entrances will be as determined by Construction Manager (if applicable).

§ 10.1.1.15 The Contractor shall be responsible for providing and maintaining all temporary emergency egress routes. The Contractor shall obtain the approval of the Building and Fire Departments for all temporary emergency egress routes. General Contractor to provide for fire separation walls between occupied areas as required by local officials.

§ 10.1.1.16 Contractor shall provide OSHA approved pedestrian walking bridges as necessary (determined by Construction Manager – if applicable) to protect against overhead hazards.

§ 10.1.1.17 Contractor shall provide, relocate and / or maintain barricades, signage, provide flagmen etc. as necessary to ensure public safety and safe egress. Contractor to provide, maintain, relocate and remove in coordination with Construction Manager, if applicable to protect against overhead hazards.

§ 10.1.1.18 Notify Construction Manager (if applicable) immediately upon arrival of OSHA to the site.

§ 10.1.1.19 Contractor shall submit to Construction Manager (if applicable), all MSDS sheets and shall cooperate in the posting of all required notifications relative to the use of hazardous substances on the property. Contractor to comply with NJ Law regarding the use or storage of hazardous substances in Buildings. MSDS sheets shall be posted prior to product being delivered to site.

§ 10.1.1.10 Contractor, subcontractor, vendor, etc should enforce a full time no smoking or alcohol use policy for all employees during the entire course of the project. Any worker found violating these reflections, or being belligerent, will be subject to removal from the site at the sole discretion of Construction Manger, if applicable.

§ 10.1.1.11 Contractor shall be responsible to secure the site at the end of each workday by an effective means and maintain until all parties determine no longer required.

§ 10.1.1.12 For the safety of occupants, staff, and the public, the steel erection must be scheduled and coordinated with the Owner and Construction Manager (if applicable). Swinging of steel and crane boom over occupied space will not be allowed. Steel contractor shall provide additional barricades and fencing around his crane and steel at all times.

§ 10.1.1.13 Contractor must submit an acceptable OSHA compliant site specific written safety plan to Construction Manger (if applicable) for review within fourteen (14) days from the notice to proceed or prior to mobilizing on site, which ever comes first. The written safety plan shall include (as applicable to their work) but is not limited to the following:

-Full time no smoking policy or alcohol use is allowed on the project. Any worker. Any worker found violating these restrictions, or being belligerent, will be subject to removal from the site. (Contractors shall post required signs).
-Full time hard hat policy (identifying hard hats shall be worn at all times).
-Site specific emergency action plan with contractor phone numbers, active 24 hours a day, 7 days a week.
-Competent on site safety representative, named and active (Provide alternate)
-Scaffold erection plan, including a log of daily inspections.
-Full time fall protection plan and exposures over 6'-0"
-Job site signage plan (perimeter fence warning signs posted 50'-0" o.c.
-First aid and CPR provisions
-OSHA 200 log and Job Safety and Health Protection Poster
-Daily clean up.
-Hazard Communication Program with MSDS logged and maintained.
-Hazard Communication program.
-Daily diary of work, issues, and incident, etc.
-Sheeting, shoring and excavations protection line.
-GFI safety program
-Hazardous Energy Control Lock out tag out program
-Required safety clothes; Eye and ear protection, respirators, boots, belts, gloves etc. as appropriate to their work requirement.
-Fire Extinguishers.
-Removal guard rail and protection at material loading areas, 200lb force minimum requirement.
-All stairs and platforms must have railings, 200lb force minimum requirement. Stair pans and landings must be filled prior to their use.
-Daily inspection of tools and equipment; verify safety devises are operational.
-Ladder usage plan
-Weekly tool box meetings, documented and signed by each employee.
-Temporary heat procedures.

§ 10.1.1.14 Contractor shall maintain and submit a complete copy of the written safety plan, logs, diaries, plans and programs on site for the Construction Manager (if applicable).

§ 10.1.1.15 The speed limit within the project property is 5MPH. Contractor employees operating vehicles in excess of the speed limit or in any otherwise unsafe manner will be directed to leave the site and not permitted to return.

§ 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 as well as any other real or personal property of the Owner.

§ 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.

§ 10.2.2.1 Contractor shall comply with all regulations required by the Federal Occupational Safety and Health Act (OSHA).

§ 10.2.2.2 The Contractor shall conform to all applicable New Jersey Department of Environmental Protection regulations.

§ 10.2.2.3 Contractors must comply with Construction and Environmental Standards contained in Federal and State Regulations and other applicable laws.

§ 10.2.2.4 It is the Contractor's responsibility to determine the existence of potentially hazardous materials, including lead, and to protect his workmen and the work area.

§ 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.

§ 10.2.9 The Contractor shall provide and maintain in good operating condition suitable and adequate fire protection equipment, and shall comply with all reasonable recommendations regarding fire protection made by the representatives of the fire insurance company carrying insurance on the Work or by the local fire chief for fire marshal. The area within the site limits under the Contractor's control shall be kept orderly and clean, and all combustible rubbish shall be promptly removed from the site. Contractor will comply with all reasonable requests of the Owner and Construction Manager with respect to additional security and protections required for work interfacing with Owner's Operations. Safety is of the utmost importance on this project and all issues relative to safety and protection of the staff and public will be treated as emergency needs and will not be subject to the 7-day notice requirements of Article 14.

§ 10.2.10 The Contractor shall remove snow or ice which may accumulate on the site within areas under his control which might result in damage or delay.

§ 10.2.11 The Contractor shall take all precautions necessary to prevent loss or damage caused by vandalism, theft, burglary, pilferage, or unexplained disappearance of property of the Owner and Contractor, whether or not forming part of the Work, located within those areas of the Project to which the Contractor ha access. Whenever unattended, including nights and weekends, mobile equipment and operable machinery shall be kept locked and made inoperable and immovable.

§ 10.2.12 Neither the Owner nor the Architect shall be responsible for providing a safe working place for the Contractor, the Subcontractors or their employees, or any individual responsible to them for the work.

§ 10.2.13 The Contractor shall conform to requirements of OSHA, the Construction Safety Code of the State Department of Labor and those of the AGC Manual. The requirements of the New Jersey and Local Building Construction Codes shall apply where there are equal to or more restrictive than the requirements of the Federal Act.

§ 10.2.14 When all or a portion of the Work is suspended for any reason, the Contractor shall securely fasten down all coverings and protect the Work as necessary from injury or any cause.

§ 10.2.15 The Contractor shall promptly report in writing to the Owner and Architect all accidents arising out of or in connection with the Work which caused death, personal injury or property damage giving full details and statements of any witnesses. In addition, if death, serious personal injury or serious property damage is caused, the accident shall be reported immediately by telephone or messenger to the Owner and Architect.

§ 10.2.16 Contractor is required to follow and enforce the work rules set forth below. Failure to comply with or enforce any of these rules will be grounds for suspension and/or termination of this contract:

§ 10.2.16.1 No use of alcoholic beverages prior to or during working hours.

§ 10.2.16.2 No use of illegal drugs or prescription medications which could induce drowsiness or otherwise impair perception or performance. Use of illegal drugs may result in prosecution to the fullest extent of the law. Any warning associated with use of prescription drugs must be complied with, particularly warning against operation of machinery and equipment.

§ 10.2.16.3 No horseplay or rough-housing will be allowed.

§ 10.2.16.4 No sexual, racial, or ethnic harassment, or similar conduct will be tolerated.

§ 10.2.16.5 All employees shall use proper sanitation habits including use of toilet facilities and garbage cans.

§ 10.2.16.6 All employees shall dress in clothing appropriate for the work they are to perform. All personnel are to wear hardhats, safety shoes, glasses, gloves, masks or respirators, noise protection devices, and other protective clothing and equipment as required by OSHA standards.

§ 10.2.16.7 All equipment is to be properly stored and/or secured at the end of the work day or if it is to remain idle for greater than one hour.

§ 10.2.16.8 All personnel are to be made aware of the availability of Material Safety Data Sheets for materials used at the Project site. This information is available from the Contractor using the product. The Contractor shall maintain a copy of all MSDS forms at the construction site office for all personnel to review.

§ 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

(Paragraphs deleted)

Contractor shall without in any way altering Contractor's liability under the Contract or applicable law, obtain, pay for and maintain insurance for the coverages and amounts of coverage not less than those set forth below in the Instructions to Bidders and shall provide to Owner certificates issued by insurance companies satisfactory to Owner to evidence such coverage no later than 7 days from the date of the execution of this Contract and prior to any personnel or equipment being brought onto and/or before any work commences at the job site. The coverage afforded under any insurance obtained pursuant to this paragraph shall be primary to any valid and collectible insurance carried separately by any of the indemnities. Such certificates shall provide that there shall be no

termination, nonrenewal, modification, or expiration of such coverage without thirty (30) days prior written notice to Owner. In the even of any failure by Contractor to comply with the provisions of this Paragraph 11.1, Owner may, at its option, on notice to Contractor, suspend the Contract for cause until there is full compliance with this Paragraph 11.1 and/or terminate the Contract for cause. Alternatively, Owner may purchase such insurance at Contractor's expense, provided that Owner shall have no obligation to do so, and if Owner shall do so, Contractor shall not be relieved of or excused from the obligation to obtain and maintain such insurance amounts and overages. Contractor shall provide to Owner a coy of any and all applicable insurance policies. Architect and the State of New Jersey shall be named as an additional insured on all Insurance Policies to the provided by the Contractor. The Owner shall be named as an additional primary insured on all Insurance Policies to be provided by the Contractor..

§ 11.1.2 Contractor shall require all Subcontractors to carry similar insurance coverages and limits of liability as required under this Article 11, adjusted to the nature of Subcontractors' operations and submit same to Owner for approval before any personnel or equipment is brought onto the site and/or before any work commences.

§ 11.1.3 In the event Contractor fails to obtain the required certificates of insurance from the Subcontractor and a claim is made or suffered, the Contractor shall indemnify, defend and hold harmless the Owner, Architect, and the Sate of New Jersey from any and all claims for which the required insurance would have provide coverage. This indemnity obligation is in addition to any other indemnity obligation provided in the Contract.

§ 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.

(Paragraphs deleted)

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 Contractor shall furnish a performance bond and labor and material payment bond meeting all statutory requirements of the State of New Jersey in form and substance satisfactory to the Owner and without limitation complying with requirements set forth in the Instructions to Bidders.

§ 11.4.2 If any of the foregoing insurance coverages are required to remain in force after final payment, including, but not limited to coverage for completed operations, an additional certificate evidencing continuation of such coverage shall be submitted with the Final Application for Payment.

§ 11.4.3 In no event shall any failure of the Owner to receive certified copies or certificates of policies required under Paragraph 11.1 or to demand receipt of suck certified copies or certificates prior to the Contractor commencing Work be construed as a waiver of the Owner or the Architect of the Contractor's obligations to obtain insurance pursuant to this Article 11. The obligation to procure and maintain any insurance required by this Article 11 is a separate responsibility of the Contractor and independent of the duty to furnish a certified copy or certificate of such insurance policies.

§ 11.4.4 If the Contractor fails to purchase and maintain or require to be purchased and maintained any insurance required under this Paragraph 11.1, the Owner may, but shall not be obligated to, upon 5 days written notice to the Contractor, purchase such insurance on behalf of the Contractor and shall be entitled to deduct said cost from the Contractor's Contract Sum.

§ 11.4.5 When any required insurance due to the attainment of a normal expiration date or renewal date shall expire the Contractor shall supply the Owner with certificates of insurance and amendatory riders or endorsements that clearly evidence the continuation of all coverage in the same manner, limits of protection and scope as was provided by the previous policy. In the event any renewal or replacement policy for whatever reason obtained or required is written by a carrier other than that with whom the coverage was previously placed or the subsequent policy differs in any way from the previous policy, the Contractor shall also furnish replacement policy unless the Owner provided the Contractor with prior written consent to submit only a certificate of insurance for any such policy. All renewal and or replacement policies shall be in form and substance satisfactory to the Owner and written by carriers acceptable to the Owner.

§ 11.4.6 The Contractor shall cause each subcontractor to (1) procure insurance in the amounts set forth in Paragraph 11.2 and (2) name the indemnities under Paragraph 3.18 as additional insures under the subcontractor's comprehensive general liability policy. The additional insured endorsements included on the subcontractor's comprehensive general liability policy shall state that coverage is afforded the additional insureds with respect to claims arising out of operations performed by or on behalf of the Contractor. If the additional insureds have other insurance which is applicable to the claims, such other insurance shall be on an excess or contingent basis. The amount of the insurance liability under this insurance policy shall not be reduced by the existence of such other insurance.

§ 11.4.7 Property insurance provided by the Owner shall not cover any tools, apparatus, machinery, scaffolding, hoists, forms, staging, shoring, or other similar items commonly referred to as construction equipment which may be on the site and the capital value of which is not included in the work. The Contractor shall make its own arrangements for any insurance it might require on such construction requirement. Any such policy obtained by the Contractor under this Paragraph 11.4.7 shall include a waiver of subrogation.

§ 11.4.8 The Contractor may carry whatever additional insurance he deems necessary to protect himself against hazards not covered for theft, collapse, water damage, materials and equipment stored on the site, and for materials and equipment stored off site, and against loss of owned or rented capital equipment and tools owned by mechanics or any tools, equipment, scaffolding, stagings, towers and forms owned or rented by the Contractor, the capital value of which is not included in the cost of the Work.

§ 11.4.9 All insurance coverage procured by the Contractor shall be provided by insurance companies having policy holder ratings no lower than "A" and financial rating no lower than "X" in the Best's Insurance guide, latest edition in effect as of the date of the Contract and subsequently in effect at the time of the renewal of the policies required by the Contract Documents.

§ 11.4.10 If the Owner or the Contractor is damaged by the failure of the other party to purchase or maintain insurance required under Article 11, then the party who failed to purchase or maintain the insurance shall bear all reasonable costs (including attorneys fees and court and settlement costs) properly attributable thereto.

§ 11.4.11 The Contractors must remove all "X, C & U" exclusions from their policies.

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 or Contract Sum.

§ 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. If prior to the date of Substantial Completion the Contractor, a subcontractor or anyone for whom either is responsible, uses or damages any portion of the Work, including without limitation, mechanical, electrical, plumbing and other building systems, machinery, equipment or other mechanical device, the Contractor shall cause each such item to be restored to "like new conditions" at no expense to the Owner.

§ 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 Final Acceptance 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.

§ 12.2.2.1.1 The obligations under Paragraph 12.2 shall cover any repairs and replacement to any part of the Work or other property caused by the defective Work.

§ 12.2.2.1.2 Upon completion of any work under or pursuant to this Paragraph 12.2, the two year correction period in connection with the work requiring correction shall be renewed and recommenced.

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

§ 12.2.2.3 The two -year period for correction of Work shall 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.

§ 12.3.1 This Subparagraph relates exclusively to the knowing acceptance of nonconforming work by the Owner. T has no applicability to work accepted by the Owner or Architect without the knowledge that such work fails to conform to the requirements of the Contract Documents.

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. The Contractor also agrees that the cost of testing services required for the convenience of the Contractor in his scheduling and performance of the Work and the cost of testing services related to remedial operations performed to correct deficiencies in the Work shall be borne by the Contractor.

§ 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

§ 13.6.1 The Contractor shall not be entitled to any payment of interest for any reason, action or inaction by the Architect or the Owner.

§ 13.6.2 Any payments withheld for time delays, faulty materials, or workmanship, shall not bear interest for period of delay or non-acceptance.

§ 13.7 TIME LIMITS ON CLAIMS

Owner and Contractor issues including the applicable statute of limitations shall be as governed by New Jersey Law.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 TERMINATION BY THE CONTRACTOR

§ 14.1.1 The Contractor may terminate the Contract in the manner provided in Subparagraph 14.1.2 if repeated suspensions, delays or interruptions by the Owner as described in Paragraph 14.3 constitute in the aggregate more than 100% of the total number of days scheduled for completion or 120 days in any 365 day period, whichever is less, or if all the Work is entirely stopped for a continuous period of 60 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 certificate for payment and has not notified the Contractor of the reason for withdrawing certification as provided in Subparagraph 9.4.1, or because the Owner has not made payment on a certificate for payment (without cause) within the time stated in the Contract Documents.

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§ 14.1.2 If one of the above reasons exist, the Contractor may upon fourteen (14) days written notice to the Owner and Architect, terminate the Contract unless this reason is cured prior to the expiration of the notice, and recover from the Owner payment of Work properly executed in accordance with the Contract Documents (the basis for such payment shall be as provided in the Contract) and for payment for cost directly related to work thereafter performed by Contractor in terminating such work including reasonable demobilization and cancellation charges provided said Work is authorized in advance by Architect and Owner.

§ 14.1.3 The Owner shall not be responsible for damages for loss of anticipated profits on work not performed on account of any termination described in Subparagraph 14.1.1 and 14.1.2.

§ 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 refuses or fails to supply enough properly skilled workers or proper materials and/or equipment;

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

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

.4 Disregards the instructions of Architect or Owner (when such instructions are based on the requirements of the Contract Documents;

.5 Is adjudged bankrupt or insolvent, or makes a general assignment for the benefit of Contractor's creditors, or a trustee or a receiver is appointed for Contractor or for any of its property, or files a petition to take advantage of any debtor's act, or to recognize under bankruptcy or similar laws; or

.6 Breaches any warranty made by the Contractor under or pursuant to the Contract Documents.

.7 Fails to furnish the Owner with assurances satisfactory to the Owner evidencing the Contractor's ability to complete the Work in compliance with the requirements of the Contract Documents.

.8 Fails after the commencement of the Work to proceed continuously with the construction and completion of the work for more than 10 days except as permitted under the Contract Documents.

.9 Otherwise does not fully comply with 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.

§ 14.4.4 If Owner terminates the Contract for cause pursuant to Paragraph 14.2 and it is subsequently determined that the Owner was not authorized to terminate the Contract as provided in Paragraph 14.2, the Owner's termination shall be treated as a termination for convenience under this Paragraph 14.4 and the rights and obligations of the parties shall be the same as if the Owner has issued a notice of termination to the Contractor as provided in this Paragraph 14.4.

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 5 days after occurrence of the event giving rise to such Claim or within 5 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 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 Claim for an increase in the Contract Sum written notice as provided herein shall be given to the Owner, Architect and Construction Manager (if applicable) before proceeding to execute the Work and within five (5) days after the occurrence of the event giving rise to such Claim for increase in the Contract Sum. The foregoing written notice shall contain a written statement from the Contractor setting forth in detail the nature and cause of the Claim and an itemized statement of the increase requested. No such written notice shall form the basis of an increase to the Contract Sum unless and until such increase has been authorized by a written Change Order executed and issued according to the terms and conditions set forth herein. The Contractor hereby acknowledges that the Contractor shall not have any right to and the Owner will not consider any requests for an increase in the Contract Sum that is not submitted in compliance with the foregoing requirements. Prior notice is required for Claims relating to an emergency endangering life or property arising under Section 10.6.

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME

§ 15.1.5.1 If the Contractor wishes to make Claim for an increase in the Contract Time, written notice as provided herein shall be given. Said notice shall itemize all claims and shall contain sufficient detail and substantiating data to permit evaluation of same by Owner and Architect. No such claim shall be valid unless so made. The Contractor's Claim shall include an estimate of cost and probably effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary. Any change in the Contract Sum resulting from such Claim shall be authorized only by Change Order or Construction Change Directive, as the case may be. All required notices for additional costs shall be made by Certified Mail.

§ 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 Owner may claim consequential damages arising out of or relating to this Contract. This 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;

§ 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 litigation mediation, to binding dispute resolution.

§ 15.2.5.1 Any dispute arising under the Contract shall be resolved in accordance with and subject to the limitations contained in N.J.S.A. 40A:11-41.1 as follows:

§ 15.2.5.1.1 All remedies provided elsewhere in the Contract Documents to resolve disputes, claims and protests shall be exhausted. Where the Engineer or Architect is required to issue a decision, such decision shall be a conditions precedent to proceeding to resolve the dispute in accordance with Paragraph 2.

§ 15.2.5.1.2 Prior to litigation, the Owner and Contractor shall endeavor to settle disputes by mediation in accordance with the current Construction Industry Mediation Rules of the American Arbitration Association. Demand for mediation shall be filed in writing by the party requesting mediation with the other party to this Agreement and with the American Arbitration Association. The Engineer or Architect shall be provided with an information copy of the demand unless the Engineer or Architect is joined. In no event shall such demand be made more than 30 days after completion, acceptance and final payment nor after the date when institution of legal or equitable proceeding regarding the matter in dispute would be barred as a matter of law.

§ 15.2.5.1.3 Nothing herein shall be constructed to prevent the Owner and Contractor from agreeing to utilize any other alternative dispute resolution procedure in lieu of or in addition to mediation.

§ 15.2.5.1.4 Nothing herein shall be construed to prevent the Owner from notifying any performance guarantor (Surety) of, and requesting the Surety's assistance in resolving any disputes which involve the Contractor's performance.

§ 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 non-binding dispute resolution.

§ 15.3.2 The mediation shall be pursuant to industry standards prior to being submitted to a court for adjudication.

(Paragraph deleted)

§ 15.4 NON-BINDING ARBITRATION

§ 15.4.1 If agreed to by Owner, non-binding arbitration shall be pursuant to industry standards prior to being submitted to a court for adjudication.

(Paragraphs deleted)

PREVAILING WAGE RATES

PREVAILING WAGE RATES

1. To obtain current prevailing wage rates, visit the following website: http://lwd.dol.state.nj.us/labor/wagehour/wagerate/prevailing_wage_determinations.html

END OF SECTION

SCHEDULE OF DRAWINGS

The following contract drawings are herein made part of the project specifications:

C-1 COVER SHEET AND INDEX OF DRAWINGS, AND LEGEND
C-2 PROJECT NOTES AND PROJECT AREA PLAN

A-0 TANK GUIDE AND MONITOR FLOOR PLAN
A-1 DEMOLITION FLOOR PLAN
A-2 PROPOSED FLOOR PLAN
A-3 REFLECTED CEILING PLAN
A-3.1 PROPOSED FLOORING PLAN
A-3.2 NOT USED
A-3.3 REFLECTED CEILING PLAN – LUMICOR PANELS
A-3.4 WALL AND CEILING PAINT PLANS
A-4 EXHIBIT DETAILS
A-4.1 TOUCH TANK DETAILS
A-4.2 TANK 5 DETAILS
A-5 EXHIBIT DETAILS
A-6 EXHIBIT DETAILS
A-7 INTERIOR ELEVATIONS AND DETAILS
A-7.1 RAILING PANEL AND ENTRY PORTAL DETAILS

S-1.1 STRUCTURAL NOTES AND SCHEDULES
S-2.1 SECOND FLOOR FRAMING PLAN

EC1 ELECTRICAL COVER SHEET
E-1.0 ELECTRICAL FLOOR PLANS
E-1.1 ELECTRICAL FLOOR PLANS
E-1.2 ELECTRICAL FLOOR PLANS
E-2.0 ELECRICAL SCHEDULES
E-3.0 FIRE ALARM SYSTEM
E-4.0 ELECTRICAL SPECIFICATIONS
E-4.1 ELECTRICAL SPECIFCATIONS

MC MECHANICAL COVER SHEET
M-1.0 MECHANICAL FLOOR PLAN
M-2.0 MECHANICAL FLOOR PLAN

PC PLUMBING COVER SHEET
P-1.0 DEMO PLUMBING FLOOR PLAN
P-2.0 PLUMBING FLOOR PLAN

FP-1 FIRE PROTECTION PLAN

END OF SECTION

AGREEMENT FORM

1. Owner-Contractor Agreement Form: AIA A101, Owner-Contractor Agreement Form - Stipulated Sum. A draft of the agreement is included as an appendix to these specifications.

END OF SECTION

DEFINITIONS

For the purposes of these specifications, and the accompanying drawings, the following definitions shall apply. This listing of definitions is not intended to be all-inclusive, but rather a clarification of several terms which are commonly used within these documents to describe the contractor's responsibilities under this contract. All other terms shall be defined by the current edition of Webster's unabridged dictionary, and, where appropriate, the best standards of the construction industry.

1.1 ALLOWANCE - Final scope for a certain item will be made in the future by the Owner. The Contractor is to include a specified amount of funds in the base contract to cover each identified task in the base bid. Expenditure of Allowance funds shall be substantiated by paid invoices or other means prior to being approved for payment. Unspent Allowance funds shall be credited back to the Owner.

1.2 BID ALTERNATE - A specifically stated portion of the work which is to be bid separately from the base bid, and which the owner may, at their sole discretion, decide to accept or reject in order to meet budgetary requirements. A *bid alternate* will be an "Add Alternate" describing work which would result in a more costly project.

1.3 BUILDER'S OPTION - Where an alternative material/method may be identified as equally satisfactory, a *builder's option* may be stated, which allows the contractor to choose among the stated alternatives in order to achieve the best price for the work. The Contractor shall identify which method will be utilized, and remain consistent throughout the project. No change orders shall be awarded if a contractor elects to use the more costly material/method available from the stated *builder's option*(s).

1.4 UNIT PRICE - Due to the undefined nature of certain aspects of the work (especially so in renovation projects where it is likely that concealed conditions will exist which will have an impact on the scope of repair work), the Owner may request *Unit prices* in order to predetermine the costs associated with specific products or activities of the Contractor. *Unit prices* will be established for selected items and/or specific improvements and will be referred to as the basis of approval for any change orders requested, where applicable. A list of *unit prices* will be provided to each subcontractor by the Owner, as applicable for their trade(s), and the costs will be negotiated prior to commencement of the work.

END OF SECTION

GENERAL CONDITIONS

1. General Conditions: AIA A201, General Conditions of the Contract for Construction. Refer to Appendix A201 as amended and as included as an appendix to these specifications.

END OF SECTION

SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General Notes.
2. Work covered by Contract Documents.
3. Contractor use of premises.
4. Occupancy requirements.

1.2 GENERAL NOTES

Project Name: Adventure Aquarium Kaleidoscope Cove, Camden, New Jersey
Project Number: 2856-3
Location: 1 Riverside Drive, Camden, New Jersey 08103

Kaleidoscope Cove Exhibit will consist of a renovation to an existing portion of the second floor gallery and back of house spaces. The work generally consists of removal, relocation, and/or installation of new exhibit pieces and tanks and replacement of various finish materials and infrastructure. Work will require modifications and additions to the following: new and existing wall partitions, doors, and frames; electrical systems including power, lighting (exhibit and show lighting), controls, and life support systems (for the exhibits); exhibit life support systems including plumbing (supply and waste), pumps and circulation equipment; flooring; wall, ceiling, and window finishes; fire suppression system; structural building elements.

A. This project is subject to the provisions of the New Jersey Uniform Construction Code [N.J.A.C. 5:23]. The Contractor shall verify all code requirements and bring any discrepancies between code requirements and the construction documents to the attention of the Architect prior to commencing with construction.

B. It is the Contractor's responsibility to inspect and assess the project and to fulfill the intent of the work indicated by the contract documents. Contractor shall verify all conditions and dimensions within the contract limits. Deviations from the contract documents necessitated by field conditions shall be brought to the attention of the Architect.

C. Contractor shall bring errors and omissions which may occur in contract documents to the attention of the Architect and instructions shall be obtained from the Architect before proceeding with affected work. The Contractor will be held responsible for the results of any errors, discrepancies, or omissions in the contract documents which can readily or reasonably be determined and for which the Contractor failed to notify the Architect before construction and/or fabrication of subject work.

D. Details and sections on the drawings are taken at specific locations and are intended to serve as typical construction for all similar conditions. Modifications shall be made by Contractor to accommodate minor variations.

E. Do not scale the drawings. Refer to written text and dimensions for information. The Contractor and Sub-Contractor shall verify all dimensions and job conditions at the job site sufficiently in advance of work to be performed to assure the orderly progress of the work.

F. All dimensions are to face of GWB and face of block unless noted otherwise drawings.

G. The Contractor shall make no structural changes without written approval of the Architect. Contractor shall insure safety and stability of structure(s) at all times during the construction period.

H. The Contractor shall limit the use of the premises to the areas indicated. Portions of the site beyond areas on which work is indicated are not to be disturbed. The Contractor shall maintain the premises clean and free of all trash, debris and shall protect all adjacent work from damage, soiling, paint overspray, etc. All fixtures, equipment, glazing, floors, etc., shall be left clean and remain ready for occupancy throughout the duration of the project.

I. Do not unreasonably encumber the work area with materials or equipment. Confine stockpiling of materials to the areas approved by the Owner. If additional storage is necessary, obtain and pay for such storage off site. Maintain the site in a clean and sanitary condition.

J. Contractor to provide temporary protection to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent spaces from damage.

K. Contractor to keep project area clean and free of debris. Contractor shall maintain a supply of hardhats for use by visitors to the site and enforce the use thereof.

L. The Contractor shall monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality. Comply fully with manufacturers' instructions. Protect installed work and provide special protection where specified in individual specification Sections.

M. All applicable local, state and federal regulations shall be met for handicap accessible buildings.

N. The Contractor shall review the Contract Drawings and Specifications for other items of work required to provide a complete project and shall provide them in his Total Price Bid so as to impose no additional cost to the Owner for the completion of this project.

O. The Contractor shall be responsible for obtaining all necessary local approvals, permits, registrations and/or certifications and construction. The Contractor must follow and comply with all applicable requirements and standards as required under the approvals, permits, registrations and/or certifications and construction permits obtained for this project. Also, reference the “Supplementary Conditions” for additional permit requirements.

P. The Owner and its Architect shall not be responsible for job safety. The Contractor shall be responsible for all job safety requirements for his employees and sub-contractors in the performance or the work under this project.

Q. The Contractor shall supply, place, and maintain at all times during the term of the Contract such safety equipment and procedures as are required for protection of persons and property.

R. The Contractor is responsible for all lines, elevations, and measurements, exercising precaution to verify all dimensions shown on the Contract Drawings.

S. The Contractor shall be responsible for surface restoration work as required to complete the installation and restore all areas affected due to the performance of the work under this contract. All affected areas shall be left in the same or in a condition better than existed before the start of construction or as shown on the Contract Drawings.

1.3 WORK COVERED BY CONTRACT DOCUMENTS – BASE BID & ADD/ALTERNATES

A. Provide and pay for all labor, superintendence, materials, tools, transportation, services, licenses, taxes, equipment and all means of construction necessary and reasonably incidental to the completion of the improvements required for the “Adventure Aquarium Kaleidoscope Cove”, in Camden, New Jersey as specified herein and as shown on the Contract Drawings.

B. All materials and labor obviously a part of the work, and as necessary for proper installation and/or operation of same, although not specifically indicated on the Contract Drawings and/or in the Specifications shall be provided by the Contractor as if called in detail without additional cost to the Owner.

C. The work for this project under the Base Bid includes the following:

1. The preparation of an existing building for construction of new interior building improvements.

2. The work includes, but is not limited to: building demolition, framed walls, wall, ceiling, and floor finishes as indicated, lighting, doors and hardware, lighting, power and outlets, fire alarm system, HVAC system, plumbing system, safety devices.

3. Without intending to limit or restrict the amount of work included and solely for the convenience of the Contractor, the major items of work included shall comprise the following:

i.
ii. Interior walls, partitions and doors, ceilings, MEP and fire protection infrastructure as indicated and required.
iii. Complete finish of all building elements including floor, wall, and ceiling finishes, cladding and lighting, and any other items required for a complete project, and other items shown and/or listed on the attached contract drawings. Installation shall include all labor required by the manufacturer to provide a completed project as described on the attached contract drawings. All final dimensions shall be confirmed by the Contractor in the field prior to beginning construction.

1.4 CONTRACTOR USE OF PREMISES

A. Limit use of the premises to construction activities in areas indicated.

1. Confine operations to areas within Contract limits indicated. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.

2. Contractor to secure and protect work area from rest of the facility for dust and noise control.

3. Contractor to coordinate work under this bid with other work being performed at the project location to maintain access and project schedules throughout duration of the work under this bid.

END OF SECTION

SECTION 012000

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 BID/PAY ITEMS / SCHEDULE OF VALUES

A. All payments or credits shall be made on the basis of the TOTAL PRICE BID by the Contractor. The Contractor shall submit a detailed and balanced schedule of values. Following the acceptance of the schedule of values by the Owner, progress payments may be requested based on the approved schedule.

B. The Contractor shall prepare his schedule of values so that it reflects the actual costs which the bidder anticipates the performance of work under each item delineated so that the item includes all costs associated with the bidders anticipated profit, overhead and costs to perform the work.

C. The Owner may increase or decrease the quantity of work to be done under any item and that the Contractor will only be paid for actual quantity of work provided based on the prices delineated under the Owner approved schedule of values.

D. The schedule of values will be considered materially unbalanced when it is based on prices significantly less than cost for some work and prices which are significantly overstated for other work.

E. No progress payments will be made for Lump Sum items for which the Contractor has not included a price breakdown in the Owner approved schedule of values.

F. Measurement for partial payments will be made by the Architect and will be based on the work that the Architect considers complete, and the assigned values in the Owner approved schedule of values. The Architect shall be the sole judge of the percentage of completion of a Lump Sum item.

G. Individual schedule of value items will not be considered complete until installation and testing are complete and the item is placed in service, or in the Architect's judgment is available to be placed in service.

1.2 PROGRESS PAYMENTS (PARTIAL PAYMENTS)

A. Progress payments for the approved and measured quantities of an item will be subject to the retainage as set forth in the General conditions.

1. Progress payments approved for temporary measures are made based on the temporary measure being maintained by the Contractor until replaced by permanent measures or until no longer required and the Contractor is directed by the Architect to remove the temporary measure.

2. When in the opinion of the Architect, the Contractor is not maintaining the temporary measure, the Contractor shall be so notified by the Architect.

3. Following notice to the Contractor the Architect will increase retainage on Contractors future application or applications for progress payments in an amount equal to or exceeding that previously approved for the temporary measures that are not being maintained by the Contractor.

1.4 MEASUREMENT OF QUANTITIES

A. The Architect shall be the sole judge of the completeness of the work as well as the quantity of the item installed in the work.

B. Completed work shall be measured for payment by the Contractor. The measurement shall be performed in the presence of the Architect. The measurement shall be certified by the Contractor and witnessed by the Architect.

C. Method of measurements shall be as delineated on the Owner approved schedule of values.

D. The day the measurement is performed the Contractor shall provide to the Architect one copy of the certified and witnessed measurements.

E. Contractors application for payment shall be accompanied by certified and witnessed measurement records covering all work for which payment is requested.

1.5 CREDITS

A. No payments will be made for items or quantities of items not installed in the work. The Contractor will be paid only for work and materials that are installed and accepted.

1.6 WORK INCLUDED IN PRICE BID

A. The total price bid by the Contractor shall include all labor (based on NJ Prevailing Wages), superintendence, materials, tools, transportation, plant and equipment, overhead and profit, and all means of construction necessary and reasonably incidental to the complete and fully operational “Adventure Aquarium Kaleidoscope Cove” in accordance with the Contract Documents. No additional or separate payments will be allowed under this contract.

B. All materials and labor obviously a part of the work, and as necessary for proper installation and/or operation of same, although not specifically indicated on the Contract Drawings and/or in the Specifications shall be provided by the Contractor as if called out in detail without additional cost to the Owner and shall be considered to be included in the total price bid by the Contractor.

C. Measurement and payment will be made in accordance with the approved schedule of values for work and materials that are installed and accepted by the Architect.

END OF SECTION

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Section Includes:

1. Submittal procedures.
2. Product Data, Shop Drawings, and Samples.
3. Assurance/Control submittals.

a. Certificates.

b. Manufacturer's installation instructions.

4. Architect's action.

1.2 SUBMITTALS

A. Submit two copies of proposed Schedule of Submittals to Architect within 30 days after receipt of Notice to Proceed. List all items require submittal for review and approval by Architect. Utilize Submittal Schedule, AIA Document G712, or other approved format.

B. Schedule of Submittals: Include the following.

1. Indicate type of submittal; product data, shop drawing, sample, certificate, or other submittal.

2. Identify by Plan and/or Detail number where item is specified, and description of item being submitted.

3. Indicate scheduled date for initial submittal.

C. Coordinate Schedule of Submittals with Construction Schedule. Revise and update Schedule of Submittals when required by changes in the Construction Schedule. Provide Architect with updated schedules within 2 days of date schedule is revised.

1.3 SUBMITTAL PROCEDURES

A. Transmit each submittal with Architect accepted form. Submit the number of opaque reproductions which the Contractor requires, plus two (2) copies which shall be retained by the Architect.

B. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate.

C. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.

D. For each submittal for review, allow 10 days excluding delivery time to and from the Contractor.

E. Revise and resubmit when required, identify all changes made since previous submission.

1.4 PRODUCT DATA

A. Product data includes printed information such as catalog cuts, manufacturer's published instructions, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, performance curves and other similar items.

B. Submit the number of copies which the Contractor requires, plus two copies which will be retained by Architect.

C. Mark each copy to identify applicable products, models, options, and other data. Submissions which do not specifically indicate the products being used from among multiple products shown will be rejected without review for resubmittal. Supplement manufacturers' standard data to provide information unique to this Project.

1.5 SHOP DRAWINGS

A. Submit in the form of one reproducible transparency and one opaque reproduction.

B. Shop Drawings: Submit for review. After review, produce copies and distribute in accordance with the SUBMITTAL PROCEDURES article above.

C. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

1.6 SAMPLES

A. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

B. Submit samples of finishes in colors selected, textures, and patterns for Architect selection.

C. Include identification on each sample, with full Project information.

D. Submit four (4) samples; one of which will be retained by the Architect, minimum of three (3) sets.

1.7 CERTIFICATES

A. When specified on the Construction Drawings or requested by the Owner, submit certification by manufacturer to Architect, in quantities specified for Product Data.

B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect.

1.8 MANUFACTURER INSTALLATION INSTRUCTIONS

A. When specified on the Construction Drawings, submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, to Architect in quantities specified for Product Data.

B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.9 ARCHITECT ACTION

A. For submittals where action and return is required or requested, Architect will review each submittal, mark to indicate action taken, and return promptly; generally within 10 calendar days from date of receipt.

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

2. Submittals for information, closeout documents, record documents and other submittals for similar purposes, no action will be taken.

B. Action Stamp: Architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken.

1. "No Exceptions Taken": Final Unrestricted Release. Where submittals are marked "No Exceptions Taken", that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.

2. "Approved as Noted": Final-But-Restricted Release. When submittals are marked "Approved as Noted", that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.

3. "Rejected" or "Resubmit": Returned for Resubmittal. When submittal is marked "Rejected" or "Resubmit," do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.

4. Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be retained for the Architect's reference purposes and/or discarded. No return to the Contractor will occur.

END OF SECTION

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Administrative and supervisory personnel.
2. Submittals.
3. Contractor quality control.
4. Coordination.
5. Project coordination.
6. Preconstruction meeting.
7. Progress meetings.
8. Progress Reports.
9. Pre-installation meetings.
10. Schedule of Values.
11. Application for Payment.
12. Change Procedures.

1.2 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. Project Manager/Administrator: Contractor Representative experienced in administration, supervision, and quality control of building expansion and alteration construction, similar to Work of this Project, including electrical work.

B. Project Field Superintendent: Contractor Representative experienced in general field supervision of building construction, similar to Work of this Project, including electrical work, to supervise, direct, inspect and coordinate Work of Contractor, subcontractors, suppliers and installers, and expedite Work to assure compliance with Construction Schedules. Project Field Superintendent shall be a full-time on-site job assignment.

1.3 SUBMITTALS

A. Submit shop drawings, product data, samples, and other required submittals, in accordance with Section 013000 - Submittal Procedures, for review and compliance with Contract Documents, and for conformance to field dimensions and clearances.

B. Submit Requests for Information and interpretation of Contract Documents in a timely manner and obtain replies from Architect prior to proceeding with the work in question.

C. Submit schedule of values not less than seven (7) days prior to first payment request. Submit “pencil copy” of proposed Payment Application (fax or email is acceptable) not less than 96 hours prior to the scheduled site meeting at which the Payment Application is to be presented.

1.4 CONTRACTOR QUALITY CONTROL

A. Coordinate all program activities through the representatives of the local utility companies, or their assigned agents as required.

B. Coordinate scheduling of inspection and testing required by individual specification Sections and in accordance with Section 014000 - Quality Control.

C. Coordinate schedule for testing to be performed by the Owner under separate contract.

1.5 COORDINATION DRAWINGS

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

1.6 PROJECT COORDINATION

A. Coordinate construction activities and work of all trades under the construction documents and Work of Contract to facilitate orderly installation of each part of Work. Coordinate construction operations included under the construction documents and Contract that are dependent upon each other for proper installation, connection, and operation.

B. Where installation of one part of Work is dependent on installation of other components, either before or after that part of Work, schedule construction activities in sequence required to obtain uninterrupted installation.

C. Obtain drawings, manufacturer's product data, instructions, and other data to provide a complete and proper installation.

1. Check field dimensions prior to installing products. Verify necessary clearances and means of access from equipment storage to final position.

2. Make data and information available to trades involved.

D. Ensure that utility requirements for the installation of service laterals, meter locations, etc. are compatible current regulations.

G. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination.

H. After Owner occupancy of Project, coordinate access to project for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner’s activities.

1.7 PRE-CONSTRUCTION MEETING

A. Owner and Architect will schedule a meeting after Notice of Award.

B. Attendance: Owner, Architect, Contractor, Project Superintendent, and Contractor Quality Control Representative, plus others at the invitation of the Owner.

C. Agenda:

1. Submission of executed bonds and insurance certificates.
2. Distribution of Contract Documents.
3. Submission of schedule of values.
4. Designation of personnel representing the parties in Contract.
5. Procedures and processing of Requests for Information, field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and contract closeout procedures.
6. Scheduling.
7. Review of any special conditions or requirements for interim inspections.
8. Construction facilities and temporary controls.

D. Architect or authorized representative will record minutes and distribute copies to participants, and those affected by decisions made.

1.8 PROGRESS MEETINGS

A. Architect or authorized representative will schedule and administer meetings throughout progress of Work at intervals as agreed upon by the Owner, Architect and Contractor.

B. Architect or authorized representative will make arrangements for meetings, prepare agenda with copies for participants and preside at meetings.

C. Attendance: Job Superintendent, Contractor Quality Control Representative, major Subcontractors and suppliers, and Architect as appropriate to agenda topics for each meeting.

D. Architect or authorized representative will record minutes and distribute copies to participants, and those affected by decisions made.

1.9 PROGRESS REPORTS

A. Construction Progress Schedules

1. Submit initial progress schedule in duplicate within 15 days after “Commencement of Work” for Owner/Architect review.

2. Submit revised schedules with each Application for Payment, identifying changes since previous version. Indicate estimated percentage of completion for each item of Work at each submission.

3. Submit a horizontal bar chart with separate line for each section of Work, identifying first work date of each week.

1.10 SCHEDULE OF VALUES

A. Submit a construction cost breakdown after contract award to the Architect using AIA Form G703, or other approved format. Contractor may be required to utilize established formats as may be required by entities providing funding for the project.

1.11 APPLICATION FOR PAYMENT

A. Submit four (4) original copies of each application in the prescribed format for review, signature & processing at the Project Meeting assigned for that purpose. Submit "pencil copy" of proposed Payment Application (fax or email is acceptable) not less than 96 hours prior to the scheduled site meeting at which the Payment Application is to be presented.

B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.

C. Payment Period: Monthly.

D. Following completion of the following requirements, final payment request may be submitted:

1. Complete work listed as incomplete at time of substantial completion, or otherwise assure Owner of subsequent completion of individual incomplete items.

2. Settle liens and other claims, or assure Owner of subsequent settlement.

3. Submit proof of payment on fees, taxes and similar obligations.

4. Transfer operational, access, security and similar provisions to Owner; and remove temporary facilities, tools and similar items.

5. Completion of requirements specified in "Project Closeout" section.

6. Obtain consent of surety for final payment.

1.12 CHANGE PROCEDURES

A. Submit backup materials and costs associated with any proposed Change Order to the Owner & Architect for review. DO NOT proceed with any work for which a

Change Order is necessary without written approval to do so. Failure to obtain written approval may void Contractor's claim associated with the changed work, or the acceptance thereof.

B. Change Procedures: Change Order Forms - AIA G701 or other approved format.

END OF SECTION

QUALITY CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

2. Quality control procedures.

3. Contractor's testing and inspection reports.

4. Non-compliance check-off list.

5. Completion and inspection of Work.

6. Field samples.

1.2 QUALITY CONTROL PROCEDURES

A. Monitor quality control over Contractor staff, subcontractors, suppliers, manufacturer's, products, services, site conditions, and workmanship.

B. Comply fully with manufacturer's published instructions, including each step in sequence of installation.

C. Should manufacturer's published instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as a minimum quality for Work, except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform Work by persons who are thoroughly qualified and trained in their respective trade, to produce workmanship of specified quality.

F. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

G. Perform tests required by governing authorities having jurisdiction and utilities having jurisdiction.

1.3 CONTRACTOR FIELD INSPECTION AND TESTING

A. Contractor: Test and Inspect Work provided under this Contract to ensure Work is in compliance with Contract requirements.

B. Preparatory Inspection: Performed prior to beginning Work and prior to beginning each segment of Work and includes:

C. Initial Inspection: Performed when representative portion of each segment of Work is completed and includes:

1. Performance of required tests.

2. Quality of workmanship.

3. Review for omissions or dimensional errors.

4. Examination of products used, connections and supports.

5. Approval or rejection of inspected segment of Work.

D. Follow-Up Inspections: Performed daily, and more frequently as necessary, to assure non-complying Work has been corrected.

E. Testing and Inspection: Perform testing and inspection in accordance with Owner’s and/or Municipal requirements.

1.5 CONTRACTOR'S TEST AND INSPECTION REPORTS

A. Prepare and submit, to Architect, a written report of each test or inspection signed by Contractor Quality Control Representative performing inspection within 2 days following day inspection was made.

B. Include the following on written reports of inspection:

1. Cover sheet prominently identifying that inspection "CONFORMS" or "DOES NOT CONFORM" to Contract Documents.

2. Date of inspection and date of report.

3. Project name, location, solicitation number, and Contractor.

4. Names and titles of individuals making inspection, if not Contractor's Project Field Superintendent.

5. Description of Contract requirements for inspection by referencing Specification Section.

6. Description of inspection made, interpretation of inspection results, and notification of significant conditions at time of inspection.

7. Requirements for follow-up inspections.

1.6 NON-COMPLIANCE CHECK-OFF LIST

A. Maintain check-off list of Work that does not comply with Contract Documents, stating specifically what is non-complying, date faulty Work was originally discovered, and date Work was corrected. No requirement to report deficiencies

corrected same day it was discovered. Submit copy of Non-Compliance Check-Off List of non-complying work items to Architect on a weekly basis.

1.7 COMPLETION AND INSPECTION OF WORK

A. Prior to final acceptance by Architect, submit a certification signed by Contractor to Architect stating that all Work has been inspected and all Work, except as specifically noted, is complete and in compliance with Contract Documents.

B. Record Documents: By Contractor Quality Control Representative. Ensure that "As-Builts" required by Section 017001 - Closeout Submittals, are marked to show any deviations which have been made during the course of construction and are kept current on a daily basis. Upon completion of the Work, certify the accuracy of the "As-Builts" and submit to Architect.

1.8 FIELD SAMPLES

A. Construct field samples at the site for review as requested by the Owner or Owner’s represenatitive. Acceptable samples represent a quality level for work. Field samples shall remain in place until subject project work is completed and accepted.

END OF SECTION

MATERIAL / MANUFACTURER SUBSTITUTION POLICY

PART 1 - GENERAL

1.1 MATERIALS AND EQUIPMENT

A. Products:

1. Products: Means new material, machinery components, equipment, fixtures, and systems forming the Work but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components specifically identified for reuse.

2. Use interchangeable components of the same manufacture for similar components.

B. Product Options:

1. Products specified by Reference Standards or by Description Only: Any product meeting those standards or description and approved by the Architect.

2. Products specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named by the Architect.

1.2 SUBSTITUTION POLICY

A. Contractor must take note that certain provisions within the drawings for these projects have been designed to utilize a specific product(s) available only through the designatwed manufacturer(s). The products and materials specified in this manner have been identified by the Owner and/or the Architect as the "basis of design" for the project(s), and may not be substituted unless specifically agreed to in writing by the Owner and/or the Architect. This policy will be strictly adhered to in order to maintain uniform appearance, function, and maintenance considerations for the project.

B. If a specified product or material is no longer available, or a substitution is desired for other reasons, for items specified as a specific model number, color, and/or manufacturer, the proposed product will be required to be equivalent in every respect to the item specified. The criteria for approval as an "equivalent" shall include, but not be limited to, performance, dimension, appearance, finish, warranty, and/or the interchangeability of replacement parts with the product originally specified.

C. Proposed substitutions shall be submitted to the Architect in writing, including detailed shop drawings and product data for the proposed product, as applicable.

END OF SECTION

EXECUTION REQUIREMENTS

1.1 SUMMARY

A. Section Includes:

1. Installation.
2. Cleaning.
3. Starting and adjusting.

B. Installation:

1. Refer to installation requirements included on the drawings or indicated in the maunfacturers written specifications.

2. For each Product, inspect substrate and conditions under which the Work will be performed. Do not proceed until unsatisfactory conditions have been corrected.

3. Comply with manufacturer's published installation instructions and recommendations, to extent that instructions and recommendations are more explicit or stringent than requirements in Contract Documents.

4. Inspect Products immediately upon delivery to Project Site ready for installation.

   a. Inspect Products immediately before start of application, installation, or erection.

   b. Reject damaged and defective Products.

5. Verify and check dimensions and measurements before start of installation or erection.

6. Coordinate closing-in of Work with required inspections and tests.

   a. Do not cover Work until inspected and approved by appropriate person or entity.

7. Provide fasteners, attachments, connection devices, and methods as indicated on Drawings or as specified.

   a. Where not indicated or specified provide appropriate methods necessary for securing Work.

   b. Secure Work plumb, true to line and level.

   c. Provide for expansion and building movement.

1.2 CLEANING

A. Cleaning During Construction: Maintain the project site as clean as practicable throughout construction period, including the removal of debris, trash, etc.

B. Final Cleaning:

1. Use cleaning materials and agents recommended by manufacturer or fabricator of surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property, or that might damage finished surfaces.

2. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of Work to condition expected from a commercial building cleaning and maintenance program. Comply with manufacturer's published instructions.

3. Complete following cleaning operations before requesting Punchlist inspection for Substantial Completion of Project by Architect. Project shall be “move-in” ready for Punchlist inspection.

a. Clean Project Site, yard and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste materials, litter and foreign substances. Sweep paved areas broom clean. Remove petro-chemical spills, stains and other foreign deposits. Rake grounds that are neither planted nor paved, to a smooth even-textured surface.

b. Remove tools, construction equipment, machinery and surplus material from Project Site.

c. Remove snow and ice to provide safe access to building.

d. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

e. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics and similar spaces.

g. Vacuum clean carpet and similar soft surfaces, removing debris and excess nap. Shampoo if required.

h. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

i. Remove labels that are not permanent labels.

j. Touch-up and otherwise repair and restore marred exposed finishes and surfaces. Replace finishes and surfaces that can not be satisfactorily repaired or restored, or that show evidence of repair or restoration. Do not paint over "UL" and similar labels, including mechanical and electrical name plates.

k. Wipe surfaces of mechanical and electrical equipment, and other similar equipment. Remove excess lubrication, paint and mortar droppings and other foreign substances.

l. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

m. Replace air disposable filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills. Clean ducts, blowers, and coils if units were operated without filters during construction.

n. Clean light fixtures, lamps, globes and reflectors to function with full efficiency. Replace any burned out bulbs, and defective and noisy starters in fluorescent and mercury vapor fixtures.

o. Leave Project clean and ready for occupancy.

4. Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from Project Site and dispose of in accordance with requirements of local authorities having jurisdiction.

1.3 STARTING AND ADJUSTING

A. Starting Systems:

1. Coordinate schedule for start-up of various equipment and systems.

2. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.

3. Verify tests, meter readings, and specified electrical characteristics agree with those required by equipment or system manufacturer.

4. Verify wiring and support components for equipment are complete and tested.

5. Execute start-up under supervision of applicable Contractors' personnel in accordance with manufacturers' instructions.

6. When specified in individual specification Sections, require manufacturer to provide authorized representative be present at Project Site to inspect,

check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

B. Demonstration and Instruction:

1. Demonstrate operation and maintenance of Products to Owner's personnel 2 weeks before Date of Final Acceptance.

2. Demonstrate Project equipment and provide operation instruction by qualified installer representative who is knowledgeable about Project.

3. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

END OF SECTION

CLOSE-OUT SUBMITTALS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Operation and Maintenance manuals.
2. Product warranties.
3. “Record As-Built Drawings”.

1.2 OPERATION AND MAINTENANCE MANUALS

A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

1. Prepare data in the form of an instructional manual.

2. Binders: Commercial quality, 8-1/2 x 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

3. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

4. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.

5. Text: Manufacturer's published data, or typewritten data on 20 pound paper.

6. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

7. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, in three parts as follows:

a. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.

b. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification Section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:

1) Significant design criteria.

2) List of equipment.

3) Parts list for each component.

4) Operating instructions.

5) Maintenance instructions for equipment and systems.

6) Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.

c. Part 3: Project documents and certificates, including the following:

1) Shop drawings and product data.

2) Certificates.

3) Photocopies of warranties.

1.3 PRODUCT WARRANTIES

A. Submit Warranties required for specific Products or Work as specified in each individual Section.

B. List of Minimum Required Warranties and Guarantees (where applicable):

1. General Contractor - Two (2) year guarantee for all labor and materials for the entire project.

2. HVAC Contractor - Two (2) year guarantee for all labor and materials and manufacturer's standard guarantees for equipment within the scope of this contract.

3. Electrical Contractor - Two (2) year guarantee for all labor and materials, and manufacturer's standard guarantees for all equipment and fixtures within the scope of this contract.

4. Windows and Doors - Manufacturer's standard guarantee, one (1) year minimum.

5. Carpeting - Manufacturer's standard guarantee, one (1) year minimum for material and installation.

6. Major Appliances - e.g., range, range hood, refrigerator, disposal, washer and dryer, thru-wall A.C. units, dishwashers, etc. - Manufacturer's standard guarantees, one (1) year minimum.

C. Form of Submittals:

1. Bind in commercial quality 8-1/2 x 11 inch three D side ring binders with durable plastic covers.

2. Cover: Identify each binder with typed or printed title WARRANTIES with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

3. Table of Contents: Neatly typed, in sequence of Table of Contents of Project Manual, with each item identified with number and title of specification Section in which specified, and name of Product or Work item.

4. Separate each warranty with index tab sheets keyed to Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

D. Time of Submittals:

1. For equipment or component parts of equipment put into service during construction with Architect approval, submit documents within 10 days after acceptance.

2. Make other submittals within 10 days after Date of Final Completion, prior to final Application for Payment.

3. For items of Work for which acceptance is delayed beyond Date of Final Completion, submit within 10 days after acceptance.

1.4 “PROJECT RECORD AS-BUILT DRAWINGS”

A. Project Record Documents required include:

1. Marked-up copies of Contract Drawings.

2. Marked-up copies of Shop Drawings.

3. Marked-up copies of Contract Modifications.

4. Marked-up Product Data submittals.

5. Field records for variable and concealed conditions.

6. Record information on Work that is recorded only schematically.

B. Maintenance of Documents: Store record documents in field office apart from Contract Documents used for construction. Do not permit Project Record Documents to be used for construction purposes. Maintain and protect record documents from damage in a clean, dry, legible condition. Make documents available at all times for inspection.

C. Record Drawings:

1. During construction, maintain a set of black-line white-prints of Contract Drawings and Shop Drawings for Project Record Document purposes.

a. Mark these Drawings to indicate actual installation where installation varies from installation shown originally. Give particular attention to information on concealed elements which would be difficult to identify or measure and record later. Items required to be marked include but are not limited to:

1) Dimensional changes to Drawings.

2) Revisions to details shown on Drawings.

3) Depths of foundations below first floor.

4) Locations and depths of underground utilities.

5) Revisions to routing of piping and conduits.

6) Revisions to electrical circuitry.

7) Actual equipment locations.

8) Duct size and routing.

9) Locations of concealed internal utilities.

10) Changes made by Contract Modification.

11) Details not on original Contract Drawings.

b. Mark completely and accurately record prints of Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions. Where Shop Drawings are marked, show cross-reference on Contract Drawings location.

c. Mark record sets with red erasable colored pencil; use other colors to distinguish between changes for different categories of Work at same location.

d. Mark important additional information which was either shown schematically or omitted from original Drawings.

e. Note construction change directive numbers, alternate numbers, Contract Modification numbers and similar identification.

f. Contractor bears full Responsibility for Markup and Supervision of the As-Built documentation throughout the course of the project. Where feasible, individual or entity who obtained record data,

whether individual or entity is installer, subcontractor, or similar entity, is required to prepare mark-up on Record Drawings.

1) Accurately record information in an understandable Drawing technique.

2) Record data as soon as possible after it has been obtained. In case of concealed installations, record and check mark-up prior to concealment.

g. At time of Final Acceptance, submit record Drawings to Architect for Owner's records. Organize into sets, bind and label sets for Owner's continued use.

2. Copies and Distribution: After completing preparation of Record Drawings, print 3 black-line prints of each Drawing, whether or not changes and additional information were recorded. Organize copies into manageable sets. Bind each set with durable paper cover sheets, with appropriate identification, including titles, dates and other information on cover sheets.

a. Organize and bind original marked-up set of prints that were maintained during construction in same manner.

b. Organize record transparencies into sets matching print sets. Place each set in durable tube-type Drawing containers with end caps. Mark end cap of each container with suitable identification.

D. Additional Record Submittals:

1. Refer to other specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Immediately prior to Final Acceptance, complete additional records and place in order, properly identified and bound or filed, ready for use and reference.

a. Categories of requirements resulting in miscellaneous records include, but are not limited to the following:

1) Load and performance testing.

2) Inspections and certifications by governing authorities.

3) Fire resistance and flame spread test results.

4) Final inspection and correction procedures.

END OF SECTION

SECTION 024100

DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Provide all labor, superintendence, materials, tools, transportation, plant and equipment and all means of construction necessary and reasonably incidental to:

Kaleidoscope Cove Exhibit will consist of a renovation to an existing portion of the second floor gallery and back of house spaces. The work generally consists of removal, relocation, and/or installation of new exhibit pieces and tanks and replacement of various finish materials and infrastructure. Work will require modifications and additions to the following: new and existing wall partitions, doors, and frames; electrical systems including power, lighting (exhibit and show lighting), controls, and life support systems (for the exhibits); exhibit life support systems including plumbing (supply and waste), pumps and circulation equipment; flooring; wall, ceiling, and window finishes; fire suppression system; structural building elements.

B. The Contractor shall be responsible for obtaining all necessary approvals, permits, registrations and/or certifications and construction permits including, fees for the same. The Contractor must follow and comply with all applicable requirements and standards as required under the approvals, permits, registrations and/or certifications and construction permits obtained for this project.

1.2 PROJECT CONDITIONS

A. Dust Control: To prevent unnecessary spread of dust during performance of demolition work (including crushing of concrete footings and foundations), thoroughly moisten surfaces and debris as required to prevent dust being a nuisance to the public, neighbors and concurrent performance of other work on the site. Contractor shall be responsible for securing a supply of water in accordance with applicable regulations. Contractor shall be responsible for providing all water required at his cost.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Materials needed or required for temporary protection in the form of barricades, fences, enclosures, etc., may be "used" construction materials of sound condition and reasonably clean. However, the condition of same materials shall meet or exceed the requirements of governing agencies or approving bodies as may be involved with the work.

B. Equipment, machinery and apparatus, motorized or otherwise, used to perform

the demolition work may be used as chosen at the Contractor's discretion, but which will perform the work within the limits of the Contract requirements for the duration of the project.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to performance of the actual work, carefully inspect the entire site and structures and locate, and verify with the Architect / Engineer those structures and objects designated to be demolished and removed and those structures and objects to be preserved.

B. Locate existing exposed and buried active utilities and determine the requirement for their protection, or their disposition with respect to the demolition work. Refer to Section 3.7 for additional requirements.

3.2 PERFORMANCE

A. Conduct demolition to minimize interference with adjacent structures or properties and protect existing structures/surfaces to remain.

B. Cease operations immediately if adjacent structures appear to be in danger. Notify Project Manager and authority having jurisdiction; do not resume operations until directed.

C. Conduct operations with minimum interference to public or private accesses. Maintain protected egress and access at all times.

D. Obtain written permission from adjacent property owners when demolition equipment will traverse, infringe upon or limit access to their property.

E. Sprinkle demolition areas with water to minimize dust. Provide hoses and water connections for this purpose.

3.3 DEBRIS REMOVAL

A. Dispose of demolition debris off site in a lawfully approved landfill area. Licensed to receive demolition materials including asbestos and lead.

3.4 ABANDONED EQUIPMENT AND MACHINERY

A. Existing equipment and machinery in or on the structures shall become the property of the Contractor and may not be disposed of on the site but shall be removed and disposed of in a lawful manner off site.

3.5 CONCRETE AND MASONRY REMOVAL

A. Under the base bid, the Contractor must demolish all existing concrete foundations, footings, and floor slabs that are indicated to be demolished whether shown or not. Foundations, footings, and floor slabs comprise all concrete,

masonry, steel, wood, or other materials placed at or below grade that provide support for the existing structure(s) above which are included in the scope of building and/or site demolition. The Contractor is responsible for removing all foundation, footing, and slab materials from the site and providing fill of equivalent volume. All non concrete debris and other materials must be removed from the demolished or crushed concrete foundations and floor slabs.

B. Where concrete building or site elements are demolished as a part of the work, the Contractor may crush demolished concrete material to pieces 3” or smaller and place the crushed concrete materials to bring area of demolition up to level of adjacent grade after demolition and crushing of the existing building concrete foundations and floor slabs if doing so is approved as a base for future work and agreed to by Owner. The crushed concrete fill materials shall be in layers not more than 8" loose depth and shall be compacted by heavy equipment.

C. Any excess crushed concrete material not used on site in a manner approved by Owner shall be removed from the project site by the Contractor and disposed of at the Contractor’s cost.

D. Demolition and crushing of concrete foundation and slab materials must be performed to meet the requirements of DUST CONTROL as specified herein.

E. Under base bid, the contractor shall be required to install clean top soil and grass seed to all disturbed areas.

3.6 BACKFILLING

A. Where soil and site elements are removed, the Contractor must provide and install all required imported fill and earthwork operations to bring area of demolition up to level of adjacent grade after demolition and removal of any existing building footings, foundations, or floor slabs in accordance. Any fill material must be suitable as fill for intended purpose of area being filled. Areas to be seeded or landscaped must receive suitable topsoil material; areas to be built upon must receive suitable compactible fill.

3.7 UTILITIES

A. Contractor must notify the various utility companies when the work is to begin so that gas and electric services may be discontinued if necessary and all wires and equipment may be disconnected in accordance with the rules and regulations of the utility companies. IN NO CASE SHALL CONTRACTOR UNDERTAKE EXCAVATION WITHOUT UNDERGROUND UTILITY PROPERTY BEING MARKED BY THE VARIOUS UTILITY COMPANIES.

B. The Contractor shall plug, cap or otherwise disconnect all existing utilities as indicated on the Contract Drawings or as may enter the existing building in accordance with the individual utility company requirements. In the absence of specific utility company requirements, the Contractor shall use acceptable industry means and methods.

3.8 PERMITS AND LICENSES

A. Contractor shall obtain and pay for all permits, fees and other charges required by the municipality, county or state, and / or utility companies' regulations.

3.9 PROTECTION

A. Exercise care during demolition work to confine demolition operations to the site. The physical means and methods used for protection are at the Contractor's option. However, the Contractor will be completely responsible for replacement and restitution work of whatever nature at no expense to the Owner.

B, Additionally, if public safety is endangered during the progress of the demolition work, provide adequate protective measures to protect public pedestrian and vehicular traffic on streets and walkways.

C Signs, signals and barricades used shall conform to requirements of Federal, State and local laws, rules, regulations, and precautions.

3.10 EXPLOSIVES AND BLASTING

A. Not permitted in performance of demolition work.

END OF SECTION

SECTION 024119

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section for the Adventure Aquarium Kaleidoscope Cove project for partial building demolition as indicated on the contract drawings and as specified herein.

1.2 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.

1.3 DEFINITIONS

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

B. Demolish and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.

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

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

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 PREINSTALLATION MEETINGS

A. Predemolition Conference: Conduct conference at Project site.

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.

1.6 INFORMATIONAL SUBMITTALS

A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property. Indicate proposed locations and construction of barriers.

B. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of elevator and stairs.
5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

C. Predemolition Photographs: Submit before Work begins.

D. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.7 CLOSEOUT SUBMITTALS

A. Inventory: Submit a list of items that have been removed and salvaged.

B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.8 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. Hazardous materials will be removed by Owner before start of the Work.
2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS

2.1 PEFORMANCE REQUIREMENTS

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

B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.

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

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

E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Arrange to shut off indicated utilities with utility companies.
2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.

    a. Piping to Be Demolished: Demolish portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
    b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
    c. Equipment to Be Demolished: Disconnect and cap services and remove equipment.
    d. Equipment to Be Demolished and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
    e. Equipment to Be Demolished and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
    f. Ducts to Be Demolished: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
    g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.

C. Refrigerant: Remove refrigerant from mechanical equipment to be selectively demolished according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

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

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

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

B. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and

cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, then remove concrete between saw cuts.

B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

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

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

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

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

SECTION 033000
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:

1. Slabs-on-grade.
2. Footings and foundations.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

D. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Steel reinforcement and accessories.
4. Fiber Reinforcement.
5. Curing compounds.

6. Floor and slab treatments.
7. Bonding agents.
8. Adhesives.
9. Repair materials.

E. Field quality-control test and inspection reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Testing Agency Qualifications: An independent agency, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-01 or an equivalent certification program.

2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.

E. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301, "Specification for Structural Concrete," Sections 1 through 5.

2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

F. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.

2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Plywood, metal, or other approved panel materials.

Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch (19 by 19 mm), minimum.C. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

D. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that will leave no corrodible metal closer than 1 inch (25 mm) to the plane of exposed concrete surface.

2.3 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

B. Plain-Steel Wire: ASTM A 82.

C. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.

2.4 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), plain-steel bars, cut bars true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

2.5 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

B. Normal-Weight Aggregates: ASTM C 33, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.

1. Maximum Coarse-Aggregate Size: 1-1/2 inches (38 mm) for foundations and walls, 3/4 inch (19 mm) nominal for slabs.

2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: ASTM C 94/C 94M and potable.

2.6 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.

2. Retarding Admixture: ASTM C 494/C 494M, Type B.

3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.

4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.

5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.

6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.7 VAPOR RETARDERS

A. Plastic Vapor Retarder: ASTM E 1745, Class C, or polyethylene sheet, ASTM D 4397, not less than 15 mils (0.25 mm) thick. Include manufacturer's recommended adhesive or pressure-sensitive joint tape.

1. Products (or equivalent):

a. Fortifiber Corporation; Moistop Plus.
b. Raven Industries Inc.; Dura Skrim.
c. Reef Industries, Inc.; Griffolyn Type.
d. Stego Industries, LLC; Stego Wrap, 10 mils.

B. Granular Fill: Clean mixture of crushed stone or crushed or uncrushed gravel; ASTM D 448, Size 57, with 100 percent passing a 1-1/2-inch (37.5-mm) sieve and 0 to 5 percent passing a No. 8 (2.36-mm) sieve.

2.8 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

1. Available Products (or equivalent):

a. Burke by Edoco; BurkeFilm.
b. ChemMasters; Spray-Film.
c. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Aquafilm.
d. Dayton Superior Corporation; Sure Film.
e. Euclid Chemical Company (The); Eucobar.
f. L&M Construction Chemicals, Inc.; E-Con.
g. Meadows, W. R., Inc.; Sealtight Evapre.
h. Sika Corporation, Inc.; SikaFilm.
i. Symons Corporation, a Dayton Superior Company; Finishing Aid.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.

1. Available Products (or equivalent):

a. Anti-Hydro International, Inc.; AH Clear Cure WB.
b. Burke by Edoco; Spartan Cote WB II.
c. ChemMasters; Safe-Cure & Seal 20.
d. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Cure and Seal WB.
e. Dayton Superior Corporation; Safe Cure and Seal (J-18).
f. Euclid Chemical Company (The); Aqua Cure VOX.
g. L&M Construction Chemicals, Inc.; Dress & Seal WB.
h. Meadows, W. R., Inc.; Vocomp-20.
i. Symons Corporation, a Dayton Superior Company; Cure & Seal 18 Percent E.

2.9 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

2.10 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.

2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.

3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by underlayment manufacturer.

4. Compressive Strength: Not less than 4100 psi (29 MPa) at 28 days when tested according to ASTM C 109/C 109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.

2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.

3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by topping manufacturer.

4. Compressive Strength: Not less than 5000 psi (34.5 MPa) at 28 days when tested according to ASTM C 109/C 109M.

2.11 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.

C. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing, high-range water-reducing, or plasticizing admixture in concrete, as required, for placement and workability.

2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

2.12 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Footings: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 3000 psi (20.7 MPa) at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.50.
3. Slump Limit: 4 inches (100 mm), plus or minus 1 inch (25 mm).
4. Air Content: 5-1/2 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch (38-mm) nominal maximum aggregate size.

B. Foundation Walls: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.45.
3. Slump Limit: 4 inches (100 mm), plus or minus 1 inch (25 mm).
4. Air Content: 5-1/2 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch (38-mm) nominal maximum aggregate size.

C. Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 3500 psi at 28 days.
2. Minimum Cementitious Materials Content: 520 lb/cu. yd.

3. Slump Limit: 3 inches (100 mm), plus or minus 1 inch (25 mm).
4. Air Content: Do not allow air content of troweled finished floors to exceed 3 percent.

2.13 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.14 CONCRETE MIXING

A Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116, and furnish batch ticket information.

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

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:

1. Class A, 1/8 inch (3.2 mm) for smooth-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces.

1. Install keyways, reglets, recesses, and the like, for easy removal.

2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
3. Install dovetail anchor slots in concrete structures as indicated.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete, if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 VAPOR RETARDERS

A. Plastic Vapor Retarders: Place, protect, and repair vapor retarders according to ASTM E 1643 and manufacturer's written instructions.

1. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended tape.

B. Granular Course: Cover vapor retarder with granular fill, moisten, and compact with mechanical equipment to elevation tolerances of plus 0 inch (0 mm) or minus 3/4 inch (19 mm).

3.5 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.6 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.

2. Terminate full-width joint-filler strips not less than 1/2 inch (13 mm) or more than 1 inch (25 mm) below finished concrete surface where joint sealants, specified in Division 7 Section "Joint Sealants," are indicated.

3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

D. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.7 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.

C. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.

2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.

3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

D. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.

2. Maintain reinforcement in position on chairs during concrete placement.

3. Screed slab surfaces with a straightedge and strike off to correct elevations.

4. Slope surfaces uniformly to drains where required.

5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

E. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F (4.4 deg C) for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

F. Hot-Weather Placement: Comply with ACI 301 and as follows:

1. Maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.8 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to public view locations and locations to be covered with a coating or covering material applied directly to concrete.

C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.9 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch (6 mm) in 1 direction.

1. Apply scratch finish to surfaces to receive mortar setting beds for bonded cementitious floor finishes or concrete floor toppings.

C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces to receive trowel finish.

D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.

2. Finish surfaces to the following tolerances, according to ASTM E 1155 (ASTM E 1155M):

a. Specified overall values of flatness, F(F) 35; and of levelness, F(L) 25; with minimum local values of flatness, F(F) 24; and of levelness, F(L) 17; for slabs-on-grade.

E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set method. While concrete is still plastic, slightly scarify surface with a fine broom.

1. Comply with flatness and levelness tolerances for trowel finished floor surfaces.

F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.

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

3.10 MISCELLANEOUS CONCRETE ITEMS

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

B. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.

C. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel-finish concrete surfaces.

3.11 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

    a. Water.
    b. Continuous water-fog spray.
    c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides

and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.

b. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

a. After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.12 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 (1.18-mm) sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch (13 mm) in any dimension in solid concrete, but not less than 1 inch (25 mm) in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.

2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match

surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.

3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch (0.25 mm) wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.

2. After concrete has cured at least 14 days, correct high areas by grinding.

3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.

4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.

5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch (6 mm) to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.

6. Repair defective areas, except random cracks and single holes 1 inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch (19-mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

7. Repair random cracks and single holes 1 inch (25 mm) or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried.

Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.13 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing and Inspecting: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

C. Inspections:

1. Steel reinforcement placement.

2. Verification of use of required design mixture.

3. Concrete placement, including conveying and depositing.

D. Measure floor and slab flatness and levelness according to ASTM E 1155 (ASTM E 1155M) within 48 hours of finishing.

E. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd. (4 cu. m), but less than 25 cu. yd. (19 cu. m), plus one set for each additional 50 cu. yd. (38 cu. m) or fraction thereof.

a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.

3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.

5. Compression Test Specimens: ASTM C 31/C 31M.

   a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.

6. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.

   a. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.

8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).

9. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

11. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.

12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

13. Correct deficiencies in the Work that test reports and inspections indicate dos not comply with the Contract Documents.

END OF SECTION

SECTION 054000
COLD FORMED METAL FRAMING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Cold-formed metal framing for the following applications:
   1. Load-bearing wall framing.
   2. Exterior non-load-bearing wall framing.
   3. Floor joist framing.
   4. Roof rafter framing.
   5. Exterior soffit framing.

1.2 RELATED SECTIONS

A. Section 05 50 00 - Metal Fabrications: for masonry shelf angles and connections.

B. Section - 09 23 00 - Gypsum Board Shaft Wall Assemblies: for interior non-load-bearing, metal-stud-framed, shaft-wall assemblies.

C. Section 09 22 16.13 - 'Non-Structural Metal Framing' for interior non-load-bearing, metal-stud framing and ceiling-suspension assemblies.

1.3 REFERENCES

A. American Concrete Institute (ACI) 318 - Building Code Requirements for Structural Concrete.

B. American Iron and Steel Institute (AISI) S200 - North American Standard for Cold-Formed Steel Framing - General Provisions.

C. ASTM International (ASTM):
   1. ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   2. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   3. ASTM A 780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
   4. ASTM A 1003/A 1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members.
   5. ASTM C 150 - Statistical Calibration of ASTM C150 Bogue-Derived Phase Limits to Directly Determined Phases by Quantitative X-Ray Powder Diffraction
   6. ASTM C 404 - Standard Specification for Aggregates for Masonry Grout.
   7. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.
   8. ASTM C 1107/C 1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
   9. ASTM C 1513 - Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections.

10. ASTM E 488 - Standard Test Methods for Strength of Anchors in Concrete Elements.
11. ASTM E 1190 - Standard Test Methods for Strength of Power-Actuated Fasteners Installed in Structural Members.
12. ASTM F 1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.

D. ICC-ES AC70 - Acceptance Criteria for Fasteners Power-driven into Concrete, Steel and Masonry Elements.

E. SSPC - Structural Steel Painting Council.

1.4 ACTION SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Shop Drawings:
1. Include spacings, sizes, thicknesses, and types of cold-formed steel framing; fabrication; and fastening and anchorage details, including mechanical fasteners.
2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

D. Delegated-Design Submittal: For cold-formed steel framing structural design.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For third party manufacturing facility testing agency.

B. Welding Certificates: For each welder.

C. Manufacturing Facility Inspection Certification: For each stud and track framing product, submit current certification that manufacturing facility has been inspected by a 3rd party International Accreditation Service (IAS) accredited agency.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 5 year experience manufacturing similar products.

B. Installer Qualifications: Minimum 2 year experience installing similar products.

C. Manufacturing Facility Inspection Agency Qualifications: Qualified according to IAS Accreditation Criteria for Inspection Agencies (AC98), and has demonstrated compliance with ISO/IEC Standard 17020:2012, Conformity assessment - Requirements for the operation of various types of bodies performing inspection for testing indicated.

D. Product Tests: Mill certificates or data from a qualified independent testing agency, or in-house testing with calibrated test equipment, indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.

E. Welding Qualifications: Qualify procedures and personnel according to the following:
1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

F. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   1. Finish areas designated by Architect.
   2. Do not proceed with remaining work until workmanship is approved by Architect.
   3. Rebuild mock-up area as required to produce acceptable work.

1.7 PRE-INSTALLATION MEETINGS

A. Convene minimum two weeks prior to starting work of this section.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.

B. Handling: Handle materials to avoid damage.

C. Protect cold-formed steel framing from corrosion, moisture staining, deformation, and other damage during delivery, storage, and handling.

1.9 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 recommended limits.

1.10 SEQUENCING

A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers (or equivalent): Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   1. Dietrich Metal framing: a Worthington Industries Company

   2. MarinoWARE

   3. Nuconsteel: a Nucor Company

   4. Steel Network, Inc. (The).

   5. Super Stud Building Products, Inc.

   6 United Steel Manufacturing

B. Web: http://buysuperstud.com.

C. Substitutions: Not permitted.

D. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 - Quality Requirements "Quality Requirements," to design cold-formed steel framing.

B. Structural Performance: Provide cold-formed steel framing capable of withstanding design loads within limits and under conditions indicated.
   1. Design Loads: As indicated on Structural Drawings, and in accordance with Applicable Building Code.
   2. Deflection Limits: For deflection calculations, wind pressures may be reduced in accordance with International Building Code (IBC) table 1604.3, footnote f. Design framing systems to withstand design loads without deflections greater than the following:
      a. Exterior Load-Bearing and Exterior Non-Load-Bearing Wall Framing: Horizontal deflection depending upon type of cladding supported:
         1) Brick or Stone or Masonry Veneer: l/600 of wall height.
         2) Stucco or Portland Cement Plaster or Tile or Thin Brick: 1/360 of wall height.
         3) Exterior Insulation and Finish System (EIFS): 1/240 of the wall height.
         4) Aluminum composite metal (ACM) or similar metal panel systems: 1/180 of the wall height.
      b. Interior Load-Bearing Wall Framing: Horizontal deflection of 1/240 of the wall height under a horizontal load of 5 lbf/sf (24 kilogram-force/square meter).
      c. Floor Joist Framing: Vertical deflection of 1/360 for live loads and l/240 for total loads of the span.
      d. Roof Rafter Framing: Vertical deflection of 1/240 of the horizontally projected span for live loads.
   3. Design framing systems to provide for movement of framing members located outside the insulated building envelope without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 degree F (49 degree C).
   4. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live and snow load deflection of primary building structure as follows:
      a. Upward and downward movement of 1/2 inch (13 mm).
   5. Design exterior non-load-bearing wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.

2.3 COLD-FORMED STEEL FRAMING, GENERAL

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

B. Steel Sheet: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:

   1. Grade: for 33 and 43 mil thickness: ST33H. For 54 mil and greater thickness: ST50H.
   2. Coating: ASTM A653 G60 standard. Heavier galvanizing is permitted.

C. Steel Sheet for Vertical Deflection Clips: ASTM A 653/A 653M, structural steel, zinc coated, of grade and coating as follows:
   1. Grade: 50.
   2. Coating: G90.

2.4 LOAD-BEARING AND EXTERIOR NON-LOAD-BEARING WALL FRAMING

A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated,

punched, with stiffened flanges, and as follows:
1. Minimum Base-Metal Thickness: 0.0329 inch (0.836 mm) (33 mil, structural 20 gauge).
2. Flange Width: 1-5/8 inches (41 mm).

B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and as follows:
1. Minimum Base-Metal Thickness: 0.0329 inch (0.836 mm).
2. Flange Width: 1-5/8 inches (41 mm).

C. Steel Box or Back-to-Back or L-Headers: Manufacturer's standard C-shapes or L-shapes used to form header beams, of web depths indicated, unpunched, with stiffened flanges, and as follows:
1. Minimum Base-Metal Thickness: 0.0329 inch (0.836 mm).
2. Flange Width: 1-5/8 inches (41 mm) minimum for C-shapes, and top flange width minimum 2 inches (51 mm) for L-shapes.
3. Holes in header members greater than 1/4 inch (6 mm) are not permitted without an approved design.

D. Vertical Deflection Clips: Manufacturer's standard bypass and head-of-wall clips, capable of accommodating 1.5 inches (38 mm) upward and downward vertical displacement of primary structure (with total vertical movement of 3 inches (76 mm)) through positive mechanical attachment to stud web. Minimum deflection clip thickness: 97 mil (2.46 mm) (12 gauge).
1. Basis-of-Design Product: Subject to compliance with requirements, provide Super Stud Building Products, Inc.; or comparable product by one of the following:
a. Super Stud Building Products, Inc.
b. Simpson Strong-Tie, Inc.
c. The Steel Network.

E. Single Deflection Track: Manufacturer's single, deep-leg, U-shaped steel track; unpunched, with unstiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal loads and transfer them to the primary structure, and as follows:
1. Minimum Base-Metal Thickness: 0.0428 inch (1.1 mm) (43 mil, 18 gauge).
2. Flange Width: 1 inch (25 mm) plus the design gap, or 1.5 inches (38 mm), whichever is greater.

F. Drift Clips (where indicated on drawings): Manufacturer's standard bypass or head clips, capable of isolating wall stud from upward and downward vertical displacement and lateral drift of primary structure through positive mechanical attachment to stud web and structure.

2.5 FLOOR JOIST FRAMING

A. Steel Joists: Manufacturer's standard C-shaped steel joists, of web depths indicated, with stiffened flanges, and as follows:
1. Minimum Base-Metal Thickness: 0.0428 inch (1.1 mm) (43 mil, 18 gauge).
2. Flange Width: 1-5/8 inches (41 mm) minimum.

B. Steel Joist Track: Manufacturer's standard U-shaped steel joist track, of web depths indicated, unpunched, with unstiffened flanges, and as follows:
1. Minimum Base-Metal Thickness: Matching steel joists.
2. Flange Width: 1-1/4 inches (32 mm) minimum.

2.6 ROOF RAFTER FRAMING

A. Steel Rafters: Manufacturer's standard C-shaped steel sections, of web depths indicated, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 0.0329 inch (0.836 mm) (33 mil, structural 20 gauge).
2. Flange Width: 1-5/8 inches (41 mm) minimum.

2.7 EXTERIOR SOFFIT FRAMING

A. Exterior Soffit Framing: Manufacturer's standard C-shaped steel sections, of web depths indicated, with stiffened flanges, and as follows:
1. Minimum Base-Metal Thickness: 0.0329 inch (0.836 mm) (33 mil, structural 20 gauge).
2. Flange Width: 1-5/8 inches (41 mm) minimum.

2.8 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.

B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
1. Supplementary framing.
2. Bracing, bridging, and solid blocking.
3. Web stiffeners.
4. Anchor clips.
5. End clips.
6. Foundation clips.
7. Gusset plates.
8. Stud kickers and knee braces.
9. Joist hangers and end closures.
10. Hole reinforcing plates.
11. Backer plates.

2.9 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.

B. Anchor Bolts: ASTM F 1554,Grade 36 minimum, threaded carbon-steel bolts and carbon-steel nuts; and flat, hardened-steel washers; zinc coated.

C. Expansion Anchors: Fabricated from corrosion-resistant materials, with allowable load or strength design capacities calculated according to ACI 318 greater than or equal to the design load, as determined by testing per ASTM E 488 conducted by a qualified testing agency.

D. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with allowable load capacities calculated according to ICC-ES AC70, greater than or equal to the design load, as determined by testing per ASTM E 1190 conducted by a qualified testing agency.

E. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping, steel drill screws.
1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

F. Welding Electrodes: Comply with AWS standards.

2.10 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint must comply with one of the following: SSPC-Paint 20, MIL-P-21035B, or ASTM A 780.

B. Cement Grout: Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

C. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, Portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents, complying with ASTM C 1107/C 1107M, with fluid consistency and 30-minute working time.

D. Shims: Load bearing, high-density multi-monomer plastic, and nonleaching; or of cold-formed steel of same grade and coating as framing members supported by shims.

E. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch (6 mm) thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

2.11 FABRICATION

A. Fabricate cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened, according to code-referenced American Iron and Steel Institute (AISI) specifications and standards, manufacturer's written instructions, and requirements in this Section.
   1. Fabricate framing assemblies using jigs or templates.
   2. Cut framing members by sawing or shearing; do not torch cut.
   3. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, pneumatic pin fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.
      a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
      b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by no fewer than three exposed screw threads.
   4. Fasten other materials to cold-formed steel framing by welding, bolting, pneumatic pin fastening, or screw fastening, according to Shop Drawings.

B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.

C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
   1. Spacing: Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
   2. Squareness: Fabricate each cold-formed steel framing assembly to a maximum out-of-square tolerance of 1/8 inch (3 mm).

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Before sprayed fire-resistive materials are applied, attach continuous angles, Z-Furring, supplementary framing, or tracks to structural members indicated to receive sprayed fire-resistive materials.

B. After applying sprayed fire-resistive materials, remove only as much of these materials as needed to complete installation of cold-formed framing without reducing thickness of fire-resistive materials below that are required to obtain fire-resistance rating indicated. Protect remaining fire-resistive materials from damage.

C. Install load bearing shims or grout between the underside of load-bearing wall bottom track and the top of foundation wall or slab at locations with a gap larger than 1/4 inch (6 mm) to ensure a uniform bearing surface on supporting concrete or masonry construction.

D. Install sealer gaskets at the underside of wall bottom track or rim track at the top of foundation wall or slab at stud or joist locations.

3.3 INSTALLATION, GENERAL

A. Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed steel framing according to ASTM C1007 and to manufacturer's written instructions unless more stringent requirements are indicated.

C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.
   1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.

D. Install cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened.
   1. Cut framing members by sawing or shearing; do not torch cut.
   2. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.
      a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
      b. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.

E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.

F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.

G. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.

H. Install insulation, specified in Section 07 21 26 - Blown Insulation " Insulation," in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.

I. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's approved or standard punched openings.

J. Erection Tolerances: Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
   1. Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.4 LOAD-BEARING WALL INSTALLATION

A. Install continuous top and bottom tracks sized to match studs. Align tracks accurately and securely anchor at corners and ends, and anchor at spacings to match stud spacing, or as shown on Shop Drawings.

B. Squarely seat studs against top and bottom tracks with gap not exceeding 1/8 inch between the end of wall framing member and the web of track. Fasten both flanges of studs to top and bottom tracks. Space studs at maximum 16 inches (406 mm) on center, or as indicated on approved shop drawings.

C. Set studs plumb, except as needed or required for nonplumb walls or curved surfaces and similar configurations.

D. Align studs vertically where floor framing interrupts wall-framing continuity. Where studs cannot be aligned, continuously reinforce track to transfer loads.

E. Align floor and roof framing over studs according to AISI S200, Section C1. Where framing cannot be aligned, continuously reinforce track to transfer loads.

F. Anchor studs abutting structural columns or walls, including masonry walls, to supporting structure as indicated.

G. Install headers over wall openings wider than stud spacing. Locate headers above openings as indicated. Fabricate headers of compound shapes indicated or required to transfer load to supporting studs, complete with clip-angle connectors, web stiffeners, or gusset plates.
   1. Frame wall openings with not less than a double stud at each jamb of frame as indicated on Shop Drawings. Fasten jamb members together to uniformly distribute loads.
   2. Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with clip angles or by welding, and space jack studs same as full-height wall studs.

H. Install supplementary framing, blocking, and bracing in stud framing indicated to support fixtures, equipment, services, casework, heavy trim, furnishings, and similar work requiring attachment to framing. If type of supplementary support is not indicated, comply with stud manufacturer's written recommendations and industry standards in each case, considering weight or load resulting from item supported.

I. Install horizontal bridging in stud system, spaced vertically as indicated on Shop Drawings. Fasten at each stud intersection.
   1. Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs with a minimum of two screws into each flange of the clip angle for framing members up to 8 inches deep.
   2. Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.

J. Where required for overall structural shear wall lateral bracing, Install steel sheet diagonal bracing straps to both stud flanges, terminate at and fasten to reinforced top and bottom tracks. Fasten clip-angle connectors to multiple studs at ends of bracing and anchor to structure.

K. Install miscellaneous framing and connections, including supplementary framing, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.5 NON-LOAD-BEARING WALL INSTALLATION

A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.

B. Fasten both flanges of studs to top and bottom track unless otherwise indicated. Space studs at maximum 24 inches (610 mm) on center, or as indicated on approved shop drawings.

C. Set studs plumb, except as needed or required for nonplumb walls or curved surfaces.

D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.
1. Install single deep-leg deflection tracks and anchor to building structure.
2. Connect vertical deflection clips to bypassing and infill studs and anchor to building structure.
3. Connect drift clips to cold-formed metal framing and anchor to building structure.

E. Install horizontal bridging in wall studs, spaced vertically in rows indicated on Shop Drawings. Fasten at each stud intersection.
1. Top Bridging for Single Deflection Track: Install row of horizontal bridging within 24 inches (610 mm) of top single deflection track. Install a combination of bridging and stud or stud-track solid blocking of width and thickness matching studs, secured to stud webs or flanges. At bridging line, install solid blocking at each end of bridging straps, and at a maximum spacing of 120 inches (3048 mm) on center.
2. Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs.
3. Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges. At bridging line, install solid blocking at each end of bridging straps, and at a maximum spacing of 120 inches (3048 mm) on center.

F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.6 JOIST INSTALLATION

A. Install perimeter joist track sized to match joists. Align and securely anchor or fasten track to supporting structure at corners, ends, and spacings indicated on Shop Drawings.

B. Install joists bearing on supporting frame, level, straight, and plumb; adjust to final position, brace, and reinforce. Fasten joists to both flanges of joist track, or use end stiffeners for joist/track connection where attachment to one flange is not accessible.
1. Install joists over supporting frame with a minimum end bearing of 1-1/2 inches (38 mm).
2. Reinforce ends and bearing points of joists with web stiffeners, end clips, joist

hangers, steel clip angles, or steel-stud sections as indicated on Shop Drawings.

C. Space joists not more than 2 inches (51 mm) from abutting walls. Joist spacing shall be as indicated on approved shop drawings, but not more than 24 inches.

D. Frame openings with built-up joist headers consisting of joist and joist track, or another combination of connected joists if indicated.

E. At bearing walls and interior supports, provide web stiffeners and solid blocking as required or indicated on Shop Drawings, to transfer both vertical and lateral forces from walls above.

F. Install bridging at intervals indicated on Shop Drawings. Fasten bridging at each joist intersection as follows:
   1. Bridging: Joist-track or proprietary solid blocking of width and thickness indicated, secured to joist webs.
   2. Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and joist-track or proprietary solid blocking of width and thickness indicated. Fasten flat straps to bottom flange of joists and secure solid blocking to joist webs. At bridging line, install solid blocking at each end of bridging straps, and at a maximum spacing of 120 inches on center.

G. Secure joists to load-bearing interior walls to prevent lateral movement of bottom flange.

H. Install miscellaneous joist framing and connections, including web stiffeners, closure pieces, clip angles, continuous angles, hold-down angles, anchors, and fasteners, to provide a complete and stable joist-framing assembly.

3.7 FIELD QUALITY CONTROL

A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Field and shop welds will be subject to testing and inspecting.

C. Testing agency will report test results promptly and in writing to Contractor and Architect.

D. Remove and replace work where test results indicate that it does not comply with specified requirements.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.8 REPAIRS AND PROTECTION

I. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

J. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer that ensure that cold-formed steel framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 061010

ROUGH CARPENTRY - BLOCKING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Wood blocking, and nailers.

1.3 DEFINITIONS

A. Exposed Framing: Framing not concealed by other construction.

B. Dimension Lumber: Lumber of 2 inches nominal (38 mm actual) or greater but less than 5 inches nominal (114 mm actual) in least dimension.

C. Lumber grading agencies, and the abbreviations used to reference them, include the following:

1. NeLMA: Northeastern Lumber Manufacturers' Association.
2. NLGA: National Lumber Grades Authority.
3. SPIB: The Southern Pine Inspection Bureau.
4. WCLIB: West Coast Lumber Inspection Bureau.
5. WWPA: Western Wood Products Association.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
3. Provide dressed lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 15 percent for 2-inch nominal (38-mm actual) thickness or less, 19 percent for more than 2-inch nominal (38-mm actual) thickness] unless otherwise indicated.

C. Engineered Wood Products: Provide engineered wood products acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.

1. Allowable Design Stresses: Provide engineered wood products with allowable design stresses, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that 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.

D. Application: Treat items indicated on Drawings, and the following as applicable:

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, 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 inches (460 mm) above the ground in crawlspaces or unexcavated areas.
5. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.

B. For items of dimension lumber size, provide Standard, Stud, or No. 3 grade lumber of any species.

1. Mixed southern pine; SPIB.
2. Hem-fir; WCLIB or WWPA.
3. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
4. Western woods; WCLIB or WWPA.
5. Eastern softwoods; NeLMA.

C. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

2.4 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: NES NER-272.

D. Wood Screws: ASME B18.6.1.

E. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M).

F. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry assemblies and equal to four times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.

1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
2. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2 (ASTM F 738M and ASTM F 836M, Grade A1 or A4).

2.5 METAL FRAMING ANCHORS

A. Manufacturers: Subject to compliance with requirements, [provide products by the following] [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:

B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings; product name or designation> or comparable product by one of the following:

1. Simpson Strong-Tie Co., Inc.
2. USP Structural Connectors.

C. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, which meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

D. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 (Z180) coating designation.

1. Use for interior locations unless otherwise indicated.

E. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A 653/A 653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 (Z550) coating designation; and not less than 0.036 inch (0.9 mm) thick.

1. Use for wood-preservative-treated lumber and where indicated.

F. Top Flange Hangers: U-shaped joist hangers, full depth of joist, formed from metal strap with tabs bent to extend over and be fastened to supporting member.

1. Strap Width: 1-1/2 inches (38 mm).
2. Thickness: 0.050 inch (1.3 mm).

G. Post Bases: Adjustable-socket type for bolting in place with standoff plate to raise post 1 inch (25 mm) above base and with 2-inch- (50-mm-) minimum side cover, socket 0.062 inch (1.6 mm) thick, and standoff and adjustment plates 0.108 inch (2.8 mm) thick.

H. Rafter Tie-Downs: Bent strap tie for fastening rafters or roof trusses to wall studs below, 1-1/2 inches (38 mm) wide by 0.050 inch (1.3 mm) thick.

I. Floor-to-Floor Ties: Flat straps, with holes for fasteners, for tying upper floor wall studs to band joists and lower floor studs, 1-1/4 inches (32 mm) wide by 0.050 inch (1.3 mm) thick by 36 inches (914 mm) long.

J. Hold-Downs: Brackets for bolting to wall studs and securing to foundation walls with anchor bolts or to other hold-downs with threaded rods and designed with first of two bolts placed seven bolt diameters from reinforced base.

1. Bolt Diameter: [5/8 inch (15.8 mm)] [3/4 inch (19 mm)].
2. Width: [2-1/2 inches (64 mm)] [3-3/16 inches (81 mm)].
3. Body Thickness: [0.108 inch (2.8 mm)] [0.138 inch (3.5 mm)].
4. Base Reinforcement Thickness: [0.108 inch (2.8 mm)] [0.239 inch (6.1 mm)].

2.6 MISCELLANEOUS MATERIALS

A. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch (25-mm) nominal thickness, compressible to 1/32 inch (0.8 mm); selected from manufacturer's standard widths to suit width of sill members indicated.

B. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to suit width of sill members indicated.

C. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, [butyl rubber] [or] [rubberized-asphalt] compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch (0.6 mm).

D. Water-Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbamate, combined with an insecticide containing chloropyrifos as its active ingredient.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

B. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

C. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.

D. Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

E. Install sill sealer gasket to form continuous seal between sill plates and foundation walls.

F. Do not splice structural members between supports unless otherwise indicated.

G. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches (406 mm) o.c.

H. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:

1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches (2438 mm) o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches (2438 mm) o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal- (38-mm actual-) thickness.
3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. (9.3 sq. m) and to solidly fill space below partitions.

4. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet (6 m) o.c.

I. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

J. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid water.

K. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.
2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
3. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.

L. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

C. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

D. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches (38 mm) wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 WALL AND PARTITION FRAMING INSTALLATION

A. General: Provide single bottom plate and double top plates using members of 2-inch nominal (38-mm actual) thickness whose widths equal that of studs, except single top plate may be used for non-load-bearing partitions. Fasten plates to supporting construction unless otherwise indicated.

1. For exterior walls, provide 2-by-6-inch nominal- (38-by-140-mm actual-) size wood studs spaced 16 inches (406 mm) o.c. unless otherwise indicated.
2. For interior partitions and walls, provide 2-by-4-inch nominal- (38-by-89-mm actual-) size wood studs spaced 16 inches (406 mm) o.c. unless otherwise indicated.
3. Provide continuous horizontal blocking at midheight of partitions more than 96 inches (2438 mm) high, using members of 2-inch nominal (38-mm actual) thickness and of same width as wall or partitions.

B. Construct corners and intersections with three or more studs, except that two studs may be used for interior non-load-bearing partitions.

C. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Support headers on jamb studs.

1. For non-load-bearing partitions, provide double-jamb studs and headers not less than 4-inch nominal (89-mm actual) depth for openings 48 inches (1200 mm) and less in width, 6-inch nominal (140-mm actual) depth for openings 48 to 72 inches (1200 to 1800 mm) in width, 8-inch nominal (184-mm actual) depth for openings 72 to 120 inches (1800 to 3000 mm) in width, and not less than 10-inch nominal (235-mm actual) depth for openings 10 to 12 feet (3 to 3.6 m) in width.
2. For load-bearing walls, provide double-jamb studs for openings 60 inches (1500 mm) and less in width, and triple-jamb studs for wider openings. Provide headers of depth indicated.

3.4 FLOOR JOIST FRAMING INSTALLATION

A. General: Install floor joists with crown edge up and support ends of each member with not less than 1-1/2 inches (38 mm) of bearing on wood or metal, or 3 inches (76 mm) on masonry. Attach floor joists as follows:

1. Where supported on wood members, by toe nailing or by using metal framing anchors.
2. Where framed into wood supporting members, by using wood ledgers as indicated or, if not indicated, by using metal joist hangers.

B. Frame openings with headers and trimmers supported by metal joist hangers; double headers and trimmers where span of header exceeds 48 inches (1200 mm).

C. Do not notch in middle third of joists; limit notches to one-sixth depth of joist, one-third at ends. Do not bore holes larger than 1/3 depth of joist; do not locate closer than 2 inches (50 mm) from top or bottom.

D. Provide solid blocking of 2-inch nominal (38-mm actual) thickness by depth of joist at ends of joists unless nailed to header or band.

E. Lap members framing from opposite sides of beams, girders, or partitions not less than 4 inches (102 mm) or securely tie opposing members together. Provide solid blocking of 2-inch nominal (38-mm actual) thickness by depth of joist over supports.

F. Provide solid blocking between joists under jamb studs for openings.

G. Under non-load-bearing partitions, provide double joists separated by solid blocking equal to depth of studs above.

1. Provide triple joists separated as above, under partitions receiving ceramic tile and similar heavy finishes or fixtures.

H. Provide bridging of type indicated below, at intervals of 96 inches (2438 mm) o.c., between joists.

1. Diagonal wood bridging formed from bevel-cut, 1-by-3-inch nominal- (19-by-64-mm actual-) size lumber, double-crossed and nailed at both ends to joists.
2. Steel bridging installed to comply with bridging manufacturer's written instructions.

3.5 CEILING JOIST AND RAFTER FRAMING INSTALLATION

A. Ceiling Joists: Install ceiling joists with crown edge up and complying with requirements specified above for floor joists. Face nail to ends of parallel rafters.

1. Where ceiling joists are at right angles to rafters, provide additional short joists parallel to rafters from wall plate to first joist; nail to ends of rafters and to top plate and nail to first joist or anchor with framing anchors or metal straps. Provide 1-by-8-inch nominal- (19-by-184-mm actual-) size or 2-by-4-inch nominal- (38-by-89-mm actual-) size stringers spaced 48 inches (1200 mm) o.c. crosswise over main ceiling joists.

B. Rafters: Notch to fit exterior wall plates and use metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing, if any, and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.

1. At valleys, provide double-valley rafters of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches (50 mm) deeper. Bevel ends of jack rafters for full bearing against valley rafters.
2. At hips, provide hip rafter of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches (50 mm) deeper. Bevel ends of jack rafters for full bearing against hip rafter.

C. Provide collar beams (ties) as indicated or, if not indicated, provide 1-by-6-inch nominal- (19-by-140-mm actual-) size boards between every third pair of rafters, but

not more than 48 inches (1219 mm) o.c. Locate below ridge member, at third point of rafter span. Cut ends to fit roof slope and nail to rafters.

D. Provide special framing as indicated for eaves, overhangs, dormers, and similar conditions if any.

3.6 STAIR FRAMING INSTALLATION

A. Provide stair framing members of size, space, and configuration indicated or, if not indicated, to comply with the following requirements:

1. Size: 2-by-12-inch nominal- (38-by-286-mm actual-) size, minimum.
2. Material: Laminated-veneer lumber or solid lumber.
3. Notching: Notch rough carriages to receive treads, risers, and supports; leave at least 3-1/2 inches (89 mm) of effective depth.
4. Spacing: At least three framing members for each 36-inch (914-mm) clear width of stair.

B. Provide stair framing with no more than 3/16-inch (4.7-mm) variation between adjacent treads and risers and no more than 3/8-inch (9.5-mm) variation between largest and smallest treads and risers within each flight.

3.7 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes sufficiently wet that moisture content exceeds that specified, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION

SECTION 061053

MISCELLANEOUS CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Framing with dimension lumber.
2. Wood blocking, cants, and nailers.
3. Interior wood trim.
4. Plywood backing panels.

1.2 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product.

1. Include data for wood-preservative and fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.

B. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:

1. Preservative-treated wood.
2. Fire-retardant-treated wood.
3. Power-driven fasteners.

1.3 QUALITY ASSURANCE

A. Forest Certification: For the following wood products, provide materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria":

1. Dimension lumber framing.
2. Miscellaneous lumber.
3. Interior wood trim.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Provide dressed lumber, S4S, unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

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.

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.

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 sills, sleepers, blocking, 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 floor plates that are installed over concrete slabs-on-grade.

2.3 DIMENSION LUMBER FRAMING (where specified)

A. Maximum Moisture Content: 19 percent.

B. Non-Load-Bearing Interior Partitions: Construction or No. 2 grade of any species.

C. Other Framing: No. 2 grade and any of the following species:

1. Hem-fir (north); NLGA.

2. Douglas fir-larch (north); NLGA.

2.4 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Cants.

B. For items of dimension lumber size, provide Construction or No. 2 grade lumber with 19 percent maximum moisture content of any species.

C. For concealed boards, provide lumber with 19 percent maximum moisture content and the following species and grades:

1. Northern species, No. 2 Common grade; NLGA.

2.5 INTERIOR WOOD TRIM

A. General: Provide kiln-dried finished (surfaced) material.

B. Lumber Trim for Opaque (Painted) Finish: Either finger-jointed or solid lumber, of one of the following species and grades:

1. Grade D Select eastern white pine; NeLMA or NLGA.

2. Grade D Select (Quality) Idaho white, lodgepole, ponderosa, or sugar pine; NLGA or WWPA.

3. Grade A Finish aspen, basswood, cottonwood, gum, magnolia, red alder, soft maple, sycamore, tupelo, or yellow poplar; NHLA.

C. Moldings: Made to patterns included in WMMPA WM 7 and graded according to WMMPA WM 4.

1. Moldings for Opaque (Painted) Finish: P-grade eastern white.

2.6 PLYWOOD BACKING PANELS

A. Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exposure 1, C-D Plugged, in thickness indicated or, if not indicated, not less than 1/2-inch (13-mm) nominal thickness.

2.7 FASTENERS

A. General: Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners of Type 304 stainless steel.

B. Power-Driven Fasteners: NES NER-272.

C. Screws for Fastening to Cold-Formed Metal Framing: ASTM C 954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

B. Framing Standard: Comply with AF&PA's "Details for Conventional Wood Frame Construction," unless otherwise indicated.

C. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

D. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

E. Wood Trim Installation: Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Cope at returns and miter at corners to produce tight-fitting joints with full-surface contact throughout length of joint. Use scarf joints for end-to-end joints.

1. Match color and grain pattern across joints.
2. Install trim after gypsum board joint-finishing operations are completed.
3. Install to tolerance of 1/8 inch in 96 inches (3 mm in 2438 mm) for level and plumb. Install adjoining finish carpentry with 1/32-inch (0.8-mm) maximum offset for flush installation and 1/16-inch (1.6-mm) maximum offset for reveal installation.

3.2 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION

SECTION 079000

JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes joint sealants for the following applications, including those specified by reference to this Section: following applications:

1. Interior and exterior joints in vertical surfaces and horizontal nontraffic surfaces.

1.2 PERFORMANCE REQUIREMENTS

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

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

1.3 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (l50-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

C. Preconstruction field test reports.

D. Compatibility and adhesion test reports.

E. Product test reports.

1.4 QUALITY ASSURANCE

A. Preconstruction Compatibility and Adhesion Testing: Submit samples of materials that will contact or affect joint sealants to joint-sealant manufacturers for testing according to ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.

B. Preconstruction Field-Adhesion Testing: Before installing elastomeric sealants, field test their adhesion to Project joint substrates according to the method in ASTM C 1193 that is appropriate for the types of Project joints.

1.5 WARRANTY

A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance

and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

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

1. Warranty Period: Ten years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.

B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

2.2 MATERIALS, GENERAL

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

B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.3 ELASTOMERIC JOINT SEALANTS

A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

B. Stain-Test-Response Characteristics: Where elastomeric sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

C. Suitability for Immersion in Liquids. Where elastomeric sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247 and qualify for the length of exposure indicated by reference to ASTM C 920 for Class 1 or 2. Liquid used for testing sealants is deionized water, unless otherwise indicated.

D. Suitability for Contact with Food: Where elastomeric sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.

E. Single Component Neutral Curing Non-Staining Silicone Sealant:

1. Products:
   a. Dow Corning; 795
   b. Pecora Corporation: 895NST Silicone
   c. Or equal
2. Type and Grade: S (single component) and NS (non sag).
3. Class: 50.
4. Use Related to Exposure: NT (nontraffic).
5. Uses Related to Joint Substrates: NT, M, A and O.

F. Single-Component Mildew-Resistant Neutral-Curing Silicone Sealant:

1. Products:
   a. Dow Corning; 795.
   b. Pecora Corporation: 898NST Silicone Sealant
   c. Or equal.
2. Type and Grade: S (single component) and NS (nonsag).
3. Class: 25.
4. Use Related to Exposure: NT (nontraffic).
5. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.

2.4 ACOUSTICAL JOINT SEALANTS

A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard 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.

1. Products:

   a. Pecora Corporation; AIS-919 Acoustical and Insulation Sealant or AC-20 FTR Acoustical and Insulation Sealant.
   b. United States Gypsum Co.; SHEETROCK Acoustical Sealant.
   c. Or equal.

2.5 PREFORMED JOINT SEALANTS

A. Preformed Silicone-Sealant System: Manufacturer's standard system consisting of precured low-modulus silicone extrusion, in sizes to fit joint widths indicated, combined with a neutral-curing silicone sealant for bonding extrusions to substrates.

1. Products:

   a. Dow Corning Corporation; 123 Silicone Seal.

b. GE Silicones; UltraSpan US 1100.
c. Pecora Corporation; Sil-Span.
d. Tremco; Spectrem Ez Seal.
e. Or equal.

B. Preformed Foam Sealant: Manufacturer's standard mildew-resistant, nonmigratory, nonstaining, preformed, precompressed, open-cell foam sealant that is manufactured from high-density urethane foam impregnated with a nondrying, water-repellent agent.

1. Products:
a. EMSEAL Joint Systems, Ltd.; Emseal25V.
b. illbruck Sealant Systems, Inc.; Wilseal 600.
c. Polytite Manufacturing Corporation; Polytite B.
d. Polytite Manufacturing Corporation; Polytite Standard.
e. Sandell Manufacturi11g Co., Inc.; Polyseal.
f. Density: Manufacturer's standard 5.5 to 6.5 lb/cu. ft. (90 to 110 kg/cu. m).

2.6 JOINT-SEALANT BACKING

A. General: Provide sealant backings of material and type that are nonstaining; 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. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:

C. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F (minus 32 deg *C).* Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.

D. Bond-Breaker Tape: Polyethylene tape or other plastic tape 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.

2.7 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or

other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

DO NOT INSTALL BELOW 40° F

3.1 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants.

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant.

a. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.

2. Remove laitance and form-release agents from concrete.

a. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of *joint* sealants.

B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. 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.

3.2 INSTALLATION

A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

B. Acoustical Sealant Application Standard: Comply with recommendations in ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of type indicated to support sealants during application and at position required to produce 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 sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Non sag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.

2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

G. Installation of Preformed Silicone-Sealant System: Comply with manufacturer's written instructions.

H. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, producing 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 compliance with sealant manufacturer's written instructions.

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

END OF SECTION

SECTION 080671

DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of contract, including general and supplementary conditions and division 1 specifications, apply to this section.

1.2 SUMMARY OF WORK INCLUDED

A. Sections “General Conditions”, “Special Requirements” and “General Requirements” form a part of this section by this reference thereto and shall have the same force and effect as if printed herewith in full.

B. Furnish, deliver, and coordinate all mechanical and electronic finish hardware as indicated, specified and required. Include all hardware under this section that is not specified in other sections, whether or not such hardware is scheduled herein, and include all trim, attachments and fastenings specified or required for proper and complete installation for given application. Items of hardware (specifically, mounting accessories required by door or frame details and required to properly install hardware and have it function properly and in conjunction with specified interacting hardware) not definitely specified herein and necessary for completion of the work shall be provided. Such items shall be of type and quality suitable to the service required and comparable to adjacent hardware. Where size and shape of member is such as to prevent the use of types specified, hardware shall be furnished of suitable types having as nearly as practicable the same operation and quality as the type specified.

C. Type: Typical finish hardware required includes the following:

1. Hinges
2. Lock cylinders and keys
3. Lock and Latchsets
4. Bolts
5. Exit Devices
6. Push/pull handles and plates/ kickplates
7. Closers
8. Overhead holders
9. Door trim
10. Seals, including Astragals or meeting seals on door pairs
11. Weather-stripping for exterior doors
12. Thresholds
13. Security products and Misc. Items
14. Electrical and electronic materials and systems

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. Specifications sections directly related shall be effectively coordinated:

1. Metal Doors and Frames: Section 081113

1.4 REFERENCES

A. Documents and Institutes that shall be used in estimating, detailing and installing the items specified.

1. BHMA A156 – Builders Hardware Manufacturers Association
2. ANSI A117.1 – American National Standard Institute
3. NFPA 80 – Fire Doors and Windows 2019 Edition
4. NFPA 101 – Life Safety Code 2018 Edition
5. NFPA 105 – Installation of Smoke Control Door Assemblies 2019 Edition
6. Local and State Building Codes
7. Underwriters Label for Fire Rated Doors and Assemblies
8. Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames
9. Door Hardware Institute (DHI); 2020
10. Specifications for Making Buildings and Facilities Accessible to And Usable by Physically Challenged People ICC/ANSI A117.1 – 2008

1.5 SUBMITTALS

A. Manufacturer: Products of finish hardware supplied shall be selected from manufacturers mentioned in this document as approved by the architect/owner's representative prior to bid date.

B. Suppliers shall be recognized architectural finish hardware suppliers, with warehousing facilities who have been furnishing hardware in the projects vicinity for a period of not less than 2 years and who is or employs an experienced A.H.C. (or equal experience and technical skills), who is available at reasonable times during the course of the work for consultation about products, hardware requirements, to owner, professional, contractor or other contracted party.

C. Installer Qualifications: Must be qualified to install all Builders Hardware to the extent that all hardware is installed and properly operates to the manufacturer's standards; including operational, functional, within dimensional parameters, to the manufacturer's templates, and strictly within the guidelines offered by manufacturer's product's instructions. Final adjustment shall be responsibility of installer, and shall be within tolerances as set by the product manufacturer's guidelines, both written and verbal, if applicable.

D. Product Data: Manufacturer's data for each different piece of hardware, with installation instructions. Two (2) complete sets of catalog cuts shall accompany the finish hardware schedule. The list of cuts shall include the item, manufacturer, and item number.

E. Hardware Schedule: Show manufacturer's complete identification for every item for every door.

1. Supplier shall submit three (3) physical copies or a digital copy of a complete hardware schedule referencing location of door, door number, room number, corridor number, exterior or interior, door size, door swing, door and frame type, and any more significant information required for the professional to identify door, frame, hardware, and any other pertinent information required to evaluate compliance of materials. As noted below, only a vertical type hardware schedule shall be deemed acceptable.
2. Cross-reference to item names and designations in contract documents.
3. Indicate door/frame materials and sizes.
4. Explain number codes and abbreviations.
5. Indicate hardware mounting heights or locations, if different from those specified or if not specified.
6. Indicate finish for each item.
7. Preliminary schedule will be reviewed and accompanied by product data.
8. Provide Door and Hardware Institute's format vertical type hardware schedule showing door number, location, to and from rooms, swing of door, and list all hardware provided for that specific door type of operation. Horizontal type hardware schedules shall not be considered due to the cross-referencing required.

F. Keying Schedule:

1. Supplier required to meet with owner to finalize keying requirements and to propose final instructions in writing for owner's approval. Upon approval supplier shall prepare a final keying schematic chart and a listing of all key changes by door and lock showing all levels of keyed cylinders and approved expansion, and furnish to owner in duplicate. Construction keyed or temporary cores shall be furnished as required by the owner's representative during the construction phase.

G. Operation and Maintenance Data: For operating parts and finishes.

1. Supplier shall furnish manufacturer's maintenance and parts manuals (as available from manufacturers) for all hardware items furnished. Manuals shall be delivered to owner's representative prior to project closeout.

1.6 QUALITY ASSURANCE

A. The quality of all items of hardware has been clearly indicated by the manufacturer's name and/or product number. Certain products are specified without substitution, and shall be furnished as specified. Requests for substitution must be in writing, submitted for review in accordance with section 016000. Quality levels as specified herein shall be assured and warranted by the supplier.

1. Single source responsibility: Obtain each type of hardware (locksets, exit devices and closers) from a single manufacturer.

1.7 PROJECT CONDITIONS

A. Sequence submittal of hardware schedule and door and frame submittals, allowing adequate time for review and resubmittals, if required, so that construction is not delayed; provide adequate information for review.

B. Provide hardware installation templates to installers of hardware and to fabricators of other work, which is required to be prepared in the shop or factory for hardware installation.

C. Coordinate shop drawings of other work so that proper preparation is made. Coordination of the following trades shall be included as applicable.

1. Wood Door Manufacturer.
2. Hollow Metal Manufacturer
3. Aluminum manufacturer and/or supplier
4. Electrical (and associated trades such as Security and Alarms) where electronic hardware is specified

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver hardware at the times and to the locations required for timely installation.

B. Provide a locked storage area controlled by the contractor for hardware not yet installed; take special care to prevent loss of long-lead items.

1.9 MAINTENANCE

A. Provide all adjustment and maintenance tools recommended by hardware manufacturers.

B. Final adjustment shall be responsibility of installer, and shall be within tolerances as set by the product manufacturer's guidelines and templates, both written and verbal, if applicable. It is the responsibility of the aluminum installer / supplier to make all adjustments to the hardware, installed on their doors and frames, for a period of one year from installation. All other adjustments to hardware on the project shall be the responsibility of the General Contractors Installer for a period of one year from installation.

PART 2 - PRODUCTS

A. In addition to requirements of the hardware schedule, comply with the requirements below.

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements of all previous sections and conditions; manufacturers (or suppliers) offering products that may

be incorporated in this work shall be as approved by Architect. Requests for substitution shall be made in writing to Architect with sufficient product details, cross-references testing data, and any additional supportive materials (including samples if required) as Architect shall require.

1. Butts and Hinges(or equivalent).
    a. McKinney Manufacturing Co (Assa Abloy)
    b. Stanley Hardware
    c. YKK AP
    d. Bommer Manufacturing
    e. Ives (Ingersoll-Rand)
    f. Hager
2. Pivots (or equivalent):
    a. Rixon (Assa Abloy)
    b. Glynn- Johnson (Ingersoll-Rand)
3. Cylinders (or equivalent) - Furnished as a new key system by supplier.
    a. Yale (Assa Abloy)
    b. Corbin-Russwin (Assa Abloy)
    c. Sargent (Assa Abloy)
    d. Schlage (Ingersoll-Rand)
    e. Falcon (Ingersoll-Rand)
4. Cylindrical Locks (or equivalent):
    a. Yale PB5400LN, PB5300LN & PB4300LN (Assa Abloy)
    b. Corbin Russwin, CL3300PZD, CL3900PZD, CL3300PZD (Assa Abloy)
    c. Sargent 10G LP, 7GLP (Assa Abloy)
    d. Schlage ND Series , AL Series, S Series , F Series (Ingersoll-Rand)
    e. Falcon T Series, B Series, W Series, Y Series (Ingersoll-Rand)
5. Wall & Floor Stops (or equivalent):
    a. Trimco (Assa Abloy)
    b. Rockwood Manufacturing Co.
    c. Burns Manufacturing
    d. Ives (Ingersoll-Rand)
6. Overhead Stops (or equivalent):
    a. Trimco Manufacturing (Assa Abloy)
    b. Sargent (Assa Abloy)
    c. Glynn-Johnson (Ingersoll-Rand)
7. Exit Devices and Trim (or equivalent):
    a. Yale (Assa Abloy)
    b. Corbin Russwin (Assa Abloy)
    c. Sargent (Assa Abloy)
    d. Von Duprin
    e. Monarch 18 Series Device (Ingersoll-Rand)

8. Surface Closers (or equivalent):
    a. Norton Door Controls 7500BF ALUM (Assa Abloy)
    b. Corbin Russwin DC2200 ALUM (Assa Abloy)
    c. Sargent 351 ALUM (Assa Abloy)
    d. LCN 4000 Series, 1000 Series (CAST IRON) (Ingersoll-Rand)

e. Dor-o-matic SC70 Series, SC80 Series ALUM Ingersoll-Rand)

9. Flat Goods (or equivalent):
   a. Trimco (Assa Abloy)
   b. Rockwood Manufacturing Co.
   c. Burns Manufacturing
   d. Ives (Ingersoll-Rand)

2.2 SCHEDULED HARDWARE

A. Requirements for design, grade, function, finish, size and other distinctive qualities of each type of finish hardware are indicated in the “Hardware Sets” at the end of this section. Products are identified by using hardware designation numbers of the following:

1. Manufacturers Product Designations: The product designation and name is listed for each type of hardware. Provide either the product designated or where more than one manufacturer is specified in part 2 under the article “Manufacturers” for each hardware type, the comparable product of one of the manufacturers.

2.3 MATERIALS AND FABRICATION

A. Manufacturer’s Names and Trade Names: Display of names, logos, or other identification is acceptable on lock or hinge edge of door, but not where visible on either face of door.

1. Exception: As directed by or acceptable to the architect.
2. Exception: Manufacturer’s name or other identification on face of lock cylinders.

B. Fasteners: Provide hardware prepared by the manufacturer with fastener holes for machine screws, unless otherwise indicated.

1. Provide all fasteners required for secure installation. Utilize concealed fasteners wherever possible. Where through bolts are utilized, provide finish-threaded caps to fully conceal nuts.

   a. Select fasteners appropriate to substrate and material being fastened.

2. Use Flathead Phillips screws unless otherwise indicated. - At all secure areas provide security fasteners (Security head) of same type.
3. Use wood screws or through bolts dependent on wood door and hardware manufacturer’s requirements for installation in wood.
4. Use fasteners impervious to corrosion outdoors and on exterior doors.
5. Self-drilling "Tek" type screws are not acceptable. Use only fasteners supplied by hardware manufacturer.
6. Where it is not possible to reinforce substrate adequately for screws, use through-bolts with sleeves or use sex bolts.

a. Do not use where head or nut would be exposed on face of door, unless specifically indicated or made necessary by other requirements.
b. Finish exposed heads and nuts the same as hardware on that side of the door.

7. Use expansion shield anchors in concrete and masonry.

2.4 HINGES, BUTTS, CONTINUOUS HINGES AND PIVOTS

A. Manufacturers:

1. Provide products complying with requirements of the contract document. Acceptable products shall be as specifically listed in the hardware sets herein by manufacturer's number and series. Provide either the product designated or where more than one manufacturer is specified in part 2, under the article "Manufacturers" for each hardware type, the comparable product of one of the manufacturers.

B. Butt Hinges: American made five-knuckle, exposed tip butt hinges.

1. Comply with applicable requirements of BHMA A156.1.
2. Use heavy weight hinges where scheduled at high frequency entrances.
3. Use full mortise hinges unless otherwise specified.
4. Dimensions: As indicated, within limits prescribed by ANSI/BHMA A 156.7.

a. Size(s): As prescribed by ANSI/BHMA A 156.7. - Finish as specified.
b. Size hinges to suit thickness of door, including applied facings.
c. Provide non-removable pins or safety studs for out-swinging doors with keyed lock or exit function.
a. Quantity: Provide minimum of 3 hinges or pivots on each door for doors up to and including 90". Add one additional hinge or Pivot for each 30" height increment increase.

C. Pivots - Provide type as specified in hardware sets.

2.5 LOCKS, LATCHES, AND BOLTS

A. Manufacturers:

1. Locksets, Latchsets, and Exit Devices:

a. Provide products complying with requirements of the contract document. Acceptable products shall be as specifically listed herein by manufacturer's number and series.
b. All locksets shall be as listed in hardware sets. Neither plastic inserts nor tubular levers shall be furnished in the either levers or latches. All locksets shall be furnished with solid lever handles.
c. All cylindrical lever locksets shall feature a freewheeling locking

mechanism to help extend the life of the lock and reduce maintenance.

d. Provide copy of 1 year written warranty for all cylindrical locksets when submitting hardware schedule for architect's approval.

2. Exit Devices: All exit devices for this project shall carry a written five-year manufacturer warranty. Provide copy of warranty when submitting hardware schedule for architect's approval. Use devices of only one manufacturer. All exit devices shall be provided with a guarded main latch. Standard (pullman, or other non-guarded) type latches (rim, vertical rod, or mortise device) lacking guard, shall not be acceptable.

   a. At hollow metal, wood doors or wide stile doors provide wide stile exit devices (with spacers as required) to clear raised trim as required by door details.
   b. Locate exit devices at vertical location on door per architect's instructions at those doors where multiple lites occur to offer horizontal lines as per architect's design intent. Exit devices on doors with center cross rail shall be mounted centerline in rail.
   c. Comply with requirements of BHMA A156.3, Grade 1.
   d. Style: Modern push-pad type, narrow stile or wide stile as scheduled. Where scheduled, provide security type exit device from either of the manufacturers listed. Standard exit devices utilizing Pullman type latches shall not be acceptable where security exit devices are scheduled. Only active case heads utilizing an interlocked guarded and main latch shall be acceptable.
   e. All exposed materials shall be architectural grade metals. Neither white metals, nor plastic shall be acceptable on any exposed surface.
   f. Outside trim: All lever trim at exit devices, except where indicated as rigid dummy trim, shall be furnished with either breakaway or clutch-type freewheeling levers for durability and longevity.
   g. Where cylinder only or where nightlatch is indicated, provide outside trim employing a cylinder and cylinder collar only. This function (ANSI F03) shall result in key retraction of latchbolt.
   h. All devices shall be supplied with Extra Heavy Duty Lever Release Trim. Trim shall have ramped (beveled) sides and a flush cylinder to resist abuse and extend the product life.
   i. Locate exit devices at vertical location on door per architect's instructions at those doors where multiple lites occur to offer horizontal lines as per architect's design intent.

3. Flush bolts: Lever-extension flush bolts complying with BHMA A156.16, Grade 1.

   a. Manual:

      1) Lower actuator centered 12 inches from door bottom; upper actuator centered 72 inches from door bottom. All flushbolts shall be furnished with stainless steel actuating

fingers for durability.

2) All flushbolts shall be furnished with dustproof strikes and mounting plates as required to secure to finished floor.

b. Automatic:

1) All automatic flushbolts shall operate and function efficiently and smoothly when door closers are adjusted to meet and comply with ADA and Barrier Free closing and opening forces. Units that require door closers to be excessively adjusted to operate are not acceptable.

4. Strikes: Provide strike for each latch bolt and lock bolt.

a. Finish to match other hardware on door.
b. Use wrought box strikes with curved lips unless otherwise indicated.
c. Open strike plates may be used on interior wood
d. In floors, use dustproof strikes unless threshold is supplied and strike hole shall be provided with clean and dimensionally correct bolthole.
e. At all pairs of doors requiring astragals, strikes shall be furnished such that lip of strike is flush with door edge and will not interfere with a flush astragal condition when active door is in a closed position, or astragal shall be coped around strike lip for proper operation of astragal.

2.6 LOCK CYLINDERS AND KEYING

A. Keying:

1. Keying shall be into a new master key system. Contractor may require temporary cores or temporary locks during construction phase for usage and lock-up. Furnish temporaries, as contractor requires.

2. Architectural Grade Locksets and cylinders: Provide products complying with requirements of the contract documents

B. Keys - Architectural:

1. All keys to be stamped “Do Not Duplicate” and key code number as set by the factory.
2. Provide 6 masterkeys, 4 copies each key change, 6 CMK & 10 each extra stamped *Do Not Duplicate* key blanks for owner's use. – Deliver all final keys and key blanks directly to owner’s representative.

2.7 DOOR CONTROL DEVICES

A. Manufacturers:

1. Provide products complying with requirements of the contract document. Acceptable products shall be as specifically listed herein by manufacturer's number and series.
2. Wall and floor-mounted stops and holders: Provide products complying with requirements of the contract documents and made by one of the following:

B. Closers - General: Provide metal, plastic, painted or plated door closers as schedule indicates.

1. Use closers of sizes recommended by manufacturer, unless a larger size is specified. All closer for this project to carry a minimum written "10 Year Warranty". All closers shall be manufactured in the USA of domestic metals, and supplied with a 1 ½" diameter piston.
2. Size closer or adjust closer opening force to comply with applicable codes. Furnish barrier free compliant door closer at all interior doors, whether listed specifically in hardware sets or not. Furnish all brackets and drop plates required to affix door closers as scheduled according to specific door top rails and frame face dimensions, whether listed in hardware specification or not.
3. Provide door closer mounting brackets, arms, plates, and misc. equipment as necessary to mount all door closers inside room, or out of corridor at every instance where a door closer is specified. No door closers (nor parts, nor accessories of) shall be visible from corridor side unless architect has authorized specific and formal approval for that mounting application, and has clear understanding closer is visible through lite, and has approved such. Provide top jamb mounted units where hardware schedule lists closer functions that are not available in regular arm mounting configurations.

C. Surface-Mounted, Concealed Closers and auto operated low power closers:

1. Comply with requirements of BHMA A156.4, Grade 1. Provide the following features:

    a. Warranty - Lifetime of body and 10 Year written warranty on parts on all closers.
    b. Adjustable hydraulic back check and barrier free closers at all doors.
    c. Style: Modern with cover.
    d. Parallel arms: Provide for all closers; use larger size than normal.
    e. Provide manual hold-open feature as specified.
    f. Unitrol door closers - provide spring-loaded spring-stop, spring Cush or Unitrol arm where specified. Provide arm-mounting accessories as required to properly secure Unitrol arm 6190, 2022 or 6191 kits shall be furnished where Unitrol door closers - provide spring-loaded spring-stop, spring Cush or Unitrol arm where specified. Provide arm-mounting accessories as required too properly secure Unitrol arm. 6190, 2022 or 6191 kits shall be furnished where dimensions require. An alternative closer and overhead stop may be furnished in lieu of the Unitrol specified.

Furnish closer as scheduled used in conjunction with Rixson #1 overhead stop where Unitrol type closer is scheduled and supplier desires an alternate substitution.

g. Finish: All door closers to be finished in metallic powder coated paint finish, similar to metal hardware on same door. All covers screws and arms are to be plated to match adjacent hardware.

D. Wall/Floor-Mounted Stops/Holders: Comply with requirements of ANSI A156.16.

1. Resilient bumpers: Trimco 1229A silencers shall be furnished at all hollow metal and wood frames whether scheduled in hardware sets or not. Each single door to be supplied with three (3) each. Each double opening shall be furnished with two (2) each. Exceptions: Exterior doors and sound sealed doors.

2.8 ARCHITECTURAL DOOR TRIM

A. Manufacturers:

1. Architectural door trim: Provide products complying with requirements of the contract documents. Products submitted shall meet requirements as specified herein and shall be designated by manufacturer's number and series.

2.9 SEALS

A. Manufacturers:

1. Seals: Provide products complying with requirements of the contract document. Acceptable products shall be as specifically listed herein by manufacturer's number and series.

B. Seals:

1. At jambs and head: As scheduled.
2. At bottom: As scheduled.
3. Housing finish: as scheduled.
4. Silicon or neoprene as scheduled adhered with self-adhesive, or mechanically fastened, shall be UL fire listed and provided as scheduled. Provide as listed in schedule, door schedule, and floor plans and as is typical of the balance of scheduled hardware as indicated by and thus required by usage of rooms.

2.11 FINISHES

A. Finish on All Exposed Metal Items: All finishes must match finish as listed in the Hardware sets. Supply similar painted finish only at typical painted hardware materials.

B. Exceptions:

1. At all exterior, wet or moisture-laden areas use hinges of nonferrous base metal, whether scheduled herein or not. Where specified, use Stainless Steel. At all painted finishes at wet areas (pool, exercise and at exterior) use rust resistant paint (SRI) or paint must be powder coated type to assure superior paint performance at these areas.
2. Items specified with the same finish shall match as closely as possible using standard manufactured products.
3. Provide finishes matching BHMA A156.18 designations.

PART 3 - EXECUTION

3.1 PREPARATION

A. Non-fire-rated wood doors and wood frames may be field-prepared for installation; all other types of doors and frames are to be factory- or shop-prepared.

3.2 INSTALLATION

A. Follow hardware manufacturer's recommendations and instructions.

B. Provide the services of an architectural hardware consultant to advise on proper installation, to inspect the finished work, and either to adjust or to instruct those who are adjusting.

C. Install surface-mounted items after substrates have been completely finished; install recessed items and recessed portions of items before finishes are applied and provide suitable, effective protection.

1. When surface-mounted items are installed before final finish, remove, store, and reinstall, or apply suitable effective protection.

D. Mount at heights specified in the Door and Hardware Institute's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."

E. Install hardware in correct location, plumb and level.

F. Reinforce substrates as required for secure attachment and proper operation.

G. Thresholds: Apply continuous bead of sealant to all contact surfaces before installing.

3.3 ADJUSTMENT

A. It shall be the supplier's responsibility to be available to Installers and/or owner's representative to council and demonstrate proper hardware adjustment prior to job closeout. Supplier shall offer on-site instruction of all final adjustment if so required by the installers or owners representative. Final adjustment shall result

in performance, function and operation, as manufacturer shall deem sufficient to have full warranty coverage for the time as specified herein. Project installers shall adjust each operable unit for correct function and smooth, free operation to manufacturer's required operational and functional qualitative level of performance. Readjust hardware not more than one week before substantial completion.

B. Adjust door closers to overcome air pressure produced by HVAC systems. If HAVC pressure, whether negative or positive, negates proper operation or function of any closing or latching device, or inhibits manufacturer's intended performance (in any manner), supplier shall inform the GC in writing that type of hardware cannot operate nor function as manufacturer has designed and tested due to HVAC condition.

3.4 INSTRUCTION OF OWNER'S PERSONNEL

A. Instruct the Owner's personnel in operation and maintenance of hardware, including finishes.

3.5 CLEANING

A. Clean hardware; clean other work soiled during hardware installation.

3.6 CONTRACT CLOSEOUT

A. Deliver all Bitting List, keys, and extra blanks to the Owner.

B. Contractor to furnish a binder, delivered to the owner or the owners rep, complete with:

1. Manufacturer's data for each different piece of hardware (Catalog sections).
2. One set of complete installation instructions of each piece of hardware furnished.
3. Most recent hardware schedule, complete with all changes.
4. Two complete set of Wiring diagrams (riser diagrams) per door, and door # with all supplied hardware shown.
5. Deliver complete Bitting list for all locks furnished on the project.
6. Provide all adjustment and maintenance tools recommended by hardware manufacturers.
7. Provide copy of one-year warranty for locks, five-year for exit devices and ten-year warranty for closers.

3.7 HARDWARE SETS

Refer to door schedule for number and location.
Manufacturers as listed, or equivalent.

Hardware Set 001

Single 3'-0" x 7'-0" Steel Door and HM Frame – LHR

1	ea	Lockset	Falcon W571-Dane	US26D
3	ea	Hinge	Hager BB1191	US32D
3	ea	Silencers	Ives SR64	Rubber

Lockset Key:

Panic Bar: Spring loaded, horizontal bar mounted to push side of exit door. No operating entrance device on exterior of door.

Entrance Lockset: Lever handle with keyed entrance from the exterior and push button lock on the interior.

Passage Lockset: Lever handle with no locking mechanism on either side.

Storeroom Lockset: Lever handle with keyed entrance from the exterior and no locking mechanism on the interior. Interior lever always free.

Double Cylinder: Deadbolt cylinder with keyed entrance from both sides, no thumb turn.

Keyed Deadbolt: Deadbolt cylinder with keyed entrance from one exterior and thumb turn on the interior.

END OF HARDWARE SCHEDULE

END OF SECTION

SECTION 081110

STEEL DOORS AND FRAMES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Steel doors and steel frames.

B. RELATED SECTIONS

C. Section 04 40 00 - Stone Assemblies.

D. Section 08 14 13 - Carved Wood Doors.

E. Section 08 71 53 - Security Door Hardware.

F. Section 08 83 13 - Mirrored Glass Glazing.

G. Section 09 28 13 - Cementitious Backing Boards.

H. Section 09 90 00 - Painting and Coating.

I. Section 28 16 00 - Intrusion Detection.

J. Section 41 67 19 - Plant Safety Equipment.

K. Section 26 05 23 - Control-Voltage Electrical Power Cables.

1.2 REFERENCES

A. ANSI/NFPA 80 - Standard for Fire Doors and Windows.

B. ANSI A115.IG - Installation Guide for Doors and Hardware

C. ANSI A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames.

D. ANSI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.

E. ANSI A250.11, Recommended Erection Instructions for Steel Frames.

F. ASTM E 152 - Standard Methods of Fire Tests of Door Assemblies.

G. ASTM A 366/A 366M - Standard Specification for Commercial Steel (CS) Sheet, Carbon, (0.15 Maximum Percent) Cold-Rolled.

H. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-coated (Galvannealed) by the Hot-Dip Process.

I. A 924 - Specification for General Requirements for Steel Sheet, Metallic Coated by the Hot Dip Process

J. ASTM A 1008/A 1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable

K. HMMA-820 TN03 - Guidelines for Glazing of Hollow Metal Transoms,Sidelights and Windows

L. NYC MEA 142-98-M Vol. II - E.Fire Door Assemblies: Accepted for use City of New York, Department of Buildings.

M. NFPA 252 - Standard Methods of Fire Tests for Door Assemblies.

N. UL 10B - Standard for Fire Tests of Door Assemblies.

O. UL 10C - Positive Pressure Fire Tests of Door Assemblies.

P. UL 63 - Outline of Investigation for Fire Door Frames

Q. U.S. Green Building Council, LEED Building Design and Construction (BD+C)Version 4.0 Rating System. (LEED v4.0)

1.3 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. Shop Drawings: Include schedule identifying each unit, with door marks or numbers referencing drawings. Show layout, profiles, product components and anchorages.
   1. Indicate frame configuration, anchor types and spacing, location of cutouts for hardware, reinforcement, to ensure doors and frames are properly prepared and coordinated to receive hardware.
   2. Indicate door elevations, internal reinforcement, closure method, and cutouts for glass lights and louvers.

D. LEED Submittals: Provide documentation of how the requirements of Credit will be met:
   1. Product Data for Credit MR 4.1 and MR 4.2: For products having recycled content, documentation including percentages by weight of post consumer and preconsumer recycled content
      a. Include statement indicating costs for each product having recycled content.
   2. Product Data for Credit MR 5.1 and Credit MR 5.2: Submit data, including location and distance from Project of material manufacturer and point of extraction, harvest or recovery for main raw material.
      a. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.

E. Samples: 18 by 24 inches (457 by 610 mm) cut away sample door with provisions for lockset, hinge and corner section of frame.

F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum five years documented experience manufacturing products specified this Section.

B. Installer Qualifications: Minimum five years documented experience installing products specified this Section.

C. All products shall conform to the requirements of ANSI A250.8 Recommended Specifications for Standard Steel Doors and Frames".

D. Fire Rated Doors and Frames:
1. Doors and frames shall be tested in accordance with UL 10B, "Fire Tests of Door Assemblies", NFPA 252, "Fire Tests of Door Assemblies", and UL 10C, "Positive Pressure Fire Tests of Door Assemblies".
2. Doors and frames must have an approved marking or physical label, applied by an authorized facility, in accordance with the procedure set forth by an independent certification agency.
3. Fire door assemblies in exit enclosures and exit passageways; maximum transmitted temperature end point rating of not more than 250 degrees F (121 degrees C) above ambient at the end of 30 minutes of the standard fire test exposure.
4. Conform to applicable codes for fire ratings. It is the intent of this specification that hardware and its application comply or exceed the standards for labeled openings. In case of conflict between types required for fire protection, furnish type required by NFPA and UL.

E.
5. SDI-100 - Standard Steel Doors and Frames.
6. DHI - Door Hardware Institute: The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder’s Hardware.
7. Handicapped: ANSI A117.1.

E. Fire Door Assemblies: Accepted for use City of New York, Department of Buildings MEA 142-98-M Vol. II. UL tested in accordance with ASTM E 152, 3 hr for:
1. Single Swing doors not exceeding 48 inches wide by 96 inches high or 46 inches wide by 102 inches high or 40 inches wide by 108 inches high; Doors swinging in pairs with single point latches 96 inches high or 80 inches wide by 108 inches high.

F. Stairwell Doors shall have a 250 degree F temperature rise rating (30 minute fire test duration.) The fire label on the door shall indicate the specific hourly rating.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store doors vertically in a dry area, under a proper vented cover. Place on 4 inch (102 mm) high wood sills to prevent rust or damage. Provide 1/4-inch (6 mm) space between doors to promote air circulation.

C. Store frames in an upright position with heads uppermost under cover. Place on 4 inch (102 mm) high wood sills to prevent rust and damage. Store assembled frames five units maximum in a stack with 2 inch (51 mm) space between frames to promote air circulation.

D. Do not use non-vented plastic or canvas shelters to prevent rust or damage.

E. Should wrappers become wet, remove immediately.

1.6 SEQUENCING

A. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.

B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.7 COORDINATION

A. Coordinate Work with other directly affected sections involving manufacture or fabrication of internal cutouts and reinforcement for door hardware, electric devices and recessed items.

B. Coordinate Work with frame opening construction, door and hardware installation.

C. Sequence installation to accommodate required door hardware.

D. Verify field dimensions for factory assembled frames prior to fabrication.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Galaxy Metal Products, which is located at: 2960 Woodbridge Ave.; Edison, NJ 08837; Toll Free Tel: 800-294-8199; Email: request info (mceceri@galaxymetalproducts.com); Web: galaxymetalproducts.com

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 016000 – Material Manufacturer Substitution Policy.

D. Provide all steel doors and frames from a single manufacturer.

2.2 DOORS

A. General: Construct exterior/interior doors to the following designs and gages:
   1. Exterior Doors: Zinc-Iron Alloy-Coated galvannealed steel, ASTM A 653, Class A60:
      a. Thickness:
         1) 18 gage (1 mm) (interior locations).
         2) 16 gage (1.3 mm) (exterior locations).
         3) 14 gage (1.7 mm).

b. Include galvannealed components and internal reinforcements with galvannealed doors.
c. Close tops of exterior swing-out doors to eliminate moisture penetration. Galvannealed steel top caps are permitted.

2. Interior Doors: Cold-rolled steel, ASTM A 1008/A 1008M:
   a. Thickness:
      1) 20 gage (0.8 mm).
      2) 18 gage (1 mm).
      3) 16 gage (1.3 mm).
      4) 14 gage (1.7 mm).
3. Interior Doors: Zinc-Iron Alloy-Coated galvannealed steel, ASTM A 653, Class A60:
   a. Thickness:
      1) 20 gage (0.8 mm).
      2) 18 gage (1 mm).
      3) 16 gage (1.3 mm).
4. Include galvannealed components and internal reinforcements.
5. Prime Finish Doors: Clean, phosphatize and factory prime painted doors indicated on Door Schedule as HM.
6. Glass moldings and stops:
   a. Fabricate from 24 gage (0.5 mm) steel conforming to:
      1) Interior openings ASTM designation A 366 cold rolled steel.
      2) Exterior openings ASTM designation A 924 Zinc-Iron Alloy-Coated galvannealed steel with a zinc coating of 0.06 ounces per square foot (A60) for exterior openings.
   b. Install trim into the door as a four sided welded assembly with mitered, reinforced and welded corners.
   c. Trim: identical on both sides of the door.
   d. Exposed fasteners are not permitted.
   e. Labeled and non-labeled doors: use the same trim.
   f. Acceptable mounting methods:
      1) Fit into a formed area of the door face, not extending beyond the door face, and interlocking into the recessed area
      2) Cap the cutout not extend more than 1/16 inch (1.6 mm) from the door face.
7. Hardware Reinforcements:
   a. Hinge reinforcements for full mortise hinges: minimum 7 gage (4.76 mm).
   b. Lock reinforcements: minimum 16 gage (1.3 mm).
   c. Closer reinforcements: minimum 14 gage (1.7 mm) steel, 20-inch (508 mm) long.
   d. Galvannealed doors: include galvannealed hardware reinforcements.
   e. Projection welded hinge and lock reinforcements to the edge of the door.
   f. Provided adequate reinforcements for other hardware as required.

B. Full Flush Doors:
1. Door Thickness: 1-3/4 inches (45 mm).
2. Door faces reinforced and sound deadened as follows:
   a. Honeycomb Core: Reinforced, stiffened, sound deadened and insulated with impregnated Kraft honeycomb core completely filling the inside of

the doors and laminated to inside faces of both panels using contact adhesive applied to both panels and honeycomb core.

b. Steel Stiffened Core: Vertical stiffeners, hat-shaped, minimum 20 gage (0.8 mm) steel, type same as face sheet material, spaced 6 inches (150 mm) apart and welded to inside of face sheets 5 inches (127 mm) on center; full-thick glass fiber insulation between stiffeners.

3. Vertical edge seams: Provide doors with continuous vertical mechanical inter-locking joints at lock and hinge edges. Finish edges as follows:
   a. Visible Interlocked Edge: Continuous vertical mechanical interlocking joints with visible edge seams and continuous bead of structural epoxy in internal vertical connection
   b. Filled Vertical Edges (F): Continuous vertical mechanical interlocking joints with internal epoxy seal; edge seams epoxy filled and ground smooth.
   c. Welded Vertical Edges (W): Continuous vertical mechanical interlocking joints; edge seams welded, epoxy filled, and ground smooth.
4. Bevel hinge and lock door edges 1/8 inch (3 mm) in 2 inches (50 mm). Square edges on hinge and/or lock stiles are not acceptable.
5. Reinforce top and bottom of doors with galvannealed 14 gage (1.7 mm), welded to both panels.
6. Glazing Bead: Formed steel sheet.
7. Fire Rating: Supply door units bearing Labels for fire ratings indicated in Door Schedule for the locations indicated.

C. Temperature Rise Doors:
1. Door Thickness: 1-3/4 inches (45 mm).
2. Mineral Fiber Core: Full 1-3/4 inches (45 mm) mineral fiber core material designed to comply with the 250 degrees F (121 degrees C) maximum temperature rise rating.
3. Vertical edge seams: Provide doors with continuous vertical mechanical inter-locking joints at lock and hinge edges. Finish edges as follows:
   a. Visible Interlocked Edge: Continuous vertical mechanical interlocking joints with visible edge seams and continuous bead of structural epoxy in internal vertical connection
   b. Filled Vertical Edges (F): Continuous vertical mechanical interlocking joints with internal epoxy seal; edge seams epoxy filled and ground smooth.
   c. Welded Vertical Edges (W): Continuous vertical mechanical interlocking joints; edge seams welded, epoxy filled, and ground smooth.
4. Bevel hinge and lock door edges 1/8 inch (3 mm) in 2 inches (50 mm). Square edges on hinge and/or lock stiles are not acceptable.
5. Reinforce top and bottom of doors with galvannealed 14 gage (1.7 mm), welded to both panels.
6. Fire Rating: Supply door units bearing Labels for fire ratings indicated in Door Schedule for the locations indicated.

D. Full Glass Entrance Doors:
1. Exterior Doors: 14 gage (1.7 mm) Zinc-Iron Alloy-Coated galvannealed steel, ASTM A 653, Class A60.
2. Interior Doors: 14 gage (1.7 mm) Cold-rolled steel, ASTM A 1008/A 1008M.
3. Door Thickness: 1-3/4 inches (45 mm).

a. Honeycomb Core: Reinforced, stiffened, sound deadened and insulated with impregnated Kraft honeycomb core completely filling the inside of the doors and laminated to inside faces of both panels using contact adhesive applied to both panels and honeycomb core

4. Vertical edge seams: Provide doors with continuous vertical mechanical inter-locking joints at lock and hinge edge seams epoxy filled and ground smooth. Reinforce intersections of the vertical stiles and bottom rails with internal corner gussets to provide added strength and rigidity.
5. Bevel hinge and lock door edges 1/8 inch (3 mm) in 2 inches (50 mm). Square edges on hinge and/or lock stiles are not acceptable.

2.3 DOOR FRAMES

A. General: Construct exterior/interior metal door frames to the following designs and gages;
   1. Exterior Frames: Zinc-Iron Alloy-Coated galvannealed steel, ASTM A 653, Class A60:
      a. Thickness:
         1) 16 gage (1.3 mm).
         2) 14 gage (1.7 mm).
   2. Interior Frames in Masonry: Zinc-Iron Alloy-Coated galvannealed steel, ASTM A 653, Class A60, galvannealed steel.
      a. Thickness:
         1) 16 gage (1.3 mm).
         2) 14 gage (1.7 mm).
   3. Interior Frames in stud wall construction: cold rolled steel, ASTM A 1008/A 1008M.
      a. Thickness:
         1) 18 gage (1 mm).
         2) 16 gage (1.3 mm).
         3) 14 gage (1.7 mm).
   4. Interior KD Drywall Frames (Pressure Fit): cold rolled steel, ASTM A 1008/A 1008M.
      a. Thickness:
         1) 18 gage (1 mm).
         2) 16 gage (1.3 mm).
         3) 14 gage (1.7 mm).
   5. Include galvannealed components and internal reinforcements with galvannealed frames.
   6. Electrical Requirements: Coordinate all electrical requirements for doors and frames. Make provisions for installation of electrical items so that wiring can be readily removed and replaced.
      a. Provide cutouts and reinforcements required for metal door frame to accept electric components.
      b. Frame with Electrical Hinges: Weld UL listed grout guard cover box welded over center hinge reinforcing. Top or bottom hinge locations are not permitted.
      c. Provide cutouts and reinforcements required to accept security system components.
      d. Coordinate with Section 08 71 53 - Security Door Hardware for electrified hardware items.

B. Flush Steel Frames:
   1. Construction: Three-piece knock-down frames; mitered joints, with locking tab at each head and jamb intersection.
   2. Construction: Factory-welded three sided frames in accordance with UL 63.
      a. Face welded: Weld miter joints between head and jamb faces completely along their length either internally or externally. The remaining elements of the frame profile (soffit, stop and rabbets) are not welded. Grind and finish face joints smooth.
      b. Full profile welded:
         1) Weld miter joints between head and jamb faces completely along their length either internally or externally.
         2) Internally weld perimeter profile joints full length of soffit and rabbets with hairline seams on external meeting surfaces. Grind and finish face joints smooth.
   3. Profile:
      a. 2 inches (51 mm) face dimension with 5/8 inch (16 mm) high stop, and types and throat dimensions indicated on the Door Schedule.
      b. 1 inch (25 mm) face dimension with 5/8 inch (16 mm) high stop, and types and throat dimensions indicated on the Door Schedule.
      c. Custom special face dimension with 5/8 inch (16 mm) high stop, and types and throat dimensions indicated on the Door Schedule.
   4. Provide following reinforcement and accessories:
      a. Hinge Preparation for 4-1/2 inches (114 mm) high, standard weight, or heavy weight, full mortise hinges; with plaster guard.
      b. Hinge Preparation for 5 inch (127 mm) high, universal standard weight, or heavy weight, full mortise hinges; with plaster guard.
      c. Strike preparation (single doors) for 4-7/8 inch (123 mm) universal strike; with plaster guard.
      d. Silencers. Prepare frames to receive inserted type door silencers, 3 per strike jamb on single doors, and 2 per head for pair of doors. Stick-on silencers are not permitted.
   5. Fire Rating: Supply frame units bearing Labels for fire ratings indicated in Door Schedule for the locations indicated.
   6. Finish: Factory prime finish in accordance with ANSI A 250.10.

C. Steel Frames for Drywall:
   1. Profile:
      a. Profile: 2 inches (51 mm) face dimension, 1/2 inch (13 mm) backbend with 5/16 inch (8 mm) return, 5/8 inch (16 mm) high stop, types and throat dimensions indicated.
   2. Provide following reinforcement and accessories:
      a. Hinge preparation for 4-1/2 inches (114 mm) high, full mortise hinges, 0.134 inch (3.4 mm) or 0.180 inch (4.6 mm) leaf thickness.
      b. Strike preparation (single doors) for 4-7/8 inch (125 mm) universal strike; with plaster guard.
      c. Closer reinforcement: minimum 14 gage (1.7 mm) steel.
      d. Projection weld hinge and strike reinforcements to the door frame.
      e. Provide metal plaster guards for all mortised cutouts.
      f. Include galvannealed hardware reinforcements in all galvannealed frames.
      g. Silencers. Prepare frames to receive inserted type door silencers, 3 per

strike jamb on single doors, and 2 per head for pair of doors. Stick-on silencers are not permitted.

3. Anchors: Locate adjustable anchors in each jamb 4 inches (102 mm) from the top of the door opening to hold frame in rigid alignment.
   a. Provide 14 ga. pressure anchors used in conjunction with base floor clips as required.
4. Fire Rating: Supply frame units bearing Labels for fire ratings indicated in Door Schedule for the locations indicated.
5. Finish: Factory prime finish.

2.4 ACCESSORIES

A. Anchors: Manufacturer's standard framing anchors, specified in manufacturer's printed installation instructions for project conditions.

B. Astragals for pairs of doors: Manufacturer's standard for labeled and non-labeled openings.

C. Plaster Guards: Same material as door frame, minimum 24 gage (0.5 mm) minimum; provide for all strike boxes.

D. Silencers: Resilient rubber, Inserted type, three per strike jamb for single openings and two per head for paired openings. Stick-on silencers shall not be permitted except on hollow metal framing systems.

E. Glazing: Specified in Section 08 83 13 - Mirrored Glass Glazing.

F. Door Louvers:
   1. Inserted: 1 inch (25 mm) thick, inverted "Y" blade type, inserted into an opening prepared in the door faces. Blades are made from 18 gage (1.0 mm) steel and welded to a fabricated sub-frame. Louver is held in place by a retaining frame (shroud), supplied with louver.
      a. Free air space is 50 percent of louver area.
      b. Size: As indicated on the Drawings.
      c. Frame: with tamper proof fasteners.
   2. Fusible Link: Louvers are 1 inch (25 mm) thick, steel "Z" blade type, containing a fusible link that will break at a prescribed temperature, releasing a closing mechanism. Free air space is 30 percent of louver area.
      a. UL Rated.
      b. Size: As indicated on the Drawings.
      c. Frame: with tamper proof fasteners.

2.5 FABRICATION

A. Steel Frames:
   1. Three-piece knock-down frames: Head and jamb intersecting corners die-cut, mitered at 45 degrees, with locking tabs for rigid connection when assembled.
   2. Factory-welded frames: Head and jamb intersecting corners mitered at 45 degrees, with back welded joints ground smooth.
      a. Continuous faceweld the joint between the head and jamb faces along their length either internally or externally. Grind, prime paint, and finish smooth face joints with no visible face seams.
      b. Externally weld, grind, prime paint, and finish smooth face joints at

meeting mullions or between mullions and other frame members per a current copy of ANSI A250.8.

c. Provide temporary steel spreaders (welded to the jambs at each rabbet of door openings) on welded frames during shipment. Remove temporary steel spreaders prior to installation of the frame.

3. Provide cutouts and reinforcements required for electrical and security components specified elsewhere in this specification.

4. Prepare doors and frames to receive mortised and concealed finish hardware in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A115 series specifications for door and frame preparation for hardware.

2.6 FINISHES

A. Chemical Treatment: Treat steel surfaces to promote paint adhesion.

B. Factory Prime Finish: Meet requirements of ANSI A250.10.

C. Steel Sheet: Galvanized to ASTM A525 G60 (exterior doors only).

D. Field Finish: Paint in field.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. Verify that substrate conditions are acceptable for installation of doors and frames in accordance with manufacturer's installation instructions and technical bulletins.

C. Verify door frame openings are installed plumb, true, and level.

D. Select fasteners of adequate type, number, and quality to perform intended functions.

E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 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.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions and with ANSI/SDI-100.

B. Install frames plumb, level, rigid and in true alignment in accordance with ANSI A250.11, "Recommended Erection Instructions for Steel Frames" and ANSI A115.IG, "Installation Guide for Doors and Hardware".

C. All frames other than slip-on types shall be fastened to the adjacent structure to

retain their position and stability. Drywall slip-on frames shall be installed in prepared wall openings, and shall use pressure type and sill anchors to maintain stability.

D. Where grouting is required in masonry installations, frames shall be braced or fastened to prevent the pressure of the grout from deforming the frame members. Grout shall be mixed to provide a 4 inch (102 mm) maximum slump and hand troweled into place. Grout mixed to a thin "pumpable" consistency shall not be used.

E. Install fire-rated doors and frames in accordance with NFPA 80 and local code authority requirements.

F. Install doors to maintain alignment with frames to achieve maximum operational effectiveness and appearance. Adjust to maintain perimeter clearances as required. Shim as needed to assure the proper clearances are achieved.

G. Glaze and seal exterior transom, sidelight and window frames in accordance with HMMA-820 TN03.

H. Install hardware as specified in Section 08 71 53 - Security Door Hardware in accordance with the hardware manufacturer's recommendations and templates. ANSI A115.IG, "Installation Guide for Doors and Hardware" shall be consulted for other pertinent information.

3.4 CLEARANCES

A. Clearance between the door and frame head and jambs for both single swing and pairs of doors shall be 1/8 inch (3.2 mm).

B. Clearance between the meeting edges of pairs of doors shall be 3/16 inch plus or minus 1/16 inch (5 mm plus or minus 1.6 mm). For fire rated applications, the clearance between the meeting edges of pairs of doors shall be 1/8 inch plus or minus 1/16 inch (3.2 mm plus or minus 1.6 mm).

C. Bottom clearance shall be 3/4 inch (19 mm) (Standard).

D. The clearance between the face of the door and door stop shall be 1/16 inch to 1/8 inch (1.6 mm plus or minus 3.2 mm).

E. All clearances shall be, unless otherwise specified, subject to a tolerance of plus or minus 1/32 inch (.4 mm).

3.5 ADJUSTING AND CLEANING

A. Adjust doors for free swing without binding.

B. Adjust hinge sets, locksets, and other hardware. Lubricate using a suitable lubricant compatible with door and frame coatings.

C. Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions before owner's acceptance.

D. Remove from project site and legally dispose of construction debris associated with

this work.

3.6 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

3.7 SCHEDULES

A. :

B. :

END OF SECTION

SECTION 092900

GYPSUM BOARD

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Fiberglass-mat faced, mold- and moisture-resistant gypsum board.

1.02 REFERENCES

A. ASTM International (ASTM):

1. ASTM C473 Standard Test Methods for Physical Testing of Gypsum Panel Products.

2. ASTM C518 Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

3. ASTM C630 Standard Specification for Water-Resistant Gypsum Backing Board.

4. ASTM C840 Standard Specification for Application and Finishing of Gypsum Board.

5. ASTM C1396 Standard Specification for Gypsum Board.

6. ASTM C1658 Standard Specification for Glass Mat Gypsum Panels.

7. ASTM D3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

8. ASTM D6329 Standard Guide for Developing Methodology for Evaluating the Ability of Indoor Materials to Support Microbial Growth Using Static Environmental Chambers**.**

9. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.

B. Gypsum Association (GA):

1. GA-214 Recommended Levels of Gypsum Board Finish.

2. GA-216 Application and Finishing of Gypsum Panel Products.

1.03 SUBMITTALS

A. Product Data: Manufacturer’s specifications and installation instructions for each product specified.

1.04 QUALITY ASSURANCE

A. Regulatory Requirements: Provide products that comply with the following limits for surface burning characteristics when tested per ASTM E84:

1. Flame spread: 26-75.

2. Smoke developed: 0-450.

B. Provide products that are GREENGUARD Indoor Air Quality Certified and GREENGUARD Children & Schools Certified for low emissions of volatile organic compounds (VOCs) by GREENGUARD Environmental Institute.

C. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

D. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

E. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

F. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.

2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

1.05 WARRANTY

A. Provide products that offer twelve months of coverage against in-place exposure damage (delamination, deterioration and decay).

B. Manufacturer’s Warranty: Three years against manufacturing defects.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design: Georgia-Pacific Gypsum LLC:

1. Fiberglass-Mat Faced Gypsum Board: DensArmor Plus Interior Panel.

2. Fire-Rated Fiberglass-Mat Faced Gypsum Board: DensArmor Plus Fireguard.

B. American Gypsum.

C. CertainTeed Corp.

D. Lafarge North America Inc.

E. National Gypsum Company.

F. PABCO Gypsum.

G. Temple-Inland.

H. USG Corporation.

2.02 MATERIALS

A. 5/8 Inch Fire-Rated Fiberglass-Mat Faced Gypsum Board:

1. Thickness: 5/8 inch.

2. Width: 4 feet.

3. Length: 8 feet.

4. Weight: 2.5 pounds per square foot.

5. Edges: Tapered.

6. Surfacing: Coated fiberglass mat on face, back, and long edges.

7. Flexural Strength, Parallel (ASTM C473, ASTM C1658): Not less than 100 lbf.

8. Flexural Strength, Perpendicular (ASTM C473, ASTM C1658): Not less than 140 lbf.

9. R-Value (ASTM C518): Not less than 0.67.

10. Nail Pull Resistance (ASTM C473, ASTM C1658): Not less than 90 lbf.

11. Humidified Deflection (ASTM C473, ASTM C1658): Not more than 1/8 inch.

12. Hardness, Core, Edges, and Ends (ASTM C473, ASTM C1396): Not less than 15.

13. Water Absorption (ASTM C630, ASTM C1396, ASTM C1658): Less than 5 percent of weight.

14. Mold Resistance (ASTM D3273): 10, in a test as manufactured.

15. Microbial Resistance (ASTM D6329): Will not support microbial growth.

16. Acceptable Products:

    a. 5/8 inch DensArmor Plus Fireguard, Georgia-Pacific Gypsum.

    b. 5/8 inch DensArmor Plus Fireguard C, Georgia-Pacific Gypsum.

2.03 PERFORMANCE REQUIREMENTS

A. Moisture- and Mold-Resistant Assemblies: Provide and install moisture- and mold-resistant glass-mat gypsum wallboard products with moisture-resistant surfaces complying with ASTM C 1658 and ASTM C 1177 where indicated on Drawings and in all locations which might be subject to moisture exposure during construction.Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

C. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

D. Low-Emitting Materials: For ceiling and wall assemblies, provide materials and construction identical to those tested in assembly and complying with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

PART 3 EXECUTION

3.01 INSTALLATION

A. General: In accordance with GA-216, ASTM C840 and manufacturer’s recommendations.

1. Manufacturer’s Recommendations:

    a. Current “Product Catalog”, Georgia-Pacific Gypsum.

3.02 APPLICATION

A. Primer and Paint Application:

1. Use high solids primer with at least 40% volume solids.

2. Apply primer to a dry film thickness of 1.7 to 1.8 mils dry to ensure uniform coverage and appearance.

3. Apply finish coats of paint per the paint manufacturer's label instructions.

3.03 PROTECTION

A. Protect gypsum board installations from damage and deterioration until the date of Substantial Completion.

3.04 SCHEDULE

For purposes of this schedule, exposure to water is defined as follows: Direct Exposure: Surfaces normally soaked, saturated or, regularly and frequently exposed to water and moisture. Incidental Exposure: Surfaces immediately adjacent to lavatories, sinks, urinals, water closets, and other plumbing fixtures. No Exposure: Surfaces in locations not normally exposed to water and moisture sources. Abuse-resistant gypsum board shown on drawings			TYPICAL PAPER FACED	ENHANCED RESISTANCE PAPER FACED OR GLASS MAT	COATED GLASS MAT
TOILET AND BATHROOMS	Walls with Adjacent Plumbing Fixtures - Wet Walls (Incidental Exposure):	Paint and Wall Coverings		X	
		Tile and Adhered Sheet/Panel Finishes			X
	Wall locations other than wet walls (No Exposure)	Paint and Wall Coverings		X	
		Tile and Adhered Sheet/Panel Finishes			X

	Tub and Shower Walls (Direct Exposure):	Paint and Wall Covering Finishes above Tub and Shower Finishes		X	
		Tile and Adhered Sheet/Panel Finishes			X
	Ceilings (No Exposure)	Paint Only		X	
	Walls above ceilings (Incidental Exposure)		X	X	X
Interior Faces of Exterior Walls (No Exposure, excerpt for future potential of water and moisture infiltration through exterior wall)				X	
All Other Walls and Ceilings (No Exposure) – Paint only			X		

END OF SECTION

SECTION 095123

ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general conditions of Contract, including General and Supplementary Conditions and Divisions-1 Specification sections apply to work of this section.

1.2 SUMMARY

A. Section Includes

1. Acoustical ceiling panels.
2. Exposed grid suspension system.
3. Wire hangers, fasteners, main runners, cross tees, and wall angle moldings.
4. Perimeter trim.

B. Related Sections

1. Section 092000 – Plaster and Gypsum Board
2. Division 23 – HVAC Air Distribution
3. Division 26 – Electrical

C. Alternates

1. Prior Approval: Unless otherwise provided for in the Contract documents, proposed product substitutions may be submitted no later than TEN (10) working days prior to the date established for receipt of bids. Acceptability of a proposed substitution is contingent upon the Architect's review of the proposal for acceptability and approved products will be set forth by the Addenda. If included in a Bid are substitute products that have not been approved by Addenda, the specified products shall be provided without additional compensation.

2. Submittals that do not provide adequate data for the product evaluation will not be considered. The proposed substitution must meet all requirements of this section, including but not necessarily limited to, the following: Single source materials suppliers (if specified in Section 1.5); Underwriters' Laboratories Classified Acoustical performance; Panel design, size, composition, color, and finish; Suspension system component profiles and sizes; Compliance with the referenced standards

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

2. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.

3. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.

4. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

5. ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

6. ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.

7. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

8. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials.

9. ASTM E 119 Standard Test Methods for Fire Tests of Building Construction and Material.

    a. Armstrong Fire Guard Products

10. ASTM E 580 Installation of Metal Suspension Systems in Areas Requiring Moderate Seismic Restraint.

11. ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems.

12. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum .

13. ASTM E 1264 Classification for Acoustical Ceiling Products.

B. International Building Code.

C. ASHRAE Standard 62.1-2004, Ventilation for Acceptable Indoor Air Quality

D. NFPA 70 National Electrical Code

E. ASCE 7 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures

F. International Code Council-Evaluation Services - AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components

G. International Code Council-Evaluation Services Report - Seismic Engineer Report

1. E SR 1308 - Armstrong Suspension Systems

H. International Association of Plumbing and Mechanical Officials - Seismic Engineer Report

1. 0244 - Armstrong Single Span Suspension System

I. California Department of Public Health CDPH/EHLB Emission Standard Method Version 1.1 2010.

J. LEED - Leadership in Energy and Environmental Design is a set of rating systems for the design, construction, operation, and maintenance of green buildings

K. International Well Building Standard

L. Mindful Materials

M. Living Building Challenge

N. U.S. Department of Agriculture BioPreferred program (USDA BioPreffered).

1.4 SYSTEM DESCRIPTION

A. Continuous/Wall-to-Wall

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each type of acoustical ceiling unit and suspension system required.

B. Samples: Minimum 6 inch x 6 inch samples of specified acoustical panel; 8 inch long samples of exposed wall molding and suspension system, including main runner and 4 foot cross tees.

C. Shop Drawings: Layout and details of acoustical ceilings show locations of items that are to be coordinated with, or supported by the ceilings.

D. Acoustical Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with

specified tests and standards. For acoustical performance, each carton of material must carry an approved independent laboratory classification of NRC, CAC, and AC.

E. If the material supplied by the acoustical subcontractor does not have an Underwriter's Laboratory classification of acoustical performance on every carton, subcontractor shall be required to send material from every production run appearing on the job to an independent or NVLAP approved laboratory for testing, at the architect's or owner's discretion. All products not conforming to manufacturer's current published values must be removed, disposed of and replaced with complying product at the expense of the Contractor performing the work.

1.6 SUSTAINABLE MATERIALS

A. Transparency: Manufacturers will be given preference when they provide documentation to support sustainable requirements for the following: Material ingredient transparency, Removal of Red List Ingredients per LBCV3, Life Cycle impact information, Low-Emitting Materials, and Clean Air performance.

B. Health Product Declaration. The end use product has a published, complete Health Product Declaration with disclosure at a minimum of 1000ppm of known hazards in compliance with the Health Product Declaration open Standard.

C. Declare Label. The end use product has a published Declare label by the International Living Future Institute with disclosure of 100 ppm with a designation of Red List Free or Compliant (less than 1% proprietary ingredients).

D. Low Emitting products with VOC emissions data. Preference will also be given to manufacturers that can provide emissions data showing their products meet CDHP Standard Method v1.1 (Section 01350).

E. Life cycle analysis. Products that have communicated lifecycle data through Environmental Product Declarations (EPDs) will be preferred.

F. End of Life Programs/Recycling: Where applicable, manufacturers that provide the option for recycling of their products into new products at end-of-life through take-back programs will be preferred.

G. Products meeting LEED V4 requirements including:

1. Storage & Collection of Recyclables

2. Construction and Demolition Waste Management Planning

3. Building Life-Cycle Impact Reduction

4. Building Product Disclosure and Optimization Environmental Product Declarations

5. Building Product Disclosure and Optimization Sourcing of Raw Materials

6. Building Product Disclosure and Optimization Material Ingredients

7. Construction and Demolition Waste Management

1.7 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.

1. Fire Performance Characteristics: Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.

2. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 Classification.

3. Fire Resistance: As follows tested per ASTM E119 and listed in the appropriate floor or roof design in the Underwriters Laboratories Fire Resistance Directory

B. Acoustical Panels: As with other architectural features located at the ceiling, may obstruct or skew the planned fire sprinkler water distribution pattern through possibly delay or accelerate the activation of the sprinkler or fire detection systems by channeling heat from a fire either toward or away from the device. Designers and installers are advised to consult a fire protection engineer, NFPA 13, or their local codes for guidance where automatic fire detection and suppression systems are present.

C. Coordination of Work: Coordinate acoustical ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

1.8 DELIVERY, STORAGE AND HANDLING

A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

1.9 PROJECT CONDITIONS

A. Space Enclosure:

1. Standard Ceilings: Do not install interior ceilings until space is enclosed and weatherproof; wet work in place is completed and nominally dry; work above ceilings is complete; and ambient conditions of temperature and humidity are continuously maintained at values near those intended for final occupancy. Building areas to receive ceilings shall be free of construction dust and debris.

2. HumiGuard Plus Ceilings: Building areas to receive ceilings shall be free of construction dust and debris. Products with HumiGuard Plus performance and hot dipped galvanized steel, aluminum or stainless steel suspension systems can be installed up to 120°F (49°C) and in spaces before the building is enclosed, where HVAC systems are cycled or not operating. Cannot be used in exterior applications where standing water is present or where moisture will come in direct contact with the ceiling.

3. HumiGuard Max Ceilings: Building areas to receive ceilings shall be free of construction dust and debris. Ceilings with HumiGuard Max performance can be installed in conditions up to 120°F (49°C) and maximum humidity exposure including outdoor applications, and other standing water applications, so long as they are installed with either SS Prelude Plus, AL Prelude Plus, or Prelude Plus Fire Guard XL suspension systems. Products with Humiguard Max performance can be installed in exterior applications, where standing water is present, or where moisture will come in direct contact with the ceiling. Only Ceramaguard with AL Prelude Plus suspension system can be installed over swimming pools.

1.10 ALTERNATE CONSTRUCTION WASTE DISPOSAL

A. Ceiling material being reclaimed must be kept dry and free from debris.

B. Contact the Armstrong Recycle Center a consultant will verify the condition of the material and that it meets the Armstrong requirements for recycling. The Armstrong consultant with provide assistance to facilitate the recycling of the ceiling.

C. Recycling may qualify for LEED Credits:

1. LEED 2009 - Category 4: Material and Resources (MR)

a. Credit MRc2: Construction Waste Management

b. LEEDv4 - MRp2 - Construction Waste Management Planning Qualifies as a material stream (non-structural) targeted for diversion. Ceilings will be source-separated and diverted through the Armstrong Ceiling Recycling Program.

c. LEEDv4-MRc5 –

i. Option 1: Divert ceilings to qualify for one of the 3 material streams (50%)

ii. Option 2: Divert ceilings to qualify for one of the 4 material streams (75%)

1.11 WARRANTY

A. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period. Failures include, but are not limited to the following:

1. Acoustical Panels: Sagging and warping

2. Grid System: Rusting and manufacturer's defects

B. Warranty Period:

1. Acoustical panels: Ten (10) years from date of substantial completion

2. Cirrus: Ten (10) years from date of substantial completion

3. Suspension: Ten (10) years from date of substantial completion

4. Ceiling System: Thirty (30) years from date of substantial completion

C. The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

1.12 MAINTENANCE

A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.

1. Acoustical Ceiling Units: Furnish quality of full-size units equal to 5.0 percent of amount installed.

2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Ceiling Panels:

1. Armstrong World Industries, Inc.

B. Suspension Systems:

1. Armstrong World Industries, Inc.

C. Perimeter Systems

1. Armstrong World Industries, Inc.

2.2.1 ACOUSTICAL CEILING UNITS

A. Acoustical Panels Type 1728BL Fine Fissured Black

1. Surface Texture: Medium

2. Composition: Mineral Fiber

3. Colors:

i. Black (where indicated on plans).

ii. White (where indicated on plans).

4. Size: 24 in x 24 in

5. Edge Profile: Square 15/16 in for interface with PRELUDE XL 15/16" Exposed Tee grid.

6. Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton 0.55

7. Ceiling Attenuation Class (CAC) : ASTM C 1414; Classified with UL label on product carton 40

8. Sabin: N/A

9. Articulation Class (AC):

10. Flame Spread: ASTM E 1264; Class A (UL)

11. Light Reflectance (LR) Black Panel: ASTM E 1477; 0.06

12. Dimensional Stability: HumiGuard Plus

13. Recycle Content: - 40%

14. Material Ingredient Transparency: Health Product Declaration (HPD); Declare Label

15. Life Cycle Assessment: Third Party Certified Environment Product Declaration (EPD)

16. Acceptable Product: FINE FISSURED, 1728BL No added formaldehyde as manufactured by Armstrong World Industries

2.3.1 METAL SUSPENSION SYSTEMS

A. Components:

1. Main beams and cross tees, base metal and end detail, fabricated from commercial quality hot dipped galvanized steel complying with ASTM A 653. Main beams and cross tees are double-web steel construction with type exposed flange design. Exposed surfaces chemically cleansed, capping prefinished galvanized steel in baked polyester paint. Main beams and cross tees shall have rotary stitching.

a. Structural Classification: ASTM C 635 Intermediate Duty duty
b. Color: Black and match the actual color of the selected ceiling tile, unless noted otherwise.
c. Sustainability: Environmetal Product Declaration (EPD), Health Product Declaration (HPD)
d. Acceptable Product: PRELUDE XL 15/16" Exposed Tee as manufactured by Armstrong World Industries

B. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

C. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft annealed, with a yield stress load of at least time three design load, but not less than 12 gauge.

D. Edge Moldings and Trim:

1. 780036 - 12ft Hemmed Angle Molding

E. Accessories:

2.4 METAL EDGE MOLDINGS AND TRIM

A. Manufacturers:

1. Armstrong.

2. Chicago Metallic Corporation.

3. Fry Reglet Corporation.

4. Gordon, Inc.

5. MM Systems, Inc.

6. USG Interiors, Inc.

7. Or equivalent

B. Roll-Formed Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that fit acoustical tile edge details and suspension systems indicated; formed from sheet metal of same material and finish as that used for exposed flanges of suspension system runners

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendations. (Exception: HumiGuard Max Ceilings)

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.

B. Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other sections.

1. Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination of other work.

3.3 INSTALLATION

A. Follow manufacturer installation instructions.

B. Install suspension system and panels in accordance with the manufacturer's instructions, in compliance with ASTM C 636, per the CISCA'S "Ceiling Systems Handbook", and with the authorities having jurisdiction.

C. Suspend main beam from overhead construction with hanger wires spaced 4-0 on center along the length of the main runner. Install hanger wires plumb and straight.

D. Install wall moldings at intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps.

E. For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.

F. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.

3.4 ADJUSTING AND CLEANING

A. Replace damaged and broken panels.

B. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove any ceiling products that cannot be successfully cleaned and or repaired. Replace with attic stock or new product to eliminate evidence of damage.

C. Before disposing of ceilings, contact the Armstrong Recycling Center at 877-276-7876, select option #1 then #8 to review with a consultant the condition and location of building where the ceilings will be removed. The consultant will verify the condition of the material and that it meets the Armstrong requirements for recycling. The Armstrong consultant with provide assistance to facilitate the recycle of the ceiling.

END OF SECTION

SECTION 096513

RESILIENT WALL BASE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Resilient Wall Base.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. LEED Submittals:

   1. Product Data for Credit EQ 4.1: For adhesives, include printed statement of VOC content and chemical components.

C. Samples for Initial Selection: For each type of product indicated.

D. Samples for Verification: For each type of product indicated, in manufacturer's standard-size samples of each resilient product color, texture, and pattern required.

E. Product Schedule: For resilient products. Use same designations indicated on Drawings**.**

1.4 QUALITY ASSURANCE

A. Installation Qualification: Contractors for floor covering installation should be experienced in managing commercial flooring projects and provide professional installers, qualified to install the various flooring materials specified. An installer is “qualified” if trained, or a certified by Tarkett or a certified INSTALL (International Standards & Training Alliance) resilient floor covering installer.

B. Mockups: Provide resilient products with mockups specified in other Sections.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by Tarkett, but not less than 55 deg F (13 deg C) or more than 85 deg F (29 deg C).

1.6 PROJECT CONDITIONS

A. Install resilient products after other finishing operations, including painting, have been completed.

B. Maintain ambient temperatures within range recommended by Tarkett, but not less than 65 deg F (18 deg C) or more than 85 deg F (29 deg C) in spaces to receive resilient products during the following time periods:
   1. 48 hours before installation.
   2. During installation.
   3. 48 hours after installation.

C. Maintain the ambient relative humidity between 40% and 60% during installation.

D. Until Substantial Completion, maintain ambient temperatures within range recommended by Tarkett, but not less than 55 deg F (13 deg C) or more than 85 deg F (29 deg C).

PART 2 - PRODUCTS

2.1 RESILIENT SHEET FLOORING

Manufacturer:

Tarkett North America

Phone: (800) 899-8916

30000 Aurora Rd.
Solon, Ohio 44139
Web: www.tarkettna.com
E-mail: info@tarkett.com

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For resilient tile flooring, as determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
   1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

B. Flooring products shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.3 RESILIENT **TRADITIONAL RUBBER DURACOVE** WALL BASE

A. Basis-of-Design Product: Subject to compliance with requirements, provide Tarkett Traditional Thermoplastic Rubber Wall Base.

B. Performance requirements meets ASTM F1861 Standard Specification for Resilient Thermoplastic Rubber Wall Base, Type TP, Group 1.

C. For thickness specify, 0.125" (3.17 mm)

D. For type, specify: Coved

E. For height specify: 6" (15.24 cm)

F. For 6" heights, specify length: 100' (30.48 m)

G. For corners, specify: Inside Corners, Outside Corners

H. Colors and Patterns: **Match Architect's sample**] [**As selected by Architect from full range of industry colors**.

I. Test Data:
   1. Flexibility, ASTM F137: Passes 1/4 inch mandrel
   2. Resistance to light, ASTM F1515: Passes
   3. Resistance to chemicals, ASTM F925: Passes
   4. ASTM E 648, Standard Test Method for Critical Radiant Flux of 0.45 watts/cm^2 or greater, Class 1.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the work.

B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to Tarkett's written instructions to ensure adhesion of resilient wall base.

B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

C. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

D. Vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 RESILIENT BASE INSTALLATION

A. Comply with Tarkett's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

3.4 CLEANING AND PROTECTION

A. Comply with Tarkett's written instructions for cleaning and protection of resilient products.

B. Perform the following operations immediately after completing resilient product installation:
   1. Remove adhesive and other blemishes from exposed surfaces.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

END OF SECTION

SECTION 096519

RESILIENT TILE FLOORING

PART 1 – GENERAL

1. SUBMITTALS
    a. Product Specification
    b. Specification for Adhesive
    c. Floor Layouts
    d. Samples
    e. Schedule
    f. Qualifications for Installer
2. CLOSEOUT SUBMITTALS
    a. Maintenance Instructions
    b. Warranty
3. QUALITY ASSURANCE
    a. Environmental:
        i. FloorScore® Certified
        ii. Environmental Product Declarations
        iii. Health Product Declaration
    b. Installer Qualifications: Installer who has been trained in the installation of resilient sheet flooring.
    c. Mockups: Install 100 sf of product at designated location for architect review and approval.
4. MATERIAL STORAGE AND HANDLING
    a. Store tiles on a flat surface and squarely on top of one another.
    b. Store away from vents and direct sunlight.
    c. When palletizing, first place a 5/8” or thicker plywood on the pallet. Stack 2 rows high side by side with no airspace between. Then quarter turn for 2 rows side by side. Do not exceed 12 boxes high. If you are stacking pallets, use a 1” thick plywood in between pallets.
    d. Store in protected dry conditions between 65 and 85 degrees.
5. SITE CONDITIONS
    a. The permanent HVAC system must be on for 7 days prior to, during and after installation between 65 and 85 degrees Fahrenheit or 18 to 29 degrees Celsius.
    b. Material and adhesive must be acclimated to the installation area for a minimum of 48 hours prior to installation.

PART 2 – PRODUCTS

6. TESTING REQUIREMENTS
    a. Slip Resistance ASTM D2047: ADA Compliant
    b. Static Load Limit ASTM F970: 1500 psi
    c. Residual Indentation F1914: passes , 8%

d. Flexibility ASTM F137: Passes
e. Resistance to Heat ASTM F1514: Passes
f. Resistance to Light ASTM F1515: Passes
g. Resistance to Chemicals ASTM F925: Passes
h. Radiant Flux ASTM E648: / 0.45 W/sq. cm., Class I
i. Smoke Density ASTM E662: Passes, <450

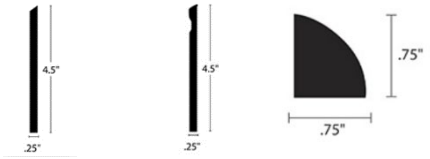
7. RESILIENT TILE
   a. Manufacturer: Patcraft
   b. Product: cmyk, I426V
   c. Construction:
   d. Class ASTM F1700: ASTM F1700 Class III printed film vinyl plank Type B (embossed)
   e. Wear-layer Thickness: 20 mil
   f. Overall Thickness: 0.098 inches (2.5 mm)
   g. Nominal Dimensions: 12 in x 24 in
   h. Finish: ExoGuard+®
   i. Backing Class:
   j. Installation: Glue Down

8. INSTALLATION MATERIALS
   a. High Moisture Management Solutions (10 Year Warranty)
      i. **Concrete with %RH <99%, MVER </=10, pH < 11**
         1. Apply USG Advanced skim coat as necessary for patch/skim coat.
         2. Install flooring with Shaw 4151* adhesive.
      ii. **Concrete with %RH >/= 99%, MVER </=12, pH </= 12**
         1. Apply Shaw Surface Prep EXT followed by Shaw Moisture Shield.
         2. Apply USG Advanced skim coat as necessary for patch/skim coat.
         3. Install flooring with Shaw 4151* adhesive.
      iii. **Concrete with %RH >/= 99%, MVER </= 17, pH> 12**
         1. Apply Surface Prep
         2. Apply Shaw Moisture Shield.
         3. Apply MRP
         4. Apply USG Advanced Skim Coat as necessary for patch/skim coat.
         5. Install flooring with Shaw 4151* adhesive
      iv. **Concrete with %RH >/= 99%, MVER >17, pH> 12**
         1. Apply Shaw Surface Prep EXT followed by Shaw MoistureTek.
         2. Apply USG Advanced skim coat as necessary for patch/skim coat.
         3. Install flooring with Shaw 4151* adhesive.

   b. Adhesives:

i. Lokworx Resilient	95% RH	8 lbs	pH 10
ii. Lokworx+ Resilient			
iii. S150 spray	95% RH	NA	pH 11
iv. Shaw 4151 for high moisture	99% RH	10 lbs.	pH 12
v. Shaw 200 for low demand areas	85% RH	5 lbs	pH 5-9

c. Weld Rod
    i. Heat
    ii. Chemical
d. Primer: Shaw 9050
e. Leveling and Patching Compounds: Use only Portland-based patching and leveling compounds. Do not install resilient flooring over gypsum-based patching and/or leveling compounds.
f. Shaw MRP: Barrier Primer over concrete, Old Cut Back Adhesive, Chemically Abated Floors or other solid surfaces
g. FinishWorx Transition Strips (Micro Transition, Metal TrimMaster)
h. FinishWorx Wall Base Accessories
i. FinishWorx Cove Base Accessories:
    i. Angle Profile
    ii. Detail Profile
    iii. Quarter Round
j. Floor Polish



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PART 3 – EXECUTION

9. EXAMINATION
    a. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content, pH, smoothness and level.
    b. Proceed with installation after any unsatisfactory conditions have been corrected.
10. PREPARATION OF SUBSTRATE
    a. All substrates to receive resilient flooring shall be dry, clean, smooth and structurally sound. They shall be free of dust, solvent, paint, wax, oil, grease, residual adhesive, adhesive removers, curing, sealing, hardening, or parting compounds, alkaline salts, excessive carbonation or laitance, mold, mildew and other foreign materials that might prevent adhesive bond.
    b. RADIANT HEAT
        i. Substrates must not exceed 85°F surface temperature.
        ii. Seven days prior to installing resilient products, activate the radiant system at maximum temperature to reduce residual moisture in the concrete.
        iii. 24 hours prior to installation, lower the temperature to 70°F and maintain that temperature for 48 hours after installation.
        iv. Ensure the floor does not exceed 85°F. An in-floor temperature sensor is recommended.
    c. WOOD SUBSTRATES
        i. Double-layered APA rated plywood subfloors should be a minimum 1” total thickness, with at least 18” well ventilated air space beneath. Insulate and protect crawl spaces with a vapor barrier.
        ii. Do not install over sleeper construction subfloors or wood subfloors applied directly over concrete.

iii. Underlayment panels can only correct minor deficiencies in the sub-floor while providing a smooth, sound surface on which to adhere the resilient flooring.
iv. Any failures in the performance of the underlayment panel rests with the panel manufacturer and not with Shaw Industries, Inc.
v. It is recommended that your chosen APA underlayment grade panels be designed for installation under resilient flooring and carry a written warranty covering replacement of the entire flooring system.
vi. Always follow the underlayment manufacturer's installation instructions.

d. STRIP – PLANK WOOD FLOORING
   i. Due to expansion and contraction of individual boards during seasonal changes add 1/4" or thicker APA rated underlayment panels be installed over these types of subfloors.

e. CONCRETE
   i. New or existing concrete subfloors must meet the guidelines of the latest edition of ACI 302 and ASTM F 710.
   ii. On or below-grade slabs must have an effective vapor retarder directly under the slab.
   iii. Wet curing 7 days is the preferred method for curing new concrete.
   iv. Remove curing compounds 28 days after placement, so concrete can begin drying.
   v. Concrete floors shall be flat within 3/16" in 10 ft. F-Number System: Overall values of FF 36/FL 20 may be appropriate for resilient floor coverings.
   vi. Internal relative humidity may not exceed 90% RH.

f. LIGHTWEIGHT CONCRETE
   i. All recommendations and guarantees as to the suitability and performance of lightweight concrete under resilient flooring are the responsibility of the lightweight concrete manufacturer. The installer of the lightweight product may be required to be authorized or certified by the manufacturer. Correct on-site mixing ratios and properly functioning pumping equipment are critical. To ensure proper mixture, slump testing is recommended.
   ii. Lightweight aggregate concretes having densities greater than 90 lbs. per cubic foot may be acceptable under resilient flooring.
   iii. Concrete slabs with heavy static and/or dynamic loads should be designed with higher strengths and densities to accommodate such loads.
   iv. Surface must be permanently dry, clean, smooth, and free of all dust and structurally sound.

11. INSTALLATION
    a. LAYOUT AND INSTALLATION
    b. Install using conventional tile and plank installation techniques. Plank products should have a minimum of 6 to 8" seam stagger.

c. Center rooms and hallways so borders are not less than half of a tile or plank.
d. Work out of multiple boxes at the same time.
e. In hallways and small spaces, work lengthwise from one end.
f. Ensure cut edges are always against the wall.
g. To cut products, score the top side of the material with a utility knife. Bend the product and finish the cut through the back side. It may be necessary to use a heat gun to cut around vertical obstructions. Allow the heated product to return to room temperature before installation.
h. If you cut the product into a fine point, it may delaminate. Use an ethyl cyanoacrylate-based super glue to fuse the points together. Clean all glue from the top surface immediately. Alcohol-based super glues may cause the vinyl to swell.
i. Roll the plank or tile with a 3-section 100 lb. roller. Re-roll the floor within the working time of the adhesive. Continue to roll the floor throughout the working day to ensure a proper bond.
j. Use floor protection after installation. DO NOT use a plastic adhesive-based protection system.

12. MAINTENANCE
    a. Initial Maintenance
        i. Sweep, vacuum or dust mop to remove dirt and grit.
        ii. If needed, add neutral cleaner to cool water following the manufacturer's instructions.
        iii. Scrub with a low-rpm machine or auto scrubber. Use a red pad or brush.
        iv. Never use brown or black pads (too aggressive and can damage the product)
        v. Remove the cleaning solution with a wet-dry vacuum or auto scrubber until the floor is dry.
        vi. Rinse the floor with clean water. Repeat the rinse process if necessary to remove all haze.
    b. Routine Maintenance
        i. Sweep, vacuum or dust mop to remove dirt and grit.
        ii. Add neutral pH cleaner to cool water following the manufacturer's instructions.
        iii. As needed, scrub with a low-rpm machine or auto scrubber to retain appearance. Use a red (light scrubbing) pad and neutral cleaner following the manufacturer's instructions.
    c. Preventative Floor Care
        i. Use walk-off mats that are as wide as the doorway and long enough for soil load and weather conditions.
        ii. Use mats with a non-staining backing.
        iii. Floor protectors should be used on all furniture legs.
        iv. The surface area of the floor protectors should be no less than 1" in diameter.
    d. Full maintenance instructions will be provided by the manufacturer.

END OF SECTION

SECTION 099123

PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Paint.

1.2 ENVIRONMENTAL CONDITIONS

A. Utilize a low VOC product, (less than 100 g/1), for semi-gloss and gloss. Use a water-based, “zero VOC” product (less than 10 g/1), for flat and egg shell. All interior and exterior paints shall be lead and VOC free.

1.3 SUBMITTALS

A. Product Data: Provide material specifications, characteristics, and instructions for using adhesives and grouts.

1.4 EXTRA MATERIALS

A. Provide one gallon of each color and sheen in unopened cans, sealed and labeled by manufacturer.

1.5 DELIVERY, STORAGE AND HANDLING

A. All materials must be of commercial grade made by reputable, recognized manufacturers, and delivered to the job in original containers bearing brand name and manufacturer’s name with seals unbroken and unusable materials.

B. Store materials and equipment only at locations as directed. Keep storage spaces clean and orderly and free of debris and unusable materials.

C. Deliver materials in original packages, containers, or bundles bearing brand names and identification of manufacturer or supplier.

D. Store materials in dry location, fully protected from weather and direct exposure to sunlight.

E. Use paint directly from manufacturer – Do not add water or otherwise thin paint materials.

1.6 WARRANTY

A. The Contractor shall furnish written guarantee that all work, materials and workmanship required by this section of the contract be free from defects for a period of one (1) year after the acceptance of the building.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Manufacturers:

1. PPG paint and coating systems (or equivalent).
2. MAB (M. A. Bruder) paint systems (or equivalent).
3. Benjamin Moore “Pristine” paint line with zero VOC content (or equivalent).

B. Coatings: All coatings shall be pre-mixed, except field catalyzed coatings of good flow and brushing properties, capable of drying or curing free of streaks or sags. All coatings shall be lead-free.

C. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials required to achieve the finishes specified.

2.2 FINISHES

A. All colors shall be selected by Owner.

B. Refer to schedule at end of section for surface finish schedule.

C. All new wood and steel doors shall be primed and painted with semi-gloss finish.

D. Interior walls shall be primed and painted with eggshell or low luster finish.

E. All exterior trims shall be primed and painted with semi-gloss finish.

F. Provide three (3) color paint system for interior spaces; one (1) color for walls and ceilings, one (1) color for doors, and one (1) color for trim.

2.3 CLEAR FINISH / STAINS

A. Stains shall be vegetable oil based, non-polyurethane, waterborne for exterior use with UV protection.

B. Clear finish interior wood to be 2 coats clear shellac, plus 1 coat MAB Dull-Glo Varnish (or equivalent).

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify that substrate conditions are ready to receive work.

B. Measure moisture content of porous surfaces using an electronic moisture meter. Do not apply finishes unless moisture content is less than 12 percent.

C. Correct minor defects and clean surfaces which affect work of this Section.

D. Remove electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.

E. Gypsum Board Surfaces: Fill minor defects with latex compounds. Spot prime defects after repair.

F. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

G. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove foreign matter. Remove oil and grease with a solution of tri-sodium phosphate, rinse well and allow to dry.

H. Uncoated Ferrous Surfaces: Remove scale by wire brushing, sandblasting, clean by washing with solvent. Apply treatment of phosphoric acid solution. Prime paint after repairs.

I. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust, hand power tool clean, clean surfaces with solvent. Prime bare steel surfaces.

J. Interior Wood Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.

K. Interior Wood Items Scheduled to Receive Transparent Finish: Wipe off dust and grit prior to sealing. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lighting between coats.

L. Exterior Wood Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior caulking compound after prime coat has been applied.

M. Protect adjacent work from damage.

N. Prepare all surfaces in accordance with manufacturer’s requirements.

3.2 APPLICATION

A. All paints shall be premixed. Paints shall not be thinned with water.

B. New painting shall be performed by experienced mechanics using roller, spray (with back roll on second coat) or brush, applying paint according to manufacturer's instructions, free of runs, sags, holidays and brush or roller markings.

C. Sand transparent finishes lightly between coats to achieve required finish.

D. Where clear finishes are required, tint fillers to match wood.

E. Back prime interior and exterior wood work scheduled to receive paint finish with primer paint.

F. Back prime interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

G. Finished surfaces shall be finished to a straight line where adjoining other colors or unpainted surfaces.

H. Fill cracks, nail holes, and other defects in wood with whiting putty after prime coat has been applied.

I. No exterior work to be done in rainy, damp, or frosty weather. No interior work to be done until building is dry.

J. All wood doors shall be primed and painted with a high gloss protective finish. Give top and bottom edges of doors the same number of finish coats as face. Paint prime coated butts the same as door frame unless otherwise directed.

K. Paint access doors, panelboards, grilles, exposed piping and similar items to match adjacent surfaces unless otherwise directed.

L. Give any finished work that does not have full coverage or is not neat and workmanlike additional coats of finish or remove entirely and re-do as required by Architect until it presents a satisfactory and acceptable appearance.

3.3 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. Paint shop primed equipment.

B. Remove unfinished louvers, grilles, covers, and access panels and paint separately.

C. Prime and paint exposed pipes, exposed ducts, hangers, brackets, collars and supports, except where items are pre-finished.

D. Paint both sides and edges of plywood backboards.

E. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.4 CLEANING

A. As work proceeds, promptly remove finishes where spilled, splashed, or spattered.

B. Store paint rags and waste in tightly covered metal containers or remove from job site at end of each day's work.

3.5 PAINT SCHEDULE - EXTERIOR SURFACES

A. Steel - ferrous metal (or equivalent):

1. Two (2) coats PPG 3330 Durethane Mastic Eurethane, self priming.

B. Steel - galvanized metal:

1. Two (2) coats PPG 3330 Durethane Mastic Eurethane, self priming.

C. Garage Door

1. One (1) coat PPF Paints Amerlock Sealer at 1.0 mils dry.
2. One (1) coat PPF Paints Durethane DTM 95-3330 Series.

3.6 PAINT SCHEDULE - INTERIOR SURFACES

A. Steel - Unprimed:

1. One (1) coat PPG 4020PF, PitTech Plus Primer/Finish w/ Acrylic.
2. Two (2) coats PPF 4216HP, Acrylic Enamel Sem-Gloss.

B. Concrete, concrete block:

1. One (1) coat of block filler, PPG 6-15XI.
2. Two (2) coats of PPG Sun-Proof 7 Series, semi-gloss

C. Gysum Board:

1. One (1) coat of acrylic enamel primer. PPG 4-4900 (or equivalent).
2. Two (2) PPG 4310 XI Speedhide, No VOC, eggshell (or equivalent).

D. Concrete floors (not receiving another flooring)

1. PPG Perma Crete Plexseal WB Interior/Exterior Clear Sealer

E. Exposed Pipe and Fittings:

1. Two (2) coats semi-gloss enamel

F. Wood:

1. Flat Finish

a. 1 Coat-PPG Seal Grip Alkyd Primer Series 17 -951.

b. 2 Coats-PPG Acri-Shield Max Eggshell 589-10 Series

END OF SECTION

SECTION 211100

FIRE SUPPRESSION SERVICE PIPING

PART 1 – GENERAL

1.1 GENERAL

A. Provide sprinkler systems and equipment as shown on the drawings and specified herein. Provide temporary fire protection during the building construction phase.

B. Fire protection work shall be in strict accordance with NFPA 13 - Standard for the Installation of Sprinkler Systems and NFPA 14 - Standard for the Installation of Standpipe and Hose Systems.

C. Fire protection systems and equipment shall include piping, sprinkler heads, system tests, test and drain connections, equipment supports, etc., for a complete working system.

PART 2 – PRODUCTS

2.1 GENERAL

A. Products and materials utilized for fire protection service shall be UL listed and FM approved for the intended purpose.

2.2 SPRINKLER SYSTEM CONTROL VALVES

A. Sprinkler system control valves size 2-1/2 inches and smaller shall be Milwaukee Valve Company Model BB-SCS, UL listed butterfly valves with wheel operator and integral, tamper resistant, DPDT 120 volt monitor switch for interconnection with building fire alarm system. (Wiring shall be under Division 26.)

B. Sprinkler system control valves larger than 2-1/2 inches shall be UL listed butterfly valves with integral tamper resistant DPDT 120 volt monitoring switches, Grinnell Series 8000FP or approved equivalent. Such switches shall be provided with contacts for inter-connection with the building fire alarm system. (Wiring shall be under Division 26.) Control valves shall be provided with monitor switches.

C. Sprinkler system valves one inch and smaller shall be ball valves.

2.3 FIRE DEPARTMENT CONNECTION

A. Fire department connections shall be siamese type, and shall be 2-1/2 inch x 2-1/2 inch x 4 inch size. Each of two (2) inlets shall be furnished with a self-closing clapper valve, and shall have threads suitable for coupling to the

local fire department hoses. Each unit shall be brass with polished chrome finish and shall have inlet plugs and chains to match. A UL listed check valve and a 3/4 inch ball drip shall be provided where the piping to the fire department connection joins the sprinkler supply piping system. Ball drip shall be piped to floor drain.

B. Fire department connections shall be flush type with 90 degree elbow equivalent to Elkhart #166, and shall be labeled "Standpipe - Auto. Spkr."

2.4 STANDPIPE AND WET SPRINKLER SYSTEMS

A. System Design

1. Provide the entire sprinkler and standpipe systems including sprinkler heads, piping, valves, tamper switches, flow alarms and other appurtenances required by local or state agencies, or by the Owner's insurance company. The entire sprinkler system shall be hydraulically designed unless otherwise noted.
2. **OPTION 2:** Design shall be based on the occupancy hazards as specified in NFPA. Light Hazard areas shall be designed for 0.10 gpm/ft^2 over the most remote 1,500 square feet of floor area using 1/2 inch orifice 165°F sprinklers. Ordinary Hazard Group 1 areas shall be designed for 0.15 gpm/ft^2 over the most remote 1,500 square feet of floor area using 1/2 inch orifice 165°F sprinklers. Ordinary Hazard Group 2 areas shall be designed for 0.20 gpm/ft^2 over the most remote 1,500 square feet of floor area using 1/2 inch orifice 165°F sprinklers. Extra Hazard areas shall be designed for 0.30 gpm/ft^2 over the most remote 2,500 square feet of floor area using 1/2 inch orifice 165°F sprinklers. For dry-pipe systems, increase the area of sprinkler operation by 30 percent without revising the density.
3. Obtain necessary approvals from local and state agencies and from the Owner's insurance company and submit six (6) copies of the design to the Architect for review. No fire protection systems or equipment may be installed until approvals are obtained. Submit three (3) copies of shop drawings and hydraulic calculations to the Department of Health, Division of Life Safety, for approval. Department of Health approved hydraulic calculations and drawings shall be on site prior to final Department of Health inspection.
4. Suggested sprinkler head locations are shown on the Fire Protection Plans. The sprinkler layout shall be centered in the ceiling tiles. Minimum distance from vertical surface to centerline of sprinkler head: 12 inches. Any deviation from this layout must be approved by the Architect. Provide additional sprinkler heads as required to meet NFPA 13 for adverse conditions, beam and bulkhead conditions, etc.
5. Coordinate the location of sprinkler heads and piping to insure the adequate space is available for installation of equipment. (See Section 15010 regarding Coordination Drawings.) Some revisions to the sprinkler plans may be required as a result of coordination. No extra charges shall be allowed for revisions resulting from coordination issues. Unit prices

from the Bid Form Supplement shall be used to determine compensation for other situations.

6. Cross mains and branch lines shall be held as high above the floor lines as possible.
7. Furnish and install piping and controls as required for complete drainage of the sprinkler systems.
8. Branch lines, cross mains, and feed mains shall be graded towards the drainage point. Provide drain valves at low points. Where special conditions occur in branch lines, valved drainage pipes shall be provided with discharge piped to outside the building or to a floor drain.
9. Test pipes with ball valves shall be provided as required in the sprinkler systems.
10. Provide approved flushing connections at ends of mains and cross mains.
11. Provide a framed placard encased in plexiglass at each sprinkler supply connection to each standpipe, listing the design criteria for that standpipe and sprinkler zone. Also provide a plexiglass enclosed 15 inch x 21 inch plan at each sprinkler connection to each standpipe showing the area served from that standpipe connection.

B. Flow Alarm Switch

1. At each sprinkler branch piping connection to the standpipe, provide a UL listed flow alarm switch immediately downstream from the monitored butterfly valve. Flow alarm switches shall be Grinnell Model WFD, or approved equivalent. Flow switches shall be provided with terminals for wiring to the building fire alarm system. Wiring shall be under Division 16. Provide testing of existing flow alarm switches and monitor switches.

2. Contact closure shall be set for 30 seconds from the start of flow through inspector's test connection (1/2 inch orifice) with valve fully open.

3. Coordinate testing with Owner’s maintenance and fire alarm personnel.

C. Sprinkler Heads

1. Exposed Sprinkler Heads

   a. Exposed sprinkler heads shall be Star Model LD-2 Upright or Pendant Automatic Sprinklers as indicated on the drawings with chrome finish. Temperature rating shall be 165°F.
   b. Provide wire sprinkler guards on sprinkler heads where subject to mechanical damage.

2. Concealed Sprinkler Heads

   a. Concealed sprinkler heads shall be Star, Quasar rated for 165°F. Cover plate color shall be selected by the Architect.

3. Horizontal Sidewall Sprinkler

a. Horizontal sidewall sprinkler heads shall be Star Horizontal Sidewall Model LD-2 rated for 165°F. Sprinkler shall be standard factory bronze.

D. Quick Response Sprinkler Heads

1. Exposed Sprinkler Heads - Quick Response

a. Exposed sprinkler heads shall be Reliable Model GFR Quick Response upright or pendant automatic sprinklers as indicated on the drawings with brass finish. Temperature rating shall be 165°F.

2. Concealed Sprinkler Heads - Quick Response

a. Concealed sprinkler heads shall be Reliable Model F4FR Quick Response concealed automatic sprinkler rated at 135°F. Cover plate color shall be selected by the Architect.

3. Horizontal Sidewall Sprinkler - Quick Response

a. Horizontal sidewall sprinkler heads shall be Reliable Model GFR Quick Response horizontal sidewall sprinkler rated at 165°F. Sprinkler shall be standard factory bronze.

4. Approved Manufacturers: Viking, Central or Reliable.
5. Provide two (2) dozen extra concealed Quick Response sprinklers.
6. Provide six (6) extra Quick Response sprinklers of each other type used.
7. Provide two (2) sprinkler head wrenches for concealed Quick Response sprinkler head.
8. All sprinklers shall be supplied from one (1) manufacturer. Submit one (1) sample of each Quick Response sprinkler to be utilized on this project.
9. Provide spare sprinklers as recommended by NFPA 13; 2-2.13. Deliver to Owner.

2.5 PIPING AND FITTING MATERIAL SCHEDULES

A. Piping or tubing used in sprinkler systems shall be as listed in NFPA 13: Standard for the Installation of Sprinkler Systems. Piping and tubing used in sprinkler systems shall be designed to withstand a working pressure of not less than 175 psig.

B. All piping shall be Schedule 40 black steel with screwed malleable iron-Class 150 fittings.

C. Schedule 40 black steel grooved piping with mechanical couplings similar to Victaulic Style 75 may be used in lieu of screwed fittings.

2.6 PIPE HANGERS AND SUPPORTS

A. General

1. Hanger design shall conform to ANSI Code B 31.1.0 for Pressure Piping and the Manufacturers' Standardization Society of the Valve and Fitting Industry, (MSS) SP-58 and SP-69, unless supplemented or modified herein.
2. Specified bracket clamp and rod sizes are minimum size. Support and hanger design shall include a safety factor of 5.
3. Approved type trapeze hangers may be used instead of separate clevis hangers, with suspension rods having double nuts and securely attached to the construction in an approved manner.
4. Plastic-coated hangers and clamps shall be provided for uninsulated brass or copper pipe, unless shields are provided between hangers or clamps and uninsulated brass or copper pipe.
5. Provide steel required for support of pipes other than steel shown on the structural drawings.
6. Chain straps, perforated bars, wire hangers or expansion shields are not permitted.
7. Inserts for piping shall be of a type which shall not interfere with structural reinforcing and which shall not displace excessive amounts of concrete.
8. Piping located near floors which can be supported from floor or walls shall be provided with approved floor stands, wall brackets, roller supports, masonry piers or similar items.
9. Resilient hangers and isolation devices shall be provided on piping connected to rotating equipment (such as pumps) and on other piping which may vibrate and create audible noise.
10. Rigid hangers for horizontal piping shall provide a means of vertical adjustment after erection.

2.7 VALVE BOX

A. Valve box for remote pre-action control valve shall be UL/FM approved cabinet to be labeled "REMOTE CONTROL VALVE."

2.8 CONTROL VALVE."

A. Valve cabinet shall be fully recessed with flush, full glass door.

1. Valve cabinet shall be Larsen's Figure VC-S-2626-R.

2.9 DRY PIPE AIR COMPRESSOR

A. Provide a sprinkler type air compressor of sufficient capacity to meet the demands of the dry-pipe sprinkler system. Compressor shall be suitable for operating with 208 volt, 3 phase, 60 cycle electric service.

B. Provide a manual starter and automatic start-stop pressure switch control in accordance with NFPA standards.

C. Compressor shall include suction muffler filter, MVD with cooling fan, flywheel and centrifugal unloads, inter-cylinder manifold with single inlet connection,

NEMA open dripproof motor, motor slide rails assembled on steel base and mounted on housekeeping pad.

D. Provide in the compressed air piping a low-pressure alarm switch and a high-pressure alarm switch.

E. Provide a compressed air piping system with Type "L" copper tubing, valves and required accessories.

2.10 DRY PIPE VALVES

A. Provide a dry-pipe valve with standard trimmings including priming chamber, accelerator, priming water level test facility, alarm test bypass, alarm pressure switch, and required piping, fittings, drains and test connections to make a complete installation. The dry-pipe valve shall be a Grinnell Model F302 or approved equivalent. The accelerator shall be a Grinnell Model F311 or approved equivalent.

2.11 FIRE HOSE CABINETS AND ACCESSORIES

A. Hose cabinets shall be provided with a UL approved 2-1/2 inch hose valve with a 2-1/2 inch x 1-1/2 inch reducer; 100 feet total (two 50 foot lengths with couplings) of light lined hose; and adjustable all-fog lexan nozzle suitable for A-B-C fires; and a swivel hose connection. Hose shall be horizontally folded in cabinet. A UL approved water retention device shall be included, similar to Elkhart 43-L.

B. Hose cabinets shall be fully recessed type with flush, full glass door. Decals on face shall identify contents. Refer to Section 10520, Cabinets and Accessories, for additional specifications.

1. Hose cabinets shall be Larsen's Figure HCS-2831-R.

C. Temporary hose racks shall be Larsen's Figure 2.5-100 (two 50 foot lengths with couplings) complete hose rack unit.

2.12 PRESSURE SWITCH

A. Provide pressure alarm switches as shown on the drawings and specified herein. Pressure alarm switches shall be Grinnell Model B-2 pressure switches, or approved equivalent.

PART 3 – EXECUTION

3.1 GENERAL

A. Provide temporary fire protection required by NFPA and the local fire department. Provide shop drawings for temporary fire protection prior to the shop drawing submittal for the remaining fire protection system.

B.

1. Provide design drawings and hydraulic calculations as required by NFPA.
2. Design drawings and hydraulic calculations shall be reviewed and approved by the Owner’s Insurance Underwriter, the City of Philadelphia, and/or the authority having jurisdiction.

C. Install entire sprinkler system in strict accordance with NFPA 13: Standard for the Installation of Sprinkler Systems.

D. Install the standpipe systems in strict accordance with NFPA 14: Standard for the Installation of Standpipe and Hose Systems.

E. Submit copies of hydraulic calculations to the Architect for review.

F. Provide 48 hours' notice to Architect/Engineer prior to hydrostatic testing of fire protection and alarm systems.

END OF SECTION

SECTION 260500

GENERAL ELECTRICAL PROVISIONS

PART 1 – GENERAL

1.1 REFERENCE TO CONDITIONS OF THE CONTRACT

A. The Conditions of the Contract (General, Supplementary and other Conditions) and Division 1 - General Requirements, apply to the work specified in this Division. Unless the specifications contain statements which are more definitive or more restrictive than those contained in the Conditions of the Contract, the specifications shall not be interpreted as waiving or overruling any requirements expressed in the Conditions of the Contract.

B. No claim or additional compensation shall be entertained on behalf of or paid on account of failure to be informed of the above conditions and requirements.

C. Should a bidder find discrepancies in or omissions from the drawings or specifications, or should he be in doubt as to their meaning, he should at once notify the Architect who shall send written instructions to bidders. If these are ignored by the Contractor, he shall be responsible for furnishing the proper or workable equipment as necessary.

D. Before submitting a bid, bidders shall be held responsible to have visited the site of work, attend the Pre-Bid Meeting, and fully inform themselves as to existing conditions and limitations, including rules, rates and fringe benefits, travel pay, affiliation fees and transportation expense prevailing in the local labor market, and no allowance shall subsequently be made on behalf of the bidder by reason of any error on his part.

E. Carefully examine the architectural, structural, heating, ventilating and air conditioning, kitchen, and plumbing drawings and any other contract documents. If any discrepancies occur between the drawings or between the drawings and the specifications, report such discrepancies to the Architect in writing and obtain written instructions as to the manner in which to proceed. No departures from the contract drawings shall be made without prior written approval of the Architect and Owner.

F. Obtain any additional reference drawings and/or information required for installation prior to installing equipment.

1.2 WORK INCLUDED

A. Provide and install a complete and operating electrical installation in accordance with these specifications and accompanying contract drawings. This shall include required labor, material, apparatus and supervision.

B. Without limiting or restricting the volume of work and solely for convenience, the work to be performed will, in general, comprise of the following:

1. Power and/or lighting panels.
2. Branch wiring.
3. Temporary service lighting and power.
4. Wiring of equipment furnished by others and final connections to same.
5. Grounding
6. Lighting fixtures, lamps and controls.
7. Fire alarm system.
8. Installation of equipment supplied by the Owner.

C. Items of labor, material, and equipment not specified in detail or shown on drawings, but incidental to or necessary for the complete installation and proper operation of the several branches of work and described herein, or reasonably implied in connection herewith, shall be furnished as if called for in detail by the specifications or drawings. This includes electrical work associated with mechanical and plumbing work whether indicated on electrical drawings or not.

1.3 WORK NOT INCLUDED

A. The following items of Electrical Construction are not included in this contract:

1. Certain low voltage wiring of mechanical equipment shall be done by the respective Contractor.

2. Certain motors and equipment, such as pumps, fans, etc., shall be provided by others, complete with motor and built-in or separate controllers as covered by such contracts. The extent of work required by this Contractor in connection with the provisions of this equipment is described hereinafter under "Electrical Powered Equipment."

3. Motors connected to driven equipment shall be set by respective Contractor furnishing same.

4. Certain line voltage electrical apparatus such as switches, starters, controllers, transformers, etc., furnished by others shall be delivered to the curb by the Contractor furnishing the equipment, unless specifically noted otherwise. Unload and transport to installation location.

5. Electric heating equipment.

1.4 DEFINITIONS AND ABBREVIATIONS

A. Definitions

1. "Furnish" shall mean supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.
2. "Install" shall be used to describe operations at project site including unloading, packing, assembly, erection, placing, anchoring, applying,

working to dimension, finishing, curing, protection, cleaning, and similar operations, as applicable in each instance.

3. "Provide" shall mean furnish and install, complete and ready for intended use, as applicable in each instance.
4. "Directed" shall mean as directed by Owner prior to installation of equipment.
5. "Indicated" shall mean "indicated on Contract Drawings".
6. "Shown" shall mean "shown on Contract Drawings".
7. "Section" shall mean one of the Specification Sections.
8. "Division" shall mean one of the Specification Divisions.
9. "Article" shall mean one of the numbered paragraphs of the Specification Section.
10. "Work" or "Electrical Work" herein includes products, labor, equipment, tools, appliances, transportation and related items, directly or indirectly required to complete the specified and/or indicated electrical installation.
11. "Code" shall mean any and all regulations and requirements of regulatory bodies, public or private, having jurisdiction over the work involved.
12. "Product" used in Division 26 means material, equipment, machinery, and/or appliances directly or indirectly required to complete the specified and/or indicated Electrical Work.
13. "Standard Product" shall mean a manufactured product, illustrated and/or described in catalogs or brochures, which are in general distribution prior to the date of issue of construction documents for bidding. Products shall generally be identified by means of a specific catalog number and manufacturer's name.
14. "Wiring" shall mean fittings, conduits, wires, junction boxes, connections to equipment, splices, and other accessories required to complete the work.
15. Abbreviations and Symbols: See lists for both on drawings.
16. "This Contractor" shall mean the Contractor responsible for Division 16 work.
17. Contract Documents: drawings, specifications, bid forms, addendum, and change orders.
18. Whenever the phrases "approved by the Architect or Owner," "approved equivalent," or "equivalent to" appear in these specifications, they shall be interpreted as meaning "as recommended by the Architect and approved by the Authority."

B. Reference to the following codes and standards shall mean:

Reference	Definition
NEC	National Electrical Code Current Edition
ASTM	American Society for Testing Materials
NEMA	National Electrical Manufacturers Association
ANSI	American National Standards Institute
FS	Federal Specification, US Government
CS	Commercial Standards issued by US Department of Commerce
NESC	National Electrical Safety Code
NETA	National Electrical Testing Association
ADA	Americans with Disabilities Act

1.5 CODES, PERMITS, AND INSPECTIONS

A. Electrical work, equipment, and materials furnished and installed under this contract shall conform to the requirements of the Power Company, the latest edition of the National Electrical Code, the National Fire Protection Association, and any other governmental or local authorities having jurisdiction. Pay any fees required for the installation of Division 26 work. Certificates of approval shall be obtained in duplicate from any department or agency issuing same, and shall be turned over to the Owner at the completion of the work.

B. Provide any labor, materials, services, apparatus and drawings required to comply with applicable laws, ordinances, rules and regulations, whether or not shown on the drawings and/or specified.

C. Obtain certificates of inspection and approval from authorities having jurisdiction and deliver same to Owner as a prerequisite for final acceptance of the work. Provide record copies of permit applications, permits and other items for which certification is indicated.

1.6 SPECIAL ENGINEERING SERVICES

A. In the instance of complex or specialized electrical systems such as fire alarm, or similar miscellaneous systems; the installation, final connections and testing of such systems shall be made under the direct supervision of competent authorized service engineers who shall be in the employ of the respective equipment manufacturer. Provide the Owner with copies of instruction manuals and booklets for each system and piece of equipment installed. Provide any additional instructions to the Owner over and above that listed above in the care, adjustment and operation of parts of the electrical systems.

B. Pay any and all expenses incurred by these equipment manufacturers' representatives.

1.7 SUBMITTALS

A. Shop drawings, product data, and samples shall be submitted to the Architect for approval.

1. Shop drawings shall be new drawings, and not reproductions or tracings of the Contract Documents. In preparing shop drawings, establish lines and levels for the work specified, and check the drawings to avoid interference with structural features and other work. Immediately call to the attention of the Engineer any interferences for clarification in writing.
2. Manufacturer's literature and data sheets shall be submitted indicating the necessary installation dimensions, weights, materials, and performance information. Each piece of literature shall be identified with the specific specification number, paragraph, and equipment schedule identification.
3. Layout and detail drawings shall be submitted in the form of a sepia reproducible and paper prints. Manufacturer's drawings shall be standard

drawings. Equipment shop drawings shall show specific data and other special features required for review consideration.

4. Equipment shop drawings (8-1/2 by 11 inch sheets) shall be bound together in sets, in loose leaf binders, and shall be indexed in accordance with Specification Section. Additional shop drawings may be submitted at a later date for insertion therein, and the original submittal shall note which shop drawings shall be submitted later. Marked-up catalogs are not acceptable, and shall be rejected.
5. Materials and equipment shop drawings shall be submitted within 30 calendar days of Contract receipt.
6. Manufacturers' instruction manuals shall be submitted together with shop drawings. Furnish instruction manuals and parts listed for each piece of electrical equipment, on 8-1/2 by 11 inch sheets, or catalogs, suitable for loose leaf side binding, packaged separately, and clearly identified. Instructions shall include information pertaining to installation, operation, and maintenance of equipment as applicable. Each piece of literature shall be clearly identified with the specific job equipment identification. Literature shall be factory printed and not reproduced copies.
7. Any characteristic of any piece of equipment which deviates from the characteristics of the equipment specified shall be hi-lighted and circled in red.

B. Submit manufacturers' data, and/or shop drawings of the following:

1. Lighting and Power Panels and Cabinets
2. Wiring Devices
3. Lighting Fixtures
4. Fire Alarm System
5. Distribution Equipment

1.8 OPERATING AND MAINTENANCE INSTRUCTIONS

A. After final tests and adjustments have been completed, furnish the services of qualified personnel to fully instruct representatives of the Owner in the operation and maintenance procedures for equipment installed. Operation and maintenance instructions for major items of equipment shall be directly supervised by the equipment manufacturer's representative. Supply qualified personnel to operate equipment for sufficient length of time as required to meet governing authorities' operation and performance tests and as required to assure that the Owner's representatives are properly qualified to take over operation and maintenance procedures.

1. Notify the Architect, the Owner's representatives and equipment manufacturers' representatives, by letter, as to the time and date of operating and maintenance instruction periods at least one week prior to conducting same.
2. Forward to the Architect the signatures of all present for the instruction periods.

B. Furnish three (3) copies of recommended equipment operation and maintenance procedures manuals as specified herein, assembled and bound together in 8-1/2

by 11 inch three-ring binders. The ring binders shall be submitted to the Architect in accordance with procedures established for shop drawing submittals.

1. The operation and maintenance procedures manuals shall include the following:

    a. Project Title
    b. Architect's Name and Address
    c. Date Submitted
    d. Contractor's Name and Address
    e. Index (in alphabetical order, with page numbers)
    f. General Description of Each System
    g. Parts List, identifying the various parts of equipment for repair and replacement purposes.
    h. List of spares recommended for normal service requirements.
    i. Operating instructions outlining step-by-step procedures required for system start-up and operation. The instructions shall include the manufacturer's name, model number, service manual, and brief description of each piece of equipment and its basic operating features.
    j. Maintenance instructions describing routine maintenance and lubrication procedures and schedules, and simplified diagrams which illustrate the systems as installed.
    k. Wiring and control diagrams for each piece of equipment, showing "as installed" conditions.

1.9 SINGULAR NUMBER

A. References made to any item in the singular number shall apply equally to as many identical items that the work may require.

1.10 PROTECTION OF SERVICES

A. Repair, replace and maintain in service any new or existing utilities, facilities or services (underground, overground, interior or exterior) damaged, broken or otherwise rendered inoperative during the course of construction. The method used in repairing, replacing or maintaining the services shall be approved by the Owner and Architect.

1.11 PROTECTION OF FLOORS

A. Protect existing flooring from damage during the construction period. Provide plywood or similar material under equipment or materials stored on floors, and in areas where construction may damage the floor surfaces. Replace floor surfaces (including sealer) damaged during the construction.

1.12 TEMPORARY LIGHT AND POWER SERVICES

A. Refer to the Division 1, General Requirements, of these specifications to determine responsibility for temporary lights, power, water and heat.

B. The Electrical Contractor is responsible for all temporary power and lighting requirements throughout construction. The Electrical Contractor shall review all associated phasing plans and schedules and provide any and all equipment, either temporary or permanent, required to maintain or provide temporary power and lighting to all areas of this facility, throughout the construction process.

In addition to minimal temporary lighting and power needed for construction operations, areas that will be Owner-occupied throughout construction shall be provided with temporary power and lighting services that meet or exceed the existing services that currently serve these areas.

C. The electrical documents indicate the final arrangement for the power/lighting/communication/ signal/data systems and do not reflect equipment, devices, etc., needed to provide the required temporary power and lighting services.

D. At the completion of this project, all temporary lighting, temporary receptacles, and temporary wiring shall be removed in their entirety.

1.13 SUBSTITUTIONS

A. It is the intent of these specifications that wherever a manufacturer or product is specified, and the term "or approved equivalent" is used, the substituted item must conform in respects to the specified item. Consideration shall not be given to claims that the substituted item meets the performance requirements with lesser construction. Performance indicated in schedules, drawings and specifications shall be interpreted as minimum performance.

B. Note that where specific manufacturers' products are indicated in the Contract Documents, the associated systems have been designed on the basis of that product's physical characteristics. Where specific manufacturers' products are indicated in the Contract Documents and other manufacturers' names are listed, the associated systems have been designed on the basis of the first-named manufacturer's product. When products other than those used as the basis of design are provided, pay additional costs related to modifications to the systems and/or structure required by the use of that product.

C. Equipment of one type shall be the products of one manufacturer; similar items of the same classification shall be identical, including equipment, assemblies, parts and components.

D. Materials furnished shall be determined safe by a nationally recognized testing organization, such as Underwriters' Laboratories, Inc., or Factory Mutual Engineering Corporation, and materials shall be labeled, certified or listed by such organizations

E. Where a specific manufacturer is specified and other manufacturers' names are listed as equivalent, the bid shall be based upon the specified or equivalent

manufacturers only. Any substitutions from the specified or equivalent manufacturers shall be offered as a Bidder's Initiative.

F. Final acceptance of substitutions shall be at the discretion of the Architect/Engineer.

1.14 PERFORMANCE OF EQUIPMENT

A. Materials, equipment and appurtenances of any kind, shown on the drawings, hereinafter specified or required for the completion of the work in accordance with the intent of these specifications, shall be completely satisfactory and acceptable in operation, performance and capacity. No approval either written or verbal of any drawings, descriptive data or samples or such material, equipment and/or appurtenance shall relieve the Contractor of his responsibility to turn over the same to the Owner in perfect working order at the completion of the work.

B. Any material, equipment or appurtenances, the operation, capacity or performance of which does not comply with the drawings and/or specification requirements or which is damaged prior to acceptance by the Owner shall be held to be defective material and shall be removed and replaced with proper and acceptable materials, equipment and/or appurtenances or put in proper and acceptable working order, satisfactory to the Architect and Owner, without additional cost to the Owner.

1.15 WEATHERPROOFING LOCATIONS (WP)

A. Electrical apparatus, such as outlet boxes, switches, thermal switches or manual starters, disconnect switches, combination switches and starters, motor control centers, and motor starters shall be weatherproof gasketed type, NEMA Types 3 or 4 in the following instances:

1. On surface of exterior face of building, including areas where not under canopies, cast boxes with threaded hubs must be used and under canopies steel boxes with gasket connections to devices.
2. In any areas where specifically noted "WP" or required by the NEC or Electrical Regulations mentioned herein.
3. Within air conditioning enclosures.
4. In underground splice boxes.
5. On building roof.

1.16 CLEANING, PROTECTING AND ADJUSTING

A. Materials shall be stored in a manner that shall maintain an orderly, clean appearance. If stored on-site in open or unprotected areas, equipment and material shall be kept off the ground by means of pallets or racks, and covered with tarpaulins.

B. Equipment and material, if left unprotected and damaged, shall be repainted or otherwise refurbished at the discretion of the Owner. Equipment and material is subject to rejection and replacement if, in the opinion of the Architect or the

manufacturer's engineering department, the equipment has deteriorated or been damaged to the extent that its immediate use or performance is questionable, or that its normal life expectancy has been curtailed.

C. During the construction period, protect ductwork, raceways, conduit and equipment from damage and dirt. Properly cap ductwork and conduit.

D. Vacuum cabinets, switch boards, distribution panels, lighting and power panels, etc., after completion of work.

1.17 ACCESSIBILITY

A. Coordinate to ensure the adequacy of the size of shafts and chases, and the adequacy of clearances in hung ceilings and other areas required for the proper installation of this work.

B. Locate equipment which must be serviced, operated or maintained in fully accessible positions. Equipment requiring access shall include, but is not necessarily limited to, motors, junction boxes, fire dampers, controllers and switchgears.

C. Provide, as required, the exact locations of access doors. Provide access doors in finished construction for installation by others. Locations of access doors in finished construction shall be submitted in sufficient time to be installed in the normal course of the work. Keep conduit and other electrical devices clear of access door openings to allow adequate space to work in or enter the concealed space.

D. Access panels shall not be smaller than 12 inches by 16 inches and shall be all-steel construction with a No. 16 gauge wall or ceiling frame and a No. 14 gauge panel door with not less than 1/8 inch fireproofing secured to the inside of the door. Doors shall be provided with concealed hinges and be secured with suitable clips and countersunk screws. Outside of access panels shall finish flush with finished wall or ceiling surfaces. Covers shall be factory primed with two (2) coats of primer.

1.18 GUARANTEE

A. Guarantee material, equipment and workmanship for a period of one (1) year from date of final acceptance by Architect and Owner. Replace defective material and workmanship furnished and installed and other work and equipment damaged thereby.

B. In addition to the one (1) year guarantee, furnish any warranties or guarantees that normally come with specific pieces of equipment that exceed the one (1) year guarantee. These additional warranties shall be given to the Owner for the time period specified.

1.19 OWNER COORDINATION

A. Coordinate any and all activities with the designated Owner's representative, which involves a tie to existing electrical systems or which, in any way, may interfere with or interrupt existing electrical systems. Where there are scheduled ties or interruptions or where there is a reasonable chance of interruption, written notice must be obtained from the Owner prior to work commencing.

1.20 COORDINATION

A. Coordinate and furnish in writing to others, including the Architect, any information necessary to permit the work of all contractors to be installed satisfactorily and with the least possible interference or delay.

B. Because of the complexity of the construction of this project, each Contractor shall participate in the preparation of coordination drawings. The procedure shall be supervised by the Construction Manager. No installation of permanent systems shall proceed until the coordination drawings are approved by the Construction Manager and the Architect. No extra charges shall be allowed for changes required to accommodate installation of system by other contractors.

C. Coordination drawings shall be prepared for each floor level and shall be of a scale not less than 1/4 inch - 1 foot. Coordination drawings shall include equipment, lighting, conduit and raceway plans, and elevations with dimensions. Coordination drawings shall also include required access points through ceiling panels, access doors, cover plates, etc.

D. Devices and appurtenances which are to be installed in finished areas shall be coordinated with the Architect for final approval as it relates to location, finish, materials, color, and texture.

E. When work is installed without proper coordination, changes to this work deemed necessary by the Architect shall be made to correct conditions without any extra cost to the Owner.

1.21 PRE-BID SITE VISIT

A. Bidders shall visit the site and become completely familiar with existing conditions prior to submitting their bid. No extra charges shall be allowed as a result of existing conditions.

PART 2 – PRODUCTS

2.1 MATERIALS AND WORKMANSHIP

A. Equipment shall be so built and installed as to deliver its full rated capacity at the efficiency for which it was designed. Equipment shall meet the detailed requirements indicated, and shall be suitable for the installation shown.

B. Where two or more units of the same class of equipment are furnished in same Section of Specifications, provide each from the same manufacturer. Furnish equipment and materials new and free from defects of size, make, type and quality herein specified, or as reviewed. Work shall be installed in a neat and workmanlike manner.

C. Capacities, dimensions, or sizes specified or indicated are minimum, unless otherwise stated. Tolerances used in rating or testing standards specified shall not be allowed in determining capacities of equipment.

D. Materials shall be listed by the Underwriters' Laboratories, Inc. where applicable and shall be manufactured in accordance with applicable standards established by ANSI, NEMA, ASTM, and IEEE.

E. Any products judged not in accordance with the Specifications either before or after installation shall be rejected.

F. Where products are specified with no reference to a particular manufacturer's product, the product used shall meet or exceed industry construction and testing procedure standards applicable to the product, for life expectancy, performance and safety.

G. Where electrical products are a fabricated assembly, the fabricator shall assume responsibility for correct operation of the entire assembly and of its individual components.

H. Tools: Provide special tools for proper operation and maintenance of the equipment.

2.2 IDENTIFICATION

A. Switchgear, panels, relays, terminal control cabinets, junction boxes, contactors, circuit breakers, safety switches, motor starters, and similar items shall be identified with a single plastic nameplate made up of two laminated black plastic sheets bonded with a middle sheet of white plastic and characters engraved in one black sheet to the depth of the white plastic. Nameplate shall read as follows:

1. First line shall be 1/2 inch letters stating panel/equipment name.
2. Second line (if applicable) shall be 1/4 inch letters stating the existing panel name in parentheses ( ).
3. Third line shall be 1/4 inch letters stating voltage/phase.
4. Fourth line shall be 1/4 inch letters stating breaker number, panel number, and room name/room number (Owner’s room number) from which it is fed.
5. Fifth line shall be1/4 inch letters stating function and/or equipment which it controls.

B. A typewritten list of nameplates shall be submitted to the Owner and the Architect for approval before ordering same.

C. Label receptacle plates with identification showing panel and breaker number from which it is fed. Labels shall be made using the Dymo Posiprinter System.

D. Label junction boxes and pull boxes, showing circuit numbers contained in the enclosure. Use an approved marking device.

E. Label wire with an identification tag showing panel and breaker number from which it is fed at splices, junctions, and terminations as explained in this specification.

F. Label fire alarm device bases with identification showing device address number assigned by fire alarm system manufacturer. Labels shall be made using the Dymo Posiprinter system.

2.3 ANCHOR BOLTS

A. Provide and set in place, at the time of pouring of concrete foundations, necessary anchor bolts as required for the equipment called for under these specifications. Anchor bolts shall be of the hook type, of proper size and length to suit the equipment. Anchor bolts shall be set in pipe sleeves of approximately twice the bolt diameter and one half the embedded length of the bolt. Assume full responsibility for proper emplacement of the bolts.

2.4 INSERTS

A. Provide inserts of an approved metallic type for hangers. Where two or more parallel conduits are installed, continuous inserts may be used. Where required to distribute the load on the inserts, a piece of reinforcing steel of sufficient length shall be passed through the insert.

2.5 SLEEVES

A. Provide sleeves in all roofs, floors, and any fire-rated walls. Each sleeve shall extend through its respective floor, wall or partition and shall be cut flush with each surface unless otherwise required.

B. Sleeves in bearing and masonry walls, floors and partitions shall be standard weight steel pipe finished with smooth edges. For other than masonry partitions, through suspended ceilings, and for concealed vertical piping, sleeves shall be No. 22 USG galvanized iron.

C. Sleeves shall be properly installed and securely cemented in place.

D. Floor sleeves shall extend 1 inch above the finished floor, unless otherwise noted. Space between floor sleeves and passing conduit shall be caulked with graphite packing and waterproof caulking compound.

E. Where conduits pass through waterproofed floor or walls, design of sleeves shall be such that waterproofing can be flashed into and around the sleeves.

F. Where conduits pass through roofs, sleeves shall be installed and flashed and made watertight by the General Contractor unless otherwise specified or shown on the drawings.

G. Sleeves through exterior walls below grade shall have the space between conduit and sleeve caulked watertight using an approved method.

2.6 FIREPROOFING

A. Where sleeves or other penetrations pierce floors or walls having specific fire ratings, the space between the sleeve and passing conduit shall be fireproofed using 3M Series 7900 Penetration Fire Stop putty. Where a cable tray passes through fire-rated walls, use seal bags as manufactured by International Protection Coatings Company. Installation method shall be per manufacturer's recommendations and approved by the Architect/Engineer.

2.7 WIRE GAUGE

A. The sizes of conductors and thickness of metals shown on the drawings or mentioned herein shall be understood to be American Wire Gauge.

2.8 MISCELLANEOUS METAL AND STRUCTURAL STEEL

A. Scope of Work: Furnish labor, materials, equipment and services necessary for the installation of miscellaneous metal and structural steel work required to complete this contract. Erect structural steel required for the proper support of equipment required under this contract.

B. Supports, brackets, and clamps and other items specified herein shall be installed in strict accordance with the best practices and recognized code.

C. Materials: Structural steel members required under this part shall conform to ASTM Standard Specification A-7. Other materials shall be as specified hereinafter.

D. Priming: steel and iron work shall be primed with Rust-Oleum 769 or approved equivalent. Before priming, metal shall be thoroughly cleaned free from scale, rust and dirt.

E. Anchors: Provide anchors, bolts, screws, dowels and connecting members, and do cutting and fitting necessary to secure the work to adjoining construction. Build in connecting members to masonry, concrete and structural steel as the work progresses.

F. Supports and Brackets: shall be neatly constructed to structural shapes to adequately support the equipment intended. Supports must be approved prior to installation. Attention is directed to the proper rigid support required for conduit. Field conditions shall regulate the type of support required.

2.9 VIBRATION ISOLATION MOUNTS

A. Provide vibration isolation mounts for all substations, power centers, transformers, etc. All vibration isolation mounts shall be Amber-Booth spring type applicable for the size and weight of the equipment.

2.10 GRADING, FERTILIZING, AND SEEDING

A. Provide labor, materials, equipment, and services required to strip and store topsoil, replace topsoil, and rough and finish grade and fertilize and seed areas disturbed beyond the work area of the General Contract. Topsoil must be stored where directed on the site.

2.11 BITUMINOUS PAVING

A. Provide labor, materials, equipment, and services necessary to repair pavements disturbed under the Contract.

B. Materials, methods, and workmanship shall conform with the requirements of the PA Department of Highways, as published in its specifications Form 408, as amended to date.

C. All patching of existing areas shall match existing materials.

2.12 MOTORS

A. Motors shall be built in accordance with the latest standards of NEMA and as specified. Motors shall be tested in accordance with ASA C50 and conform thereto with respect to insulation resistance and dielectric strength.

B. Each motor shall be provided with conduit terminal box and adequate starting and protective equipment as specified or required. The capacity shall be sufficient to operate associated driven devices under conditions of operation and load and without overload, and shall be at least the horsepower indicated or specified. Each motor type shall be for quiet operation.

C. Motor starting equipment must be selected so that starting currents or transients do not have an adverse effect on lighting or other electrical equipment. No open transition wye-delta starting of motors shall be permitted.

PART 3 – EXECUTION

3.1 GENERAL

A. Provide information to the General Contractor for any chases or openings required under this Contract. No cutting shall be done which may affect the building structurally or architecturally without the prior approval of the Architect. Damaged construction shall be restored to its original conditions and finished to

match the surrounding work. Refer to "Supplementary General Conditions" for the disposition of Cutting and Patching.

B. Grades, elevations, and dimensions shown on the drawings are approximately correct; however, field check and otherwise verify such data at the site before proceeding with the work. Make necessary survey equipment available at all times and make use of such equipment wherever necessary to properly install equipment.

C. The Contractor shall be entirely responsible for apparatus, equipment, and appurtenances furnished by him or his subcontractors in connection with the work and special care shall be taken to protect parts thereof in such manner as may be necessary or as may be directed. Protection shall include covers, crating, sheds or other means to prevent dirt, grit, plaster or other foreign substances from entering the working parts of machinery or equipment. Special care shall be taken to keep open ends of pipes closed while in storage and during installation. Where equipment must be stored outside the building, it shall be totally covered and secured with heavy weatherproofing tarps and kept dry at all times. Where equipment has been subjected to moisture, it shall be removed from the site and replaced with new equipment. Protect open excavating until covered over.

D. Due to the schematic nature and small scale of the electrical drawings, it is not possible to indicate exact locations, offsets, fittings, access panels, pull boxes, and miscellaneous parts which may be required to form a complete system. The drawings are generally indicative of the work to be installed. Arrange work accordingly furnishing necessary parts and equipment as may be required to meet the various conditions and to provide a complete circuit from end use device to circuit protective device in panel.

E. The Contractor shall include in his bid price, the cost to furnish and install twelve (12) additional 20 amp circuits For each panel shown on the drawings. Each circuit shall include up to eight (8) receptacles along with circuit breakers, conductors, ground, and conduits.

F. Within thirty (30) days after acceptance of bids, submit to the Architect for approval, a complete list of equipment and materials to be furnished under this contract, giving names and addresses of manufacturers and material they intend to furnish. This source of supply shall be listed on forms available from the Architect.

3.2 CLEARANCES

A. Take caution when on routing conduit and location of equipment. In many cases, clearances in ceiling plenums is limited due to ductwork and other mechanical lines and systems and steel. The Contractor shall be responsible for routing around mechanical equipment and ducts in order that everything can remain concealed in finished areas.

3.3 CUTTING AND PATCHING

A. Provide cutting and patching necessary to install the work specified herein. Patching shall match adjacent surfaces. Refer to Section 01045, Cutting and Patching, for specific direction.

B. No structural members shall be cut without prior approval of the Architect, and such cutting shall be done in a manner directed by the Architect.

C. Provide ceiling removal and replacement where work above ceilings is required. Replace ceiling components damaged in the process.

D. Provide patching where electrical devices are removed from walls, ceilings or floors as required under demolition.

3.4 PAINTING

A. Finished painting shall be performed by others except for standard factory finishes.

B. Electrical motors, pump casings, and other similar items shall be provided with three coats of machinery enamel at the factory, and shall be carefully cleaned, rubbed down, and oiled after installation.

3.5 LOCATIONS

A. Apply for detailed and specific information regarding the location of equipment as the final location may differ from that indicated on the drawings. Outlets, equipment or wiring improperly placed because of failure to obtain this information shall be relocated and re-installed without additional expense to the Owner. Determine the actual direction of door swings, so that local switches and other controls shall be installed at the lockside of doors, unless otherwise noted. Improperly located switches shall be relocated without additional expense to the Owner.

B. The design shall be subject to such revisions as may be necessary to overcome building obstructions. No changes shall be made in location of outlets or equipment without written consent of the Architect and Owner.

C. Unless otherwise mentioned or indicated, mounting heights of outlets are shown on the drawings or in the specification. Dimensions given shall be considered to be from center of outlet to finished floor.

D. Coordinate the exact location and elevation of all electrical devices and fixtures with the architectural interior elevation plan and reflective ceiling plan prior to installation.

E. Properly rough for the electrical conduit and equipment under this contract and modify as required for coordination during the construction period.

3.6 DUST, DIRT AND NOISE

A. Carry out new work and make changes, relocations, and installations with a minimum of noise. Site areas and new equipment, floors and walls, shall be adequately protected from dust and dirt caused by the work. Protection shall include suitable temporary barriers or coverings. The exterior and interior premises of each building shall be kept clean as possible during construction. Damages to surfaces or equipment as a result of negligence shall be replaced or corrected as required.

3.7 RECORD DRAWINGS

A. During the construction period, maintain in good order a complete set of blue line electrical contract drawings. Record the actual electrical installation as the work progresses. Include changes to the contract and to equipment sizes and types. Keep these drawings available at the site at all times for inspection.

B. Take proper caution against the use of superseded drawings. Check such copies and mark "void." Where drawings have been corrected by memorandum, assume the responsibility for marking all drawings so affected with the changes; such marked drawings shall remain in use until revised drawings are issued.

C. At the conclusion of the work, obtain a set of sepias from the Architect. Incorporate "as built" data in a clearly legible manner. Return such marked prints or sepias within 30 days to the Architect.

D. At the conclusion of the work, provide to the Architect a complete set of drawings which indicate precisely how the electrical single line and riser diagram equipment has been installed. Return such reproducible drawings within 30 days to the Architect.

3.8 EQUIPMENT, FOUNDATIONS, SUPPORTS, PIERS AND ATTACHMENTS

A. Provide necessary foundations, supports, pads, bases and piers required for equipment specified in this division; submit drawings in accordance with Shop Drawing Submittal requirements prior to the purchase, fabrication or construction of same.

B. Provide concrete pads for base-mounted transformers and rotating equipment, and for floor-mounted equipment located in equipment rooms and as indicated on the drawings. Pads shall be extended 6 inches beyond matching base in all directions with top edge chamfered. Inset 6 inch steel dowel rods into floors to anchor pads.

C. Construction of foundations, supports, pads, bases and piers, where mounted on the floor, shall be of the same materials and same quality of finish as the adjacent and surrounding floor material.

D. Equipment shall be securely attached to the building structure in an approved manner. Attachments shall be of a strong and durable nature and any attachments that are, in the opinion of the Architect, not strong and durable shall be replaced as directed.

3.9 SCAFFOLDING

A. Furnish and erect scaffolding and ladders required in the installation of wiring, equipment and fixtures.

3.10 ENVIRONMENTAL AIR PLENUMS

A. In spaces over hung ceiling which are used for environmental air handling purposes as defined by Article 300.22C of the National Electric Code, power data and communications cable must be in conduit or of the type cable rated for air plenum use. Cable type and/or raceway is generally indicated on the electrical drawings and specifications although the Contractor shall be responsible to clearly define ceiling space used for environmental air purposes.

END OF SECTION

SECTION 260519

WIRES AND CABLE

PART 1 – GENERAL

1.1 DESCRIPTION

A. Provide wires and cables in accordance with the Contract Documents.

B. This section includes cable requirements for systems below 600 volt insulation.

C. Conductors shall be soft drawn copper having conductivity not less than 98 percent.

D. No aluminum conductors or lugs or splicing devices shall be permitted.

E. All wiring and cables shall be installed in raceway unless otherwise noted.

PART 2 – PRODUCTS

2.1 600 VOLT WIRE

A. Insulation and conductor types shall be as follows:

1. Conductors shall have a 600 volt insulation 90°C heat resistant type THHN.
2. All wire shall be stranded, unless otherwise noted.

B. Manufacturers:

1. Cablec Continental Cable Company
2. Pirelli Cable Corporation
3. Southwire Corporation
4. The Okonite Company

2.2 TYPE MC CONDUCTOR CABLE

A. Conductors connecting receptacle and switch circuits in partitions to lighting and power grid boxes in finished areas only, in accordance with the NEC, may be 3-, 4-, or 5-wire, Type MC, consisting of #12 AWG copper THHN insulated phase conductors and one full size green insulated conductor, where acceptable to the authority having jurisdiction. Ground conductor shall be terminated to grounding system as required by NEC and authority having jurisdiction. All conductors shall be stranded, unless otherwise noted, and shall be enclosed in the flexible steel armored cover.

B. Manufacturers:

1. AFC/A Nortek Company
2. Rome Cable Company

C. Permitted Uses

1. From building wiring junction box to each light fixture in lengths not to exceed 6 feet.
2. Branch circuit wiring to room electrical devices.

2.3 PLENUM CONDUCTOR CABLE

A. Plenum conductor cable may be used for NEC Class 2 or 3 wiring if conductor cable is UL listed in accordance with UL 910 and UL 1820 and is installed in accordance with the NEC and is acceptable to the Authority having jurisdiction. Insulation types, UL listing, and written acceptance by the local authority shall be submitted for review.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Provide circuit wiring complete as shown on the drawings, and as hereinafter specified or required. The minimum size of wire for branch circuits shall be No. 12, except 120 volt circuits over 100 feet in length shall be No. 10; 120 volt circuits over 150 feet in length shall be No. 8. Wiring shall be increased in size if so demanded by wattage of load.

B. 600 volt wiring shall be color coded. Consistent phase identification of wires from service feeders to branch circuit wires shall be maintained as follows:

1. 120/208 volts - Normal - Phase A.....Black
2. 120/208 volts - Normal - Phase B.....Red
3. 120/208 volts - Normal - Phase C.....Blue
4. 120/208 volts - Neutral.....White
5. 120/208 volt - Ground Wire.....Green

C. Fire alarm wiring color coding shall be per manufacturer’s recommendation or as directed by the Owner to match existing.

D. Do not pull wires into raceways until raceways are permanently in place and termination points are not subject to damage.

E. Do not use uninsulated wire conductors.

F. Provide excess free conductor end length at termination points, adequate to make up splices and terminations, permitting neatly training conductors, and in any case not less than:

1. No. 14 through 10 AWG - 6 inches
2. No. 8 or 6 AWG - 10 inches
3. Larger than No. 6 AWG - 18 inches

G. Support vertical cables as required by Code. Use lock type cable support bushings having internal wedges and retaining collars. Locate support points in readily accessible pull boxes sized to code requirements.

H. Circuit wiring in cabinets, panels, pull boxes, etc., shall be tied and held with Thomas & Betts Nylon Self-Locking Ty-Raps, or approved equal.

I. Equip large pull, junction or terminal boxes with suitable racks to support, arrange, and retain wire and cable in an orderly manner.

J. Equip conductors smaller than No. 4 AWG, in wireways, gutters, pull boxes, terminations, etc., with Thomas & Betts E-Z-code wire markers. Designate panel and circuit number on each individual marker.

K. Equip conductors No. 4 AWG or larger size, and feeder conductors with metal, fibre or fireproof linen tags or with wrap around markers. Designate panel circuit number on each individual marker. In addition, designate use of each set of conductors on a common tag or on each individual conductor marker. Tagging shall include panel source and feeder size of equipment supply.

L. Where the single pole work is used on branch circuits, circuit wiring may be grouped in accordance with the NEC. The drawings are schematic and diagrammatic and indicate the general method of installing circuit wiring and the outlets which are to be supplied.

M. Lighting and convenience outlet circuiting are indicated on the drawings separately as single pole work for clarity; however, grouping circuits in accordance with the NEC and connecting to circuit boxes at any convenience point as required by the NEC, providing a minimum of 20 percent spare future capacity in each raceway, is permitted.

N. The minimum sizes of wire on an installation shall be as follows:

Lighting and Power Circuits	12 AWG
Signal Circuits - with common or individual leads	14 AWG
Remote Control Leads	As recommended by manufacturer
Low Voltage Light Control, Intercom, Nurse Call, and Fire Alarm Systems	Twisted Pair, Non-Shielded or Shielded as shown on drawings or recommended by manufacturer
Fixtures	14 AWG Min. and as required by Underwriters Laboratories

O. Install in each empty interior conduit, one nylon measuring fish line for the future installation of wire and cable.

P. Great care shall be exercised in pulling wires into the conduits so as not to injure the insulation. Only UL approved lubricants shall be used to assist in the pulling in of wires with an outer covering or braid.

Q. Where switch boxes are used as the termination of the "home runs" in addition to the switch legs, not less than a two-gang box shall be used, in order to provide ample room for wiring.

R. Branch lighting circuits feeding exterior yard lights and parking lot lights shall be direct burial cable type UF moisture resistant with 600 volt insulation. Where drawings indicate use of conduit, the cable feeding these lights shall be pulled in rigid steel conduit and shall utilize standard type THHN wire. This conduit shall not require a concrete envelope, however, it shall have each joint sealed watertight with a suitable mastic and sealing compound. Install the cable feeding exterior in PVC conduit with a concrete envelope as described elsewhere in the specifications in "Underground Raceways."

S. The size and general location of the various feeders are shown on the drawings; however, determine the exact location and routing of feeders at the site.

T. Communications, sound and other low voltage wiring shall be of size and insulation recommended by the manufacturer of the equipment being served.

U. In every pull or splice box and all other places where wires and cables may not be readily identified by nameplate on the equipment to which they connect, each circuit shall be identified with a permanent identification tag securely fastened to the conductors. Conductors of a feeder or branch circuit shall be laced together prior to tagging. Identification tags shall have the number of conductors, gauge and circuit identification stamped thereon in 1/4 inch high letters. Tags shall be made of a non-metallic material and shall be approved before installation.

V. Where Type MC conductor cable is used, provide proper support from building structure or install in "power" section of cable tray.

W. Each 120 volt designated circuit shall have its own individual full size neutral and insulated equipment ground throughout the circuit.

END OF SECTION

SECTION 260526

GROUNDING

PART 1 – GENERAL

1.1 DESCRIPTION

A. Provide all system equipment and static grounding in accordance with the Contract Documents and in full compliance with Article 250 of the National Electric Code 2014 Edition, and local codes.

B. Ground every device and metal part of the electrical system.

C. Maintain continuity of system and equipment grounds throughout the electrical installation unless specifically shown otherwise. Provide ground bushings and jumpers where normal metallic ground paths are interrupted.

D. Grounding shall be accomplished by means of a grounding triod as indicated on the drawings and generally outlined in the subsequent paragraphs. In addition, grounding shall be connected to the city water feed.

E. All electrical equipment, cabinets, boxes, conduit and metal raceways shall be grounded in accordance with the NEC, NFPA 99 and as shown on the drawings and as specified herein.

F. All connections to apparatus and conduits shall be made with an approved type of solderless connector. Connectors shall be securely bolted or clamped to the equipment. All contact surfaces shall be thoroughly cleaned and bright before connections are made in order to insure a good metal-to-metal contact.

G. All underground cable splicing shall be thermite welded.

H. Tie all grounding systems together at their origins as shown on the Drawings and as called for by the NEC.

I. Provide an insulated ground wire sized in accordance with the NEC in every conduit carrying 100 amps or over, whether or not it is shown on Drawings.

J. A solid ground shall be provided for the complete conduit system, feeder neutrals, motor frameworks, transformer cases, neutral of 480 volt and 208 volt building service, heating equipment enclosures, and other items as required.

1.2 GROUNDING TRIOD

A. Driven rod assembly shall consist of four (4) ground rods with three (3) spaced 6 feet apart forming an equilateral triangle and one (1) in the center.

B. One of the rods shall be equipped with a clamp at the top to accommodate a No. 4/0 bare stranded copper ground cable to the system ground base. A No. 4/0

bare stranded copper cable shall circle the three rods and be brazed to each rod. Cable shall tie into system neutrals and switchgear cases, and other metallic parts as required.

C. Upper portions of the ground rods shall be located near the surface. Cables connecting ground rod assemblies shall be installed 2 feet below grade. Grounding conductors shall be installed in such a manner as to allow the shortest and most direct path between equipment and ground.

1.3 CITY WATER PIPE CONNECTION

A. The supplemental grounding system shall be comprised of a common ground bus cable interconnected to an acceptable metallic cold water service pipe. The water pipe connection shall be made with a clamp type ground fitting that bonds the cable to the water pipe. Around the water meter, a bonding jumper shall be installed and connected by means of approved ground clamps.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Ground conductors shall be of size indicated or required by code and type/manufacturer as listed in Section 16120, Wires and Cables.

B. Ground rods shall be copper-clad steel, 3/4 inch diameter and 10 feet long.

C. Connectors shall be as manufactured by Burndy, O.Z. Gedney, or Erico.

D. Exothermic welding shall be Erico, Burndy, or O.Z. Gedney.

E. Accessible connections shall be made with multiple bolt silicon bronze connectors specifically designed and approved for the connection to be made.

PART 3 – EXECUTION

3.1 INSTALLATION

A. The neutral wire for the electrical system shall not be used to ground miscellaneous conduits.

B. Ground wires required by the National Electrical Code and/or the utility company.

C. The resistance between the grounding system and absolute earth shall not exceed 10 ohms and shall be measured in the presence of the Architect's representative.

D. The equipment grounding terminal bars of the normal and essential electrical system panel boards shall be bonded together with an insulated continuous copper bonding jumper not smaller than No. 4 copper.

3.2 EQUIPMENT GROUNDING

A. Cable shielding, metallic conduits, wireways, metal enclosures of busways, cable boxes, electrical equipment housings and all noncurrent carrying metallic parts shall be grounded. Run a separate ground wire to all equipment.

B. All conduit stub-ups shall be grounded and where multiple stub-ups are made within an equipment enclosure, such as a switchboard, they shall be equipped with grounding bushings and bonded together and to the enclosure and the enclosure ground bus.

C. Provide bonding devices, fittings or jumpers at expansion fitting, isolation sections or wherever continuity of ground is broken.

D. Install all grounding conductors with sufficient slack, to avoid breaking due to settlement or movement of conductors or attached points.

E. Motors shall be grounded by means of a grounding conductor in the same raceway with the motor feeder connected to a grounding bushing at the motor terminal box and the ground bus in the motor control center or to the incoming conduit grounding bushing of an individually mounted motor starter.

F. Where flexible conduit is used for all or part of a conduit run, except lighting branch circuits, a grounding conductor shall be provided in the conduit and connected to grounding bushings at each end of the run.

G. Under no circumstances shall a neutral conductor or neutral bar in an enclosure be grounding.

3.3 FEEDER GROUNDING

A. Run a separate insulated ground for feeders.

B. Size grounds in accordance with the NEC or as noted on the drawings.

END OF SECTION

SECTION 260529

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.1 DESCRIPTION

A. Provide products to suspend, attach, support and otherwise retain in location, electrical work.

1. The specified requirements herein include support and hardware information of a general nature. Where additional requirements are stated elsewhere in the specification related to specific products and conditions, such additional requirements shall supersede these general specifications.

B. Approvals: Obtain approval before cutting, drilling, or welding to, structural members. Where cutting, drilling, or welding is permitted, this work, as required for product support, is a part of product installation electrical work.

C. Welding: Use certified welders for welded installation. Steel in weld area shall be cleaned before and after welding operations, and refinished after welding.

1. Do not weld raceway pipe straps to structure.

D. Use electrically driven MG set for welding. No solid state welders shall be permitted.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Use expansion shield anchors or toggle bolts of the following manufacturers.
1. Phillips Drill Company, Inc. "Red Head Self Drilling"
2. Rawl Products Company "Saber Tooth"
3. McCulloch Industries "Kwik Bolt"

PART 3 – EXECUTION

3.1 INSTALLATION

A. Provide common support trapezes for parallel raceways.

B. Use manufactured preformed U-Channel system having accessory connecting and clamping devices available where parallel raceways are to be supported. Load channel system not to exceed manufacturer's recommendation.

C. Fabricate supports for transformers, panel boards, cable tray, lighting fixtures, cabinets, pull and junction loads, and similar electrical products from preformed

U-Channel systems. Load channel system not to exceed manufacturer's recommendations.

D. Use preformed U-Channel concrete inserts preset into forms to secure hangers suspended from slabs.

E. Use concrete expansion shield anchors or preformed U-Channel cast-in-place concrete inserts for attaching electrical products to concrete walls.

F. Support loads from stud anchors or concrete inserts at not to exceed manufacturer's live loading recommendations.

G. Do not use powder-charge driven fasteners.

H. Do not drill holes or install driven fasteners in concrete at less than 12 inches from prestressed steel.

I. Do not use nylon or similar concrete inserts without prior approval, except for supporting 1 inch or smaller individual runs of conduit or tubing.

J. Use toggle bolts to attach supports for electrical products to hollow masonry walls. Do not attach products weighing more than 50 pounds to hollow masonry walls, without prior approval.

K. Use toggle bolts in hollow tile.

END OF SECTION

SECTION 262416

PANELBOARDS

PART 1 – GENERAL

1.1 DESCRIPTION

A. Provide electric service with capacity as shown on the drawings.

B. Power Company Coordination: coordinate service arrangements and pay associated fees necessary to provide a complete operating system. Provide meter socket and/or CT cabinet of size and type dictated by the power company.

C. Interrupting Capacities: Panel boards to have interrupting capacity capable of handling fault current which is available at the point in the circuit where the panel is installed.

D. Interrupting ratings are listed in the Schedule of Panels on the drawings or in Appendix A of these specifications. These capacities are based on feeder sizes and panel locations shown on drawings. If major changes are made, these ratings must be adjusted.

PART 2 – PRODUCTS

2.1 120/208 PANEL BOARDS

A. 120/208 volt panel boards shall be of the dead front type and have branch circuit protectors in the quantity and of ratings indicated on the drawings and panel schedules. Panel boards shall be designed for use on a 3 phase, 4 wire, 120/208 volt system. Panel boards shall be provided with ground bar bonded to the steel cabinet, separate neutral bar, and main lugs or breaker as noted.

B. 120/208 panel boards, unless otherwise noted, shall be Square D Type NQOD 120/208 volts, 3 phase, 4 wire, s/n with main breaker or main lugs only as noted with single pole, individual trip and 2 and/or 3 pole common trip bolt-on type branch circuit breakers and as per drawings and panel schedules. Certain panels may be double with feed through lugs as indicated.

C. Bus bars and current carrying parts of panel boards exclusive of circuit breaker, shall be hard drawn copper sized in accordance with the requirements of the Underwriters' Laboratories, Inc.

D. The branch circuit portions of each panel board shall comprise the required and indicated number of interchangeable bolt-on non-combustible thermal-magnetic circuit breaker sections; single or multiple pole, rated not less than 20 amperes, 125 volts and higher as noted. Breakers as required to provide I.C. sym. amp as shown on the panel schedule(s).

E. Circuit breakers shall be readily removable from the front of panel board without disturbing adjacent units. They shall have quick-make and quick-break toggle

mechanisms, non-fusible contacts, with inverse time, short circuit characteristics. Breakers shall trip free on overload. They shall indicate clearly whether they are in the open, tripped or closed position. Multipolar units shall have thermal element in each pole and shall have a single handle. Closely grouped circuit breakers and thermal tripping devices mounted in a common cabinet shall be de-rated when necessary in accordance with NEMA standard recommended practices for high ambient temperatures.

F. Panel boards with breakers larger than 100 amp., shall be Square D Type I-Line panel with breakers of the rating and frame size as noted on plan.

G. Circuit breakers protecting circuits supplying receptacles, signaling devices, clocks, special equipment and other similar circuits not requiring switch control shall be equipped with an approved locking device.

2.2 PANEL BOARD CABINETS

A. Panel boards shall be mounted in a sheet steel enclosing cabinet designed for surface or flush mounting as indicated on the drawings. Cabinets shall be fabricated of code gauge, galvanized sheet steel. The rear of the cabinets shall be provided with a suitable means of supporting the panel board in such a manner that adjustments may be made in all directions.

B. Cabinets shall have suitable lugs for mounting and be provided with hinged steel trims and doors. Doors and trim shall be hung with heavy flush butt hinges. Doors and trims shall be of integral door-in-door construction or piano hinge trim and so designed that doors shall close without a rabbet. Doors 48 inches high or less shall be equipped with spring locks and catches. Doors larger than 48 inches in height shall be provided with a vault type handle having 3-point shoot bolts. Doors shall be finished with factory coat of baked enamel.

C. In general, cabinets shall be installed so that the operating handle of the top branch circuit protector shall not exceed 78 inches above finished floor and the bottom of the cabinet be not less than 12 inches above finished floor.

D. Fronts of cabinets shall have adjustable indicating type clamps and angle iron rests near the bottom to aid in installation and removal.

E. Cabinets shall be provided with proper number and size openings for conduits installed. No openings shall be permitted which are not to be activated.

F. In instances where it is necessary to group install cabinets, a common trim shall be employed.

G. Circuit directory holders shall be attached to the inside of each cabinet door and have transparent cover under which shall be placed a neatly typed schedule outlining circuit control. Schedule shall use Owner-designated room numbers, not drawing room numbers.

H. Extend two (2) spare empty 1 inch conduits from each recessed panel in finished areas to space above ceiling for future use.

2.3 LOCKS AND KEYS

A. Locks for lighting, power, and miscellaneous panel boards, telephone cabinets and other electrical systems having locked apparatus shall be similarly keyed to institutional keying system. Panel door to have keyed metal latch and lock. Plastic locks are not acceptable.

2.4 SHUNT TRIP BREAKERS

A. Panels in certain areas where shown on plan shall be equipped with main breakers with shunt trip devices with 120 volt coils. Connect emergency stop buttons in parallel to the shunt trip devices so that pushing any of the stop buttons in a given area shall de-energize the power feeding the panel mains. Power restoration shall be made at the panel by resetting the main breaker. Extend an independent local source of 120 volt power to each shunt trip coil. Switch shall be an integral part of the panel and shall be ASCO #920 mechanically held switch or approved equal. Size as indicated on panel schedule(s).

B. The emergency stop buttons shall be momentary contact, NEMA I, heavy duty, red, mushroom head, 1 N.O. pushbutton. Provide pilot light in pushbutton box to indicate when panel is energized.

2.5 CIRCUITING

A. Each and every outlet, device, box and system requiring power shall be circuited to the respective panels as shown on plan. Refer to plan and schedules for sizes of wire, conduit and breakers. In instances where a specific circuit has not been assigned to a box requiring same, a circuit shall be provided for the load served as directed by the Architect at no additional cost to the Owner.

2.6 MAIN SWITCHBOARD

A. Provide where indicated, a dead front type, completely metal enclosed, self-supporting structure independent of wall supports. It shall consist of the required number of vertical sections bolted together to form one rigid switchboard 90-3/8 inches high incorporating switching and protective devices of the number, ratings and type noted herein or shown on the drawings with necessary interconnections. Switchboard construction shall be of the universal frame type using die-formed members bolted and braced through the exclusive use of self-tapping bolts which shall not loosen during shipment. Ventilation openings shall be provided where required. Covers shall be secured by self-tapping screws. Properly anchor to floor.

B. The bus shall be tin plated copper of sufficient size to limit the temperature rise to 55°C based on UL tests, and adequately braced and supported to withstand mechanical forces exerted during short circuit conditions when directly connected to a power source having the indicated available short circuit current. Connections shall be tightly bolted.

C. A ground bus and lug shall be furnished firmly secured to each vertical section structure and shall extend the entire length of the switchboard.

D. Switchboard shall be provided with adequate lifting means and shall be capable of being rolled or moved into installation position and bolted directly to the floor without the use of floor sills.

E. A-B-C type bus arrangement, left-to-right, top-to-bottom, and front-to-rear, as viewed from the front, shall be used throughout.

F. Record drawings shall be furnished providing the following information: switchboard voltage/current rating; overall outline dimensions including available conduit space; switching and protective device ampere ratings; and one line diagram.

G. Adequate conduit space shall be provided to meet NEC requirements.

H. Each switching and protective device shall be provided with visible means of ON-OFF identification. Terminals shall be of the anti-turn solderless type suitable for copper cable of sizes indicated.

I. Exterior and interior steel surfaces of the switchboard shall be properly cleaned and finished with two-toned gray baked enamel over a rust-inhibiting phosphatized coating. Two-toned gray shall be ANSI 61 and ANSI 49.

J. Switchboard shall be of construction Square D Type QED, 3 phase, 4 wire, voltage as specified on drawings, in which:

1. Sections of the switchboard shall be 30 inches deep except service sections containing large ampacity main circuit breakers.

2. Construction shall allow maintenance of incoming line terminations, main device connections and main bus bolted connections to be performed without rear access.

3. The feeder or branch devices shall be removable from the front and shall be panel mounted with the necessary device line and load connections front accessible.

4. The main horizontal bus bars shall be mounted on glass polyester insulators with all three phases arranged in the same vertical plane. The main bus shall have a maximum ampacity and shall be braced for short circuits as indicated on the drawings. Main bus splices shall be supplied between adjacent distribution sections.

5. Vertical sections shall be completely factory assembled, wired and tested before delivery and shall bear UL labels where qualified. Design shall meet NEC and NEMA standards as well as OSHA requirements. Individual vertical sections shall be designed for bolting together at installation site.

6. All interconnecting wires for connecting of vertical sections shall be field installed.

K. Provide switchboard with solid state, digital metering with KW, KWH, voltage, amperage, power factor, and THD capability.

L. Provide switchboard with integral service entrance (Category C) transient voltage surge suppressor (TVSS). See Section 16650.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install new service feeders, panel boards and switch boards as required to provide a complete operating system.

B. Unless otherwise stated, install equipment in accordance with manufacturer's recommendations.

C. Completely vacuum and clean all panels before energizing and before covers are permanently installed.

END OF SECTION

SECTION 262726

WIRING DEVICES

PART 1 – GENERAL

1.1 DESCRIPTION

A. This section covers power-related devices such as receptacles, switches, and plug strips.

B. Devices listed in this section may or may not be used on this project. Specifications for devices not included in the Contract Documents are included in case they are needed during construction phase.

1.2 LOCATION OF DEVICES

A. The approximate schematic location of devices is given on the drawings. The exact location shall be determined at the building as the work progresses. Refer to Architectural plans for any special details, elevations, and reflective ceiling plan. Verify door swings at job site. In no case shall switches be located behind door swings. Any switch so located shall be changed. Field verify equipment locations and adjust device and outlet locations to avoid inaccessibility. Relocate inaccessible outlets.

B. Unless otherwise indicated, or otherwise decided at the site, outlet boxes in walls shall be located with centerline at elevation above the finished floor as shown on table.

Fire Alarm Strobe Light	6 feet 8 inches
Fire Alarm Pull Stations	3 feet 6 inches (to activation handle)
	3 feet 8 inches (to top of device)
Fire Alarm Horn	8 feet or 6 inches below ceiling in low-ceiling (wall mounted) areas
Wall Switch Outlets	4 feet
Convenience Outlets	1 foot 6 inches
Counter Outlets	8 inches above countertop

C. The Architect and the Owner reserve the right to change the location of any outlet, before it has been installed.

1.3 DESCRIPTION

A. Wiring Device Requirements

1. Use the products of a single manufacturer for each type of wiring device.
2. Use the products of a single manufacturer of all device plates. Obtain prior approval for any variations from this requirement, except that plate variations are allowed for the following devices:
   a. Where the selected plate manufacturer does not manufacture a suitable finish plate.

b. For clock receptacles.
c. For heavy-duty receptacles rated at more than 30 amperes.
d. Where the raceway system enclosure employs a non-standard finish plate.
e. Where non-standard plates are specified or indicated.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Representative general purpose wiring devices and device plates as listed herein are intended to indicate type, function, and quality of the products. Provide the products specified.

2.2 SWITCHES

A. General

1. Switches mounted vertically shall have the "ON" position at the top and horizontal-mounted switches shall have the "ON" position at the left.
2. Tumbler switches shall be the AC heavy-duty, specification grade, 120/277 volts, flush toggle type switch rated at 20 amperes, Underwriters' approved and meeting NEMA Standard WD-1 1965 and Federal Specifications W-S-896d (Type III). The operating mechanism shall be totally enclosed in a high-heat, non-inflammable, non-hygroscopic molded compound case with terminal screws located on the side of the switch. Operating handles shall be made of high heat phenolic compound. Switches shall have wide plaster ears.

B. Manufacturers

1. Single pole toggle switch, 20 ampere, 120/277 volt, specification grade, Hubbell Catalog No. 1221-I, Pass & Seymour Catalog No. 20AC1-W, or Bryant Catalog No. 4621-I.
2. Three-way toggle switch, 20 ampere, 120/277 volt, specification grade, Hubbell Catalog No. 1223-I, Pass & Seymour Catalog No. 20AC3-W, or equal of Bryant.
3. Four-way toggle switch, 20 ampere, 120/277 volt, specification grade, Hubbell Catalog No. 1224-I, Pass & Seymour Catalog No. 20AC4-W, or equal of Bryant.
4. Double pole toggle switch, 20 ampere, 120/277 volt, specification grade, Hubbell Catalog No. 1222-I, Pass & Seymour Catalog No. 20AC2-W, or equal of Bryant.
5. Single pole key lock switch, 20 ampere, 120/277 volt, specification grade, Hubbell Catalog No. 1221-L, Pass & Seymour Catalog No. 20AC1-L, or equal of Bryant.

C. Miscellaneous Switch Appurtenances

1. Weatherproof cover - Hubbell 1795
2. Locking cover - Hubbell 96061

2.3 CONVENIENCE RECEPTACLES

A. Receptacles shall be specification grade receptacles in all locations.

B. Receptacles for convenience outlets shall be duplex self-aligning grounding type rated for 20 amperes at 125 volts. Contacts shall be made of heavy spring copper or bronze so designed as to securely grip both sides of each receptacle blade and shall be enclosed in high heat, non-inflammable, non-hygroscopic molded compound case, provided with wide plaster ears. Each terminal shall be provided with two (2) binding screws located on the side of the receptacle.

C. Manufacturer(s)

1. Duplex receptacle, 20 ampere, 125 volts, 2 pole, 3 wire grounding type, NEMA 5-20R; Hubbell Catalog No. 5362-I, Pass & Seymour Catalog No. 5362-AW, or Bryant Catalog No. 5362-I.
2. Emergency duplex receptacle, 20 ampere, 125 volt, 2 pole, 3 wire grounding type, NEMA 5-20R, and connected to the normal/emergency system; Hubbell Catalog No. 5362-R, Pass & Seymour Catalog No. 5362-ARED with smooth finish red cover plate. The cover plate shall have the word "emergency" engraved at the top with white filled lettering.
3. Ground fault interrupter type duplex receptacle, 20 ampere, 125 volt, 2 pole, 3 wire grounding type, NEMA 5-20R; Hubbell Catalog No. GF-5362-I, Pass & Seymour Catalog No. 2091 W.
4. Single receptacle, 20 ampere, 125 volt, 2 pole, 3 wire grounding type, NEMA 5-20R ("EWC" denotes electric water cooler--coordinate mounting height with the equipment supplier.); Hubbell Catalog No. 5361-I, Pass & Seymour Catalog No. 5361-I.

D. Appurtenances

1. Weatherproof covers - use Hubbell WP26 or WPSF26, Pass & Seymour Catalog No. WPH8 or Bryant Catalog No. 4510D for GFI-WP locations; or Hubbell 5205WO or 5206WO, Pass & Seymour Catalog No. WPH26 for non-GFI-WP locations.

2.4 COVER PLATES

A. Unless otherwise specified, switch, receptacles, special purpose outlets, telephone, and other outlet plates shall be Bureau of Standards No. 302-18.8 brushed or satin stainless steel with beveled edges so as to lie flat against the wall. Where more than one (1) switch occurs at one point, gang plates shall be used.

B. Zinc-coated plates may be used in unfinished spaces.

C. Plates shall be set true and plumb and shall fit tight against finished wall surfaces and outlet boxes.

D. Manufacturers: Hubbell 97000 Series, Pass & Seymour SL1 Series, or Bryan 5600 Series.

E. Narrow jamb switch to have Leviton 1794 plate.

2.5 WALL SWITCH SENSORS

A. General

1. Wall switch sensors shall be installed as shown on the drawings to control light fixtures in toilet rooms, corridors, mechanical rooms, electrical rooms, etc., that are less than 1200 square feet in size.

B. Manufacturers

1. Wall switch sensors shall have a field adjustable time delay from one (1) to twenty (20) minutes, cover a maximum of 1200 square feet, have a 180 degree field of view, have a three (3) position override switch (off-auto-on) and have a LED system test.
2. Wall switch sensors, 20 ampere, 120/277 volt 1500 watt, shall be Bryant Catalog No. MSFL1200I.

2.6 CEILING MOUNT SENSORS AND LOW VOLTAGE CONTROL PACKS

A. General

1. Ceiling mount sensors and low voltage control packs shall be installed as shown on the drawings to control light fixtures in corridors, mechanical rooms, electrical rooms, stairways, etc., that are larger than 1200 square feet in size.

B. Manufacturers

1. Ceiling mount sensors shall cover 600 square feet of area and shall be Bryant Catalog No. MSCM-600.
2. Low voltage control panels shall be rated at 20 ampere, 120/277 volt and shall be Bryant Catalog No. CP120-277.

2.7 OCCUPANCY SENSORS

A. Provide occupancy sensor devices in accordance with Contract Documents.

B. Wall Mounted Switch / Occupancy Sensor

1. Switch shall fit in standard wallbox and be gangable with other units. Unit shall have manual on/off pushbutton light switching which shall operate at any time.
2. Passive infrared occupancy sensor devices shall have a 180^{o} field of view with a maximum coverage of 2100 square feet. The maximum sensing distance in front of the sensor is 40 feet and at each side is 30 feet.
3. Sensor shall have self-adjusting delayed-off time interval for real-time occupancy patterns.

C. Ceiling Mounted Occupancy Sensor

1. Sensor shall be all-digital with passive infrared technology designed for ceiling mounting.
2. Sensor shall have 360° pattern sensing with coverage area of 530 square feet.
3. Sensor shall have self-adjusting delayed-off time interval for real-time occupancy patterns. Manual time adjustment shall be 20 seconds -15 minutes with ambient override ON.
4. Input voltage shall be 120 volts AC and shall have a load rating of 1000 watts.

D. Manufacturers:

1. Wall Mounted: Leviton #ODS15-ID or equivalent.
2. Ceiling mounted: Leviton #ODC0S-I1W or equivalent

2.8 GFI PROTECTED RECEPTACLES

A. Receptacles shall be GFI protected via GFI receptacle or GFI breaker in the following locations
1. Where shown on the drawings.
2. In toilet and bathrooms.
3. Exterior receptacles within 15 feet of ground level or on roof.

B. Receptacles installed above any counter within 6 feet of sink.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Devices shall be flush mounted unless otherwise noted. Properly align and plumb devices and plates. Plates shall fit flat against wall and tight against device surface without strain on plate.

B. Code sized (#12 minimum) bonding jumper shall connect grounded outlet box to receptacle grounding terminal on flush-mounted units.

C. Where receptacles are indicated as split-wired and half of the receptacle is on a wall switch, the top receptacle shall be switched and bottom shall be on normal power.

D. Circuits to wiring devices feeding data processing equipment shall have a dedicated neutral for each 120 volt circuit. No common neutrals for data processing equipment shall be permitted.

E. Mount occupancy sensors according to manufacturer's recommendations.

F. Switches mounted vertically shall have the "ON" position at the top and all horizontal-mounted switches shall have the "ON" position at the left.

G. Where receptacles are mounted in the vertical position, the ground terminal shall be on the top, and where receptacles are mounted in the horizontal position, the ground terminal shall be on the left.

END OF SECTION

SECTION 262813

FUSES

PART 1 – GENERAL

1.1 DESCRIPTION

A. Provide fuses in accordance with the contract documents in motor starters, switchgear assemblies, panel boards and disconnect switches.

B. Fuses in equipment shall be furnished by the respective contractor supplying the device and installed under this Division.

C. Provide a complete set of three (3) spare fuses for each fuse size and type used.

D. All fuses provided shall be of the indicating type, employing either an indicating window or a mechanical indicator striker pin.

PART 2 – PRODUCTS

2.1 MANUFACTURER

A. Fuses shall be of the high interrupting rating, current limiting type and manufactured by the Bussman Company, Chase Shawmut, or Littelfuse.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Ensure that fuses are firmly and completely inserted into fuse holders and that mechanical joints are tightened.

END OF SECTION

SECTION 265100

LIGHTING

PART 1 – GENERAL

1.1 DESCRIPTION

A. Provide a complete complement of luminaires and required appurtenances including lamps, mounting hardware, and accessory wiring.

B. Fixture manufacturer and numbers as specified on the Fixture Schedule, have been taken from the catalogs of fixture manufacturers. Fixture numbers and descriptions are intended to denote a standard of quality and type. Fixtures of other manufacturers that meet or exceed the photometric data of specified fixtures may be used provided a complete comparable schedule is submitted to and approved by the Architect in accordance with the Instructions to Bidders and Supplementary Conditions. Fixture types shown on the Schedule are keyed to the fixture type letters shown on the drawings adjacent to the light fixture.

C. Fixture manufacturers and catalog numbers on the fixture schedule have been selected with respect to their photometric output, design construction, and applicability. Approved equal manufacturers' fixtures must meet or exceed the above referenced standards as determined by the Architect/Engineer. Any deviation from these or other pertinent standards shall result in rejection of the lighting fixture package.

PART 2 – PRODUCTS

2.1 LIGHTING FIXTURES

A. All fixtures are to be new LED type with high efficiency drivers as schedule on plans.

B. All fixtures located within any single room shall be provided with the same lamp color. Mixed lamp colors will not be acceptable.

C. Acrylic diffusers shall be 100% virgin acrylic .125 inch thick minimum. Furnish certificate from the lighting fixture manufacturer certifying same.

D. Fixtures shall be furnished complete with suitable pendants, canopies, cover, ceiling roundels, opening flanges, hangers, plaster rings or frames if recessed, and necessary rubber cords, chains.

E. Integral outlet boxes factory mounted on recessed fixtures are preferred, but not specifically required.

F. Finish: metal parts of fixtures shall be painted. Interior reflective surfaces shall be of baked on white enamel unless fixture specified is normally furnished with

another finish type.

PART 3 – EXECUTION

3.1 GENERAL

A. Every lighting outlet shall have a lighting fixture unless otherwise directed. In instances where a specific type of fixture has not been assigned to an outlet, provide a complete fixture of the type and wattage designated for outlets of similar function and/or type as directed by the Architect at no additional cost to the Owner.

B. At completion of work, lighting equipment shall be dusted and washed and left in condition ready to use.

3.2 FIXTURES

A. Verify with the room finish schedule as to the type of surface construction. Order the proper fixture with hardware for installation in or on the specified surface. Recessed fixtures in plaster ceilings shall include a plaster frame and a matte white trim finish.

B. Properly size the openings for recessed fixtures and provide all-wood or metal frames properly set in place and anchored.

C. Fixtures shall be installed at mounting heights as shown on the drawings or indicated in the specifications. Coordinate mounting heights of wall-mounted fixtures with the Architect.

D. Unless otherwise directed, pendant fixtures within the same room or area shall be installed plumb and at a uniform height from the finished floor. Adjustment of height shall be made during installation. Make arrangements to meet mounting heights.

E. Fixtures mounted on outlet boxes shall be rigidly secured to a fixture stud in the outlet box. Hickies or extension pieces shall be installed where required to facilitate proper installation. Surface mounted incandescent fixtures shall have the base slotted where required to receive the "T" bar tile and fit snug against ceiling.

F. Flush mounted recessed fixtures shall be installed so as to completely eliminate light leakage between the frame and the finished surface. Fixture housing, frame or canopy shall provide a suitable cover for the fixture outlet box. Where sloping ceilings occur, recessed fixtures shall be of a type designed for the application and shall be mounted to provide proper lighting.

G. Fixtures and/or fixture outlet boxes shall be provided with hangers to adequately support the complete weight of the fixture. Design of hangers and method of fastening other than shown on the drawing or specified shall be submitted to the Architect for approval.

H. Suspended ceiling construction alone shall not satisfactorily support luminare, provide and install appropriate and adequate auxiliary steel supports. Supporting methods shall be as directed by the Architect/Engineer. Auxiliary supports shall be rigidly attached to substantial building construction. Additional wires shall be provided so that supports shall not deflect more than 1/360 of the span with twice the fixture weight. Provide "scissor clips" on the "T" bar construction for installation of surface mounted fluorescent fixtures.

I. Furnish necessary additional auxiliary supporting steel for fixtures not mounted on building framework, and where necessary to span the ceiling channels of hung ceiling construction.

J. In areas where other means are inadequate, fixtures shall be installed on "Kindorf" System as manufactured by Steel City Company, or equivalent of B-Line. This system shall be suspended from the structural steel members and shall have vibration resistant assembly connections. Rods used for suspension shall be galvanized and surface raceway suspension shall have corrosion resistant paint.

K. In mounting troffers mount fixtures with lamps oriented in the same direction.

L. Primary supports for all light fixtures shall be from building structure (separate from ceiling system).

M. Use Type MC cable in length not to exceed 6 feet from building wiring junction box to each light fixture.

N. Direct wiring between light fixtures shall not be permitted.

END OF SECTION

SECTION 283111

FIRE ALARM SYSTEM

PART 1 – GENERAL

1.1 GENERAL

A. This specification document provides the requirements for the installation and extension of the existing fire alarm system installed within the building. The work shall include, but not be limited to, manual pull stations, smoke detectors, heat detectors, audio/visual and visual only notification devices.

B. All new components shall be equivalent to Silent Knight and shall in every respect be compatible with the existing fire alarm system installed with the building. Any new device installed but in any way incompatible with the existing system shall be removed and replaced with a suitable device in order to provide a complete and proper operating fire alarm system.

C. All fire alarm system equipment shall be listed for its intended purpose and be compatibility listed to assure the integrity of the complete system.

1.2 STANDARDS

A. The fire alarm equipment and installation shall comply with the current provisions of the following standards and shall be listed for it's intended purpose and be compatibility listed to insure integrity of the complete system.

B. National Electric Code, Article 760

C. National Fire Protection Association Standards:
NFPA 70 National Electrical Code
NFPA 72 National Fire Alarm Code
NFPA 101 Life Safety Code

D. Local and State Building Codes

International Building Code, International Mechanical Code, and International Fire Code.

E. All equipment shall conform with the requirements of the State and the local fire marshall.

F. All equipment shall be approved by Underwriters Laboratories, Inc. for it's intended purpose, listed as power limited by Underwriters Laboratories, Inc., for the following standards as applicable:

UL 864 UOJZ Control units for Fire Protective Signaling Systems
Local Signaling Unit
Central Station Signaling Protected Premises Unit
Remote Signaling Protected Premises Unit.

Water Deluge Releasing Unit
UL 268 Smoke Detectors for Fire Protective Signaling systems
UL 268A Smoke Detectors for duct applications
UL 217 Smoke Detectors for Single Stations
UL 521 Heat Detectors for Fire Protective Signaling systems
UL 228 Door Holders for Fire Protective Signaling systems
UL 464 Audible Signaling appliances
UL 1638 Visual Signaling appliances
UL 38 Manually Activated Signaling Boxes
UL 346 Waterflow indicators for Fire Protective Signaling systems
UL 1481 Power Supplies for Fire Protective Signaling systems

G. All visual Notification appliances and manual pull stations shall comply with the requirements of the Americans with Disabilities Act.

1.3 GENERAL REQUIREMENTS

A. The following supervision shall be provided by a factory trained service technician from the distributor of the fire alarm equipment. The technician shall be trained and shall have a minimum of two (2) years of service experience in the fire alarm industry. The technicians name shall appear on equipment submittals and a copy of his manufactures trained shall be sent to the project engineer. The technician shall be responsible for the following items:

1. A pre installation visit to the job site to review equipment submittals and to verify the method by which the system is to be wired.
2. During the installation the certified technician shall be on site or make periodic visits to verify installation and wiring of the system. He shall also supervise the completion of conduit rough, wires pulled into conduit and wiring rough, and ready for trim.
3. Upon completion of wiring, final checkout and certification of the system shall be made under the supervision of this technician.
4. At the time of the formal checkout, technician shall give operational instructions to the owner and or his representative on the system.

1.4 SUBMITTALS

A. The contractor shall submit three (3) complete sets of documentation within thirty (30) calendar days after award of the purchase order. Indicated in the document will be the type, size, rating, style, catalog number, manufacturers names, photos, and /or catalog data sheets for all items proposed to meet these specifications. The proposed equipment shall be subject to the approval of the Architect/Engineer and no equipment shall be ordered or installed on the premises without that approval.

B. Submittal of shop drawings shall contain at least six (6) copies of original manufacturer specification and installation instruction sheets. Subsequent information may be copies. All equipment and devices on the shop drawings to be furnished under this contract shall be clearly marked in the specification sheets.

C. Suppliers qualifications shall be submitted indicating years in business, service policies, warranty definitions, NICET certification, and completion of factory training program and a list of similar installations.

D. Contractor qualifications shall be supplied indicating years in business and prior experience with installations that include the type of equipment that is to be supplied.

E. The contractor shall provide hourly Service Rates, performed by a factory trained technician for this installed Life Safety System with the submittal. Proof of training and authorization shall be included with the submittal. These hourly service rates shall be guaranteed for a 1-year period.

F. Deliver two (2) copies of the following to the owner's representative within Thirty (30) days of system acceptance. The closeout submittals shall include:

1. Installation and Programming manuals for the installed Life Safety System.
2. Point to point diagrams of the entire Life Safety System as installed. This shall include all connected Smoke Detectors and addressable field modules.
3. All drawings must reflect device address as verified in the presence of the engineer and/or end user.

1.5 WARRANTY

A. Warranty all materials, installation and workmanship for a one (1) year period, unless otherwise specified. A copy of the manufacturer warranty shall be provided with the close out documentation.

1.6 PRODUCT

A. This Life Safety System Specification must be conformed to in its entirety to ensure that the installed and programmed Life Safety System will accommodate all of the requirements and operations required by the building owner. Any specified item or operational feature not specifically addressed prior to the bid date will be required to be met without exception.

B. Submission of product purported to be equal to those specified herein will be considered as possible substitutes only when all of the following requirements have been met:

1. Any deviation from the equipment, operations, methods, design or other criteria specified herein must be submitted in detail to the specifying Architect or Engineer a minimum of ten (10) working days prior to the scheduled submission of bids. Each deviation from the operation detailed in these specifications must be documented in detail, including page number and section number, which lists the system function for which the substitution is being proposed.
2. A complete list of such substituted products with three (3) copies of working drawings thereof shall be submitted to the approved Architect

and/or Consulting Engineer not less than ten (10) working days prior to the scheduled submission of bids.

3. The contractor or substitute bidder shall functionally demonstrate that the proposed substitute products are in fact equal in quality and performance to those specified herein.

1.7 GENERAL EQUIPMENT AND MATERIALS REQUIREMENTS

A. All equipment furnished for this project shall be new and unused. All components shall be designed for uninterrupted duty. All equipment, materials, accessories, devices and other facilities covered by this specification or noted on the contract drawings and installation specification shall be best suited for the intended use and shall be provided by a single manufacturer. If any of the equipment provided under this specification is provided by different manufacturers, then that equipment shall be “Listed” as to its compatibility by Underwriters Laboratories (UL), if such compatibility is required by UL standards.

1.8 SATISFYING THE ENTIRE INTENT OF THESE SPECIFICATIONS

A. It is the contractor’s responsibility to meet the entire intent of these specifications.

B. Deviations from the specified items shall be at the risk of the contractor until the date of final acceptance by the architect, engineer, and owner’s representative.

C. All costs for removal, relocation, or replacement of a substituted item shall be at the risk of the electrical contractor.

PART 2 – PRODUCTS

2.1 SYSTEM WIRING

A. The Signaling Line Circuit (SLC) and Data Communication Bus (S-BUS) shall be wired with standard NEC 760 compliant wiring, no twisted, shielded or mid capacitance wiring is required for standard installations. All FACP screw terminals shall be capable of accepting 14-18 AWG wire. All system wiring shall be in accordance with the requirements of NFPA 70, the National Electrical Code (NEC) and also comply with article 760 of the NEC.

2.2 SIGNALING LINE CIRCUITS

A. Each SLC shall be capable of a wiring distance of 10,000 feet from the SLC driver module (5815XL) and be capable of supporting 127 devices. The communication protocol to SLC devices must be digital. Any SLC loop device, which goes into alarm, must interrupt the polling cycle for priority response from the FACP. The FACP must respond consistently to a device that goes into alarm on an SLC in under 3 seconds. The auxiliary 5815XL SLC loop module must be capable of being located up to 6000 feet from the FACP on an RS-485 bus, which is separate from the SLC bus. The SLC shall be capable of functioning in a class A or class B configuration.

2.3 SLC LOOP DEVICES

A. Devices supported must include analog photoelectric, ionization smoke detectors, analog heat detectors, addressable input modules, relay output modules or addressable notification modules. There is to be no limit to the number of any particular device type up to the maximum of 127, that can be connected to the SLC.

2.4 ANALOG DETECTOR FUNCTIONS

A. The products of combustion detectors must communicate analog values using a digital protocol to the control panel for the following functions:

1. Automatic compliance with NFPA 72 standards for detector sensitivity testing
2. Drift compensation to assure detector is operating correctly
3. Maintenance alert when a detector nears the trouble condition
4. Trouble alert when a detector is out of tolerance
5. Alert control panel of analog values that indicate fire.

2.5 ADDRESSABLE NOTIFICATION MODULE

A. The contractor shall furnish and install where indicated on the plans, addressable notification modules, Silent Knight model #SD500-ANM. The modules shall be U.L. listed compatible with Silent Knight's IFP-1000 fire alarm control panel. The notification module must provide one class A (Style Z) or class B (Style Y) notification output with one auxiliary power input. The notification module must be suitable for mounting in a standard 4 square electrical box and must include a plastic cover plate. The notification module must provide an LED that is visible from the outside of the cover plate. The notification module must be fully programmable for such applications as required by the installation. The ANM shall reside on the SLC loop and can be placed up to 10,000ft. from the control or 5815 SLC loop module.

2.6 DISTRIBUTED POWER MODULE

A. The contractor shall supply a power module #RPS-1000 compatible with the IFP1000 fire alarm control panel. The power module must have 5 amps of output power, six flexput circuits rated at 3amps each, and two form C relay circuits rated at 2.5 amps at 24 volts DC. The fire system shall be capable of supporting up to eight (8) RPS-1000 power modules. The six flexput circuits shall have the same functionality as the flexput circuits on the main panel. The Distributed Power Supply shall be capable of being connected via an RS-485 system bus (SBUS) at a maximum distance of 6000ft. from the main control panel. The power module shall contain an additional RS-485 bus that is completely compatible with all IFP-1000 add on modules; including 5815XL SLC expanders, RA-1000-SK5865-SK5880 annunciators, 5824 serial/parallel module and addressable devices. The power module will also act as a bus repeater so that additional RS-485 (modules) devices can be connected at a maximum distance of 6000ft. from the power module.

B. The power module's RS-485 bus shall be electrically isolated providing ground loop isolation and transient protection.

2.7 MANUAL FIRE ALARM STATIONS

A. Manual Fire Alarm Stations shall be non-coded, break glass, Single or double action type, with a key operated test-reset lock in order that they may be tested, and so designed that after actual Emergency Operation, they cannot be restored to normal except by use of a key. The reset key shall be so designed that it will reset Manual station and open FACP without use of another key.

B. An operated station shall automatically condition itself so as to be visually detected, as operated, at a minimum distance of fifty feet, front or side. Manual Stations shall be constructed of die cast metal with clearly visible operating instructions on the front of the stations in raised letters.

C. Stations shall be suitable for surface mounting on matching backbox, or semi-flush mounting on a standard single-gang box, and shall be installed within the limits defined by the Americans with Disabilities Act (ADA) dependent on Manual Station accessibility or per local requirements. Manual Stations shall be installed in conjunction with an Addressable Input Module (AIM) or Mini Input Module (MIM). Manual Stations shall be Silent Knight Model PS-DATK or PS-SATK and Underwriters Laboratories listed.

2.8 REMOTE POWER SUPPLIES

A. The Remote Power Supplies for Notification appliances shall be the Silent Knight Model RPS 1000. The Model RPS 1000 Intelligent Power Supply shall hang on the main S-Bus and be programmed through the IFP 1000 control. It will support 5amps of 24 volt DC power, with 6 Flexput circuits, rated at 3amps each. Two additional 5815 SLC loop expanders shall be capable of be install in the cabinet, to allow an additional 254 points. The power supply will also regenerate the S-Bus for an additional 6000'.

B. The remote power supply model 5499 or 5495 may also be used on the system. These power supplies are activated by the SD500-ANM module and support 6amps of 24VDC power, with 4 notification circuits, rated at 3amps each. These power boosters may also be activated from another notification circuit from either the fire alarm control, a distributed power supply (RPS-1000). An AIM device shall be needed to monitor the power booster for trouble.

2.9 NOTIFICATION DEVICES

A. The visible and audible/visible signal shall be Silent Knight Model ST and HS series signal devises and be listed by Underwriters Laboritories Inc. per UL 1971 and/or 1638 for the ST and also UL464 for the HS.

B. The notification appliance (combination audible/visible units only) shall produce a peak sound output of 90dba or greater as measured in an anechoic chamber. The signaling appliance shall also have the capability to silence the audible signal while leaving the visible signal energized with the use of a single par of

wires Additionally, the user shall be able to select either continuos or temporal tone output with the temporal signal having the ability to be synchronized.

C. The visible signaling appliance shall maintain a minimum flash rate of 1Hz or greater regardless or power input voltage. The appliance shall also be capable of meeting the candela requirements of the blueprints presented by the Engineer and ADA. The appliance shall have an operation current of 57ma or less at 24VDC for the 15/75Cd

D. The appliance shall be polarized to allow for electrical supervision of the system wiring. The unit shall be provided with terminals with barriers for input/output wiring and be able to mount to a single gang or double gang box or double workbox with the use of an adapter plate. The unit shall have an input voltage range of 20-30 volts with either direct current or full wave rectified power.

2.10 SMOKE DETECTORS

A. Smoke detectors shall be Silent Knight model SD505-APS ceiling mounted, Analog/Addressable photoelectric smoke detectors. The combination detector head and twist lock base shall be U.L. listed compatible with the Silent Knight IFP-1000 fire alarm control panel.

B. The base shall permit direct interchange with Silent Knight's SD505-AIS ionization smoke detector or the SD505-AHS heat detector. The base shall be the appropriate twist lock base SD505-6AB.

C. The smoke detector shall have a flashing status LED for visual supervision. When the detector is actuated, the flashing LED will latch on steady at full brilliance. The detector may be reset by actuating the control panel's reset switch. The sensitivity of the detector shall be capable of being selected and measured by the control panel without the need for external test equipment.

D. The vandal security-locking feature shall be used in those areas as indicated on the drawing. The locking feature shall be field selectable when required. It shall be possible to perform a sensitivity test of the detector without the need of generating smoke. The test method shall simulate the effects of products of combustion in the chamber to ensure testing of the detector circuits.

E. Detectors shall have completely closed back to restrict entry of dust and air turbulence and have a 30 mesh insect screen. Electronics of the unit shall be shielded to protect against false alarms from E.M.I. and R.F.I.

F. Provide audible bases, where indicated on the drawings, for local annunciation. Detector shall activate trouble at annunciator upon activation.

2.11 HEAT DETECTORS

A. Furnish and install analog/addressable heat detectors, Silent Knight model SD505-AHS. The combination heat detector and twist lock base shall be U.L. listed compatible with the Silent Knight IFP-1000 fire alarm control panel.

B. The base shall permit direct interchange with the Silent Knight SD505-AIS Ionization smoke detector and the SD505-APS photoelectric smoke detector. The base shall be appropriate twist lock base SD505-6AB.

C. The heat detector shall have a flashing status LED for visual supervision. When the detector is actuated, the flashing LED will latch on steady at full brilliance. The detector may be reset by actuating the control panel's reset switch. The vandal security-locking feature shall be used in those areas as indicated on the drawings. Electronics of the unit shall be shielded to protect against false alarms from E.M.I. and R.F.I.

D. Provide audible bases in dormitory room kitchens for local annunciation. Detector shall activate trouble signal at annunciator upon activation.

PART 3 – EXECUTION

3.1 SYSTEM COMPONENTS

A. The system cabinet shall be red and can be either surface or flush mounted. The cabinet door shall be easily removable to facilitate installation and service.

B. An audible system trouble sounder shall be an integral part of the control unit. Provisions shall also be provided for an optional supervised remote trouble signal.

C. The entire system shall operate on 24 VDC, filtered switch mode power supply with the rated current available of 5 Amps. The FACP must have a battery charging circuit capable of complying with the following requirements:

1. Twenty-four (24) hours of battery standby with five (5) minutes of alarm signaling at the end of this twenty-four (24) hour period (as required per NFPA 72 central station signaling requirements) using rechargeable batteries with automatic charger to maintain gel-cell batteries in a fully charged condition.

D. The power supply shall comply with U.L. Standard 864 for power limiting.

E. The FACP will indicate a trouble condition if there is a loss of AC power or if the batteries are missing or of insufficient capacity to support proper system operation in the event of AC failure. A "Battery Test" will be performed automatically every minute to check the integrity of the batteries. The test must disconnect the batteries from the charging circuit and place a load on the battery to verify the battery condition.

F. In the event that it is necessary to provide additional power one or more of the model RPS-1000 Distributed Power Modules shall be used to accomplish this purpose.

G. Connections to the light and power service shall be on a dedicated branch circuit in accordance with the National Fire Alarm Code NFPA 72, National Electrical Code (NEC) NFPA 70, and the local authority having jurisdiction (AHJ).

H. The circuit and connections shall be mechanically protected.

I. A circuit disconnecting means shall be accessible only to authorized personnel and shall be clearly marked “FIRE ALARM CIRCUIT CONTROL”.

3.2 WIRING

A. The installer shall coordinate the installation of the fire alarm equipment.

B. All conductors and wiring shall be installed according to the manufacturer’s recommendations.

C. It shall be the installer’s responsibility to coordinate with the supplier, regarding the correct wiring procedures before installing any conduits or conductors.

D. System components shall be installed in accordance with the latest revisions of the appropriate NFPA pamphlets, the requirements contained herein, National Electrical Code, local and state regulations, the requirements of the fire department and other applicable authorities having jurisdiction (AHJ).

E. All wire used on the fire alarm system shall be U.L. Listed as fire alarm protection signaling circuit cable per National Electrical Code, Articles 760.

3.3 WARRANTY AND FINAL TEST

A. The contractor shall warrant all equipment and wiring free from inherent mechanical and electrical defects for one year (365 days) from the date of final acceptance.

B. Before the installation shall be considered completed and acceptable by the awarding authority, a test of the system shall be performed as follows:

1. The contractor’s job foreman, a representative of the owner, and the fire department shall operate every building fire alarm device to ensure proper operation and correct annunciation at the control panel.

C. At least one half of all tests shall be performed on battery standby power.

D. Where application of heat would destroy any detector, it may be manually activated.

E. The communication loops and the indicating appliance circuits shall be opened in at least two (2) locations per circuit to check for the presence of correct supervision circuitry.

F. When the testing has been completed to the satisfaction of both the contractor’s job foreman and owner, a notarized letter cosigned by each attesting to the satisfactory completion of said testing shall be forwarded to the owner and the fire department.

G. The contractor shall leave the fire alarm system in proper working order, and, without additional expense to the owner, shall replace any defective materials or equipment provided by him under this contract within one year (365 days) from the date of final acceptance by the awarding authority.

H. Prior to final test the fire department must be notified in accordance with local requirements.

I. A complete set of reproducible “as-built” drawings showing installed wiring, color coding, and wire tag notations for exact locations of all installed equipment, specific interconnections between all equipment, and internal wiring of the equipment shall be delivered to the owner upon completion of system.

3.4 OPERATING AND INSTRUCTION MANUALS

A. Operating and instruction manuals shall be submitted prior to testing of the system. Three (3) complete sets of operating and instruction manuals shall be delivered to the owner upon completion. User operating instructions shall be provided prominently displayed on a separate sheet located next to the control unit in accordance with U.L. Standard 864.

END OF SECTION