

CITY OF UNALASKA AQUATICS CENTER IMPROVEMENTS



CONSTRUCTION DOCUMENTS SPECIFICATIONS

NOVEMBER 15, 2015

OWNER:
CITY OF UNALASKA
P.O. BOX 610
UNALASKA, ALASKA 99685

ARCHITECT:
WOLF ARCHITECTURE
625 South Cobb
Suite 200
PALMER, AK 99645

MECHANICAL/ELECTRICAL ENGINEER:
HAY, ZEITLOW & ASSOCIATES
113 W. NORTHERN LIGHTS BLVD
ANCHORAGE, ALASKA 99503

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Section 00030
INVITATION TO BID

Sealed Bids for the **CITY OF UNALASKA –AQUATICS CENTER IMPROVEMENTS PROJECT**, addressed to the City of Unalaska, will be received at the following location:

City of Unalaska
Office of the City Clerk
P.O. Box 610
Unalaska, Alaska 99685
Tel. 907-581-1260
Fax 907-581-1417

Sealed bids will be received until **2:00 p.m. (AKST) on January 20, 2015**, and then will be publicly opened and read aloud. Any bids received after the time and date specified will not be considered.

The work includes, but is not limited to, furnishing all labor, tools, equipment, and materials and performing all operations in connection with the following scope of work:

1. Base Bid:

- a. Architectural, Mechanical, and Electrical work to remodel the existing locker rooms.
- b. Converting an existing office to a new sauna room.
- c. Removal of existing sauna and converting the area into a new staff locker room.
- d. Removal of existing staff locker rooms and converting the area into new ADA compliant family locker room.
- e. Reconfiguration of an existing storage room into a new communications room on the second level.
- f. Mechanical modifications and pump upgrades.
- g. Electrical modifications and upgrades.
- h. Misc. repairs.
- i. Contractor is responsible for coordinating and designing extensions or reconfiguration of existing sprinkler system and submitting design of the sprinkler system to the Fire Marshal.

2. Bid Alternates:

- a. New card lock door entry system.
- b. New camera surveillance system.
- c. New sound system.
- d. New ice maker.
- e. Remove existing pool deck drain and install new drain including work to refinish pool deck.

INVITATION TO BID

00030

1. Project Location: 55 E. Broadway Ave, Unalaska, Alaska 99685
2. Owner: City of Unalaska

Technical questions shall be directed in writing to Wolf Architecture. Questions shall be submitted to gwolf@wolfarchitecture.com, and copy tcohenour@ci.unalaska.ak.us. A copy of the Bidding Documents can be obtained at the City of Unalaska Website, <http://www.ci.unalaska.ak.us/rfps>, for no charge.

City of Unalaska DPW
P.O. Box 610
Unalaska, Alaska 99685
Attn: Tom Cohenour, Director of Public Works
E-mail tcohenour@ci.unalaska.ak.us
Tel. 907-581-1260

Wolf Architecture
625 S. Cobb St., Suite 200
Palmer, AK 99645
Attn: Gary Wolf
Email: gwolf@wolfarchitecture.com
Tel. 907-746-6670

Each Bid must be submitted on the prescribed form and accompanied by bid security as prescribed in the Instruction to Bidders, payable to the City of Unalaska, Alaska, in an amount not less than 5 (five) percent of the Total Bid amount. The successful bidder will be required to furnish the necessary additional bond(s) for the faithful performance of the Contract, as prescribed in the Bidding Documents.

A prebid tele-conference will be held on **December 18, 2015** at 2:00 p.m. at the City of Unalaska Department of Public Works and at Wolf Architecture's Palmer office. Bidders may attend either locations or via teleconference. Call-in number and access code are 1-888-363-4749 and 9330855#, respectively.

The successful Bidder shall hold such Contractors and Business Licenses as required by State Statutes and City of Unalaska Municipal Code Section 9.30.010. The right is reserved to reject any or all Bids, to waive informalities or irregularities in the bidding, and to accept bids that are considered to be in the best interest of the City of Unalaska.

No bidder may withdraw its bid after the time set for opening thereof, except as provided in the Instructions To Bidders or unless the award of the contract is delayed for a period exceeding 60 days.

Dated this _____ day of _____, 2015.

CITY OF UNALASKA, ALASKA

By _____
Director of Public Works

INVITATION TO BID

00030

Engineer's Estimate

The Engineers Estimate is within a US DOT Federal Highway Administration Project Classification

D. <http://www.fhwa.dot.gov/programadmin/contracts/ta508046.cfm>

	Project Classification	Project Cost
	A	\$0 - \$100,000
	B	\$100,000 - \$250,000
	C	\$250,000 - \$500,000
	D	\$500,000 – \$1,000,000
	E	\$1,000,000 - \$2,500,000
	F	\$2,500,000 - \$5,000,000
	G	\$5,000,000 - \$10,000,000
	H	\$10,000,000 - \$15,000,000
	I	\$15,000,000 – \$25,000,000
	J	\$25,000,000 - greater

Section 00100
INSTRUCTIONS TO BIDDERS

1. Defined Terms.

Terms used in these Instructions to Bidders which are defined in the General Conditions of the Contract Documents have the meanings assigned to them in the General Conditions.

Certain additional terms used in the Bidding Documents have the meanings indicated below which are applicable to both the singular and plural thereof.

- A. Bidder - one who submits a Bid directly to Owner as distinct from a sub-bidder, who submits a bid to a Bidder.
- B. Bidding Documents - the Bidding Requirements and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).
- C. Bidding Requirements - the Invitation to Bid, Instructions to Bidders, and Bid Form, plus additional documents that may be submitted with the Bid.
- D. Issuing Office - the City Public Works Department, from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.
- E. Low Bidder - Low Bidder will be determined on the basis of the lowest Amount for the total bid including Owner chosen Additive and/or Deductive Bid Items as described in the Bid Form. Award of the Additive or Deductive Bid Items will be made to the extent that construction funds are available, in such order as may suit the best interest of the Owner. The Deductive and Additive Bid items are not in any specific order and are not listed in order of preference. The Owner reserves the right to select the low bidder on the basis of the Base Bid plus any combination of Additive and/or Deductive Bid items. If the order of the bids is affected, the award will be made on the basis of the Base Bid plus any combination of the Deductive and Additive Bid items.
- F. Successful Bidder - the lowest, qualified, responsible and responsive Bidder to whom the City (on the basis of the City's evaluation as hereinafter provided) makes an Award.

2. Copies of Bidding Documents.

- A. Complete sets of the Bidding Documents for the sum stated in the Invitation to Bid may be obtained from the Issuing Offices.
- B. Complete sets of Bidding Documents must be used in preparing Bids; the City does not assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

- C. The Drawings bound in the Contract Documents are at a scale indicated by a note or scale bar on the Drawings.
- D. The City, in making copies of Bidding Documents available on the above terms, does so only for the purpose of obtaining Bids for the work and does not confer a license or grant for any other use.

3. **Qualifications of Bidders.**

To demonstrate qualifications to perform the work, each Bidder must be prepared to submit within 5 days after Bid opening upon City's written request, information such as financial data, previous experience, present commitments, subcontractor names and qualifications, and other such data as may be called for below. Each Bid must contain evidence of Bidder's qualification to do business in Alaska. Bidders shall be eligible to obtain a business license from the City of Unalaska.

Nothing indicated herein should prejudice the right of Owner to seek additional pertinent information as provided in the General Conditions.

4. **License Requirements**

Contractors and subcontractors, in order to perform public work in the State of Alaska, are required to hold State of Alaska Contractor's licenses of the class required to perform the specified work. Contractors and subcontractors are also required to hold current Alaska Business Licenses and obtain a City of Unalaska businesses license in order to perform public work in the State of Alaska. Contractor's license and Business License numbers shall be inserted in the appropriate place on the Bid form. Evidence of subcontractor's compliance with the above shall be submitted to the City before starting subcontract work on public work contracts.

5. **Examination of Contract Documents and Site.**

A. It is the responsibility of each Bidder before submitting a Bid:

- 1. To examine thoroughly the Contract Documents and other related data identified in the Bidding Documents (including "technical data" referred to below);
- 2. To visit the site to become familiar with and satisfy Bidder as to the general, local, and site conditions that may affect cost, progress, performance, or furnishing of the Work;
- 3. To consider federal, state, and local Laws and Regulations that may affect cost, progress, performance, or furnishing of the Work;
- 4. To study and carefully correlate Bidder's knowledge and observations with the Contract Documents and such other related data;

INSTRUCTIONS TO BIDDERS

5. To promptly notify the City of all conflicts, errors, ambiguities or discrepancies which Bidder has discovered in or between the Contract Documents and such other related documents;
 6. To review applicability of the City of Unalaska sales tax to any purchases of materials or services related to the Work.
- B. Information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based upon information and data furnished to the City by Owners of such Underground Facilities or others, and the City does not assume responsibility for the accuracy or completeness thereof unless it is expressly provided otherwise in the Supplementary Conditions.
- C. Provisions concerning responsibility for the adequacy of data furnished to prospective Bidders on subsurface conditions, other physical conditions and Underground Facilities, and possible changes in the Contract Documents due to differing or unanticipated conditions appear in Article 4 of the General Conditions.
- D. Before submitting a Bid, each Bidder will be responsible to make or obtain such examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance, or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences, or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto or which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price, and other terms and conditions of the Contract Documents.
- E. On request, the City will provide each Bidder access to the site to conduct such examinations, investigations, explorations, tests and studies as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the site to its former condition upon completion of any such explorations, investigations, test, and studies.
- F. The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 5; that, without exception, the Bid is premised upon performing and furnishing the work required by the Contract Documents and applying the specific means, methods, techniques, sequences, or procedures of construction (if any) that may be shown or indicated or expressly required by the Contract Documents; that Bidder has given the Contracting Officer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Contract Documents and the written resolution thereof by the City is acceptable to Bidder; and that the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

INSTRUCTIONS TO BIDDERS

- G. The provisions of paragraph 5A through 5F above, inclusive, do not apply to asbestos, polychlorinated biphenyl (PCB), petroleum, hazardous waste, or radioactive material covered by the Supplementary Conditions.
- H. Nothing contained in the Bid Documents, any and all attachments thereto, or any and all addenda thereto, shall be interpreted by any party as requiring or allowing the Contractor to do anything that is not in compliance with all applicable codes and regulations, that is less than general standard industry quality, or that results in an unsafe, unstable or dangerous condition.

6. Availability of Lands for Work, Etc.

The lands upon which the work is to be performed, rights-of-way and easements for access thereto, and other lands designated for use by Contractor in performing the work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the work are to be obtained and paid for by the Successful Bidder. Easements for permanent structures or for permanent changes in existing facilities are to be obtained and paid for by the City unless otherwise provided in the Contract Documents.

7. Interpretations and Addenda.

- A. All questions about the meaning or intent of the Bidding Documents are to be directed to Wolf Architecture, Inc. and the City of Unalaska copied.. Interpretations or clarifications considered necessary by the City in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by the Issuing Office as having received the Bidding Documents. Questions received less than 6 days prior to the date for opening of Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- B. Addenda may also be issued to modify the Bidding Documents as deemed advisable by the City.

8. Bid Security.

- A. Each Bid must be accompanied by Bid security made payable to Owner for 5 percent of Bidder's Total Bid price and in the form of a certified bank check or a Bid Bond on form attached, issued by a Surety meeting the requirements of the General Conditions.
- B. The Bid security of a successful bidder will be retained until such Bidder has executed the Agreement, furnished the required Contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the successful Bidder fails to execute and deliver the Agreement and furnish the required Contract security within 15 days after the Notice of Award, Owner may annul the Notice of Award and the Bid security of that Bidder will be forfeited. The bid security of the Bidders whom Owner believes to have a reasonable chance of

INSTRUCTIONS TO BIDDERS

receiving the award may be retained by Owner until the earlier of the 7th day after the Effective Date of the agreement or the 60th day after the Bid opening, whereupon Bid security furnished by such Bidders will be returned. Bid security submitted with bids which are not competitive will be returned within 15 days after the Bid opening.

9. **Contract Times.**

The number of days within which, or the dates by which, the work is to be completed and ready for final payment (the Contract Times as defined in Article 1 of the General Conditions) are set forth in the Agreement (or incorporated therein by reference to the attached Bid Form).

10. **Liquidated Damages.**

Provisions for liquidated damages, if any, are set forth in the Agreement.

11. **Bid Form.**

- A. The Bid Form is included with the Bidding Documents.
- B. All blanks on the Bid Form must be completed by printing in black ink or by typewriter.
- C. Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown below the signature.
- D. Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.
- E. All names must be typed or printed in black ink below the signature.
- F. The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which must be filled in on the Bid Form).
- G. The address, telephone, email address, and FAX number for communications regarding the Bid must be shown.
- H. See Article 4 above, for required evidence of authority to conduct business as an out-of-state corporation in Alaska. State Contractor license number, if any, must also be shown.

12. **Submission of Bids.**

INSTRUCTIONS TO BIDDERS

- A. Bids shall be submitted not later than the time prescribed, at the place, and in the manner set forth in the Invitation to Bid and shall be enclosed in an opaque sealed envelope, marked with the project title (and, if applicable, the designated portion of the project for which the Bid is submitted) and name and address of Bidder and accompanied by the other required documents. If the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation "**BID ENCLOSED**" on the face of it.
- B. Only one Bid from any individual, firm, partnership, or corporation, under the same or different names, will be considered. Should it appear to the City that any Bidder is interested in more than one Bid for work contemplated, all Bids in which such Bidder is interested will be rejected.
- C. Attachments.

Bidder shall complete and submit the following forms with its Bid:

Bid Form
Addenda Acknowledgment
Alaska Bid Bond (5% of Bid)
Alaska Business and Contractor's License

13. Modifications and Withdrawal of Bids.

- A. Prior to the time and date designated for receipt of Bids, any Bid submitted may be withdrawn by notice to the party receiving Bids at the place designated for receipt of Bids. Such notice shall be in writing over the signature of the Bidder or by facsimile. If by facsimile, the modification received shall be over the signature of the Bidder and shall be received before the date and time set for receipt of Bids. Facsimile messages shall be worded as to not reveal the amount of the original or modified Bid. Facsimile telephone number is:

City of Unalaska (907) 581-1417

Bid modifications must be sent to the office to which the original proposal is delivered or sent.

- B. If, within 72 hours after Bids are opened, any Bidder files a duly signed, written notice with the City and promptly thereafter demonstrates to the reasonable satisfaction of the City that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid. Thereafter, that Bidder will be disqualified from further consideration on the Work to be provided under the Contract Documents.

14. Opening of Bids.

Bids will be opened and read aloud publicly at the place where Bids are to be submitted.

INSTRUCTIONS TO BIDDERS

15. **Bids to Remain Subject to Acceptance.**

All Bids will remain subject to acceptance for 60 days after the day of the Bid opening, but the City may, in its sole discretion, release any Bid and return the Bid security prior to that date.

16. **Award of Contract.**

- A. The City reserves the right to reject any or all Bids, including without limitation the rights to reject any or all nonconforming, non-responsive, unbalanced or conditional Bids, and to reject the Bid of any Bidder if the City believes that it would not be in the best interest of the Project to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by Owner. The City also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate Contract terms with the successful Bidder. Discrepancies in the multiplication of units of work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.
- B. In evaluating Bids, the City will consider the qualifications of Bidders, whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.
- C. The City may consider the qualifications and experience of subcontractors, suppliers, and other persons and organizations proposed for those portions of the Work as to which the identity of subcontractors, suppliers, and other persons and organizations must be submitted as provided in the Supplementary Conditions. The City also may consider the operating costs, maintenance requirements, performance data, and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data are required to be submitted prior to the Notice of Award.
- D. The City may conduct such investigations as the City deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications, and financial ability of Bidders, proposed subcontractors, suppliers, and other persons and organizations to execute the work in accordance with the Contract Documents to the City's satisfaction within the prescribed time.
- E. If, at the time this Contract is to be awarded, the total of the lowest acceptable Bid exceeds the funds then estimated by the City as available, the City may reject all Bids or take such other action as best serves the City's interests.
- F. If the Contract is to be awarded, it will be awarded to lowest responsive, responsible Bidder as stated in Section 00100 Instructions To Bidders, whose evaluation by the City indicates to the City that the award will be in the best interests of the Project.

INSTRUCTIONS TO BIDDERS

- G. In the event of failure of the lowest responsive, responsible Bidder to sign the Contract and provide an acceptable Performance Bond, Payment Bond, and insurance certificate(s), the Owner may award the Contract to the next lowest responsive, responsible Bidder. Such award, if made, will be made within 60 days after the opening of Proposals.
- H. An Additive or Deductive Bid Item is an amount proposed by Bidders and stated on the Bid Form for certain construction activities defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems or installation methods described in the Contract Documents.
- I. Award of the Additive or Deductive Bid Items will be made to the extent that construction funds are available, in such order as may suit the best interest of the Owner. The Deductive and Additive Bid items are not in any specific order and are not listed in order of preference. The Owner reserves the right to select the Base Bid plus any combination of Additive and/or Deductive Bid items. If the order of the bids is affected, the award will be made on the basis of the Base Bid plus any combination of Additive or Deductive Bid items that the Owner selects at their option.

17. **Contract Security.**

Article 5 of the General Conditions sets forth Owner's requirements as to Performance and Payment Bonds. When the successful Bidder delivers the executed Agreement to Owner, it must be accompanied by the required Performance and Payment Bonds.

18. **Signing of Agreement.**

When the City gives a Notice of Award to the successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement, with all other written Contract Documents attached. Within 10 days thereafter, contractor shall sign and deliver the required number of counterparts of the Agreement and attached documents to the City with the required Bonds. Within 10 days thereafter, the City shall deliver one fully signed counterpart to Contractor.

19. **State Required Wage Rates.**

All workers shall be paid prevailing wage rates as described in the State of Alaska LABORERS' AND MECHANICS' MINIMUM RATES OF PAY, Title 36, Public Contracts, AS 36.05 & AS 35.10 Wage and Hour Administration Pamphlet No. 600 – Latest revision.

NOTE TO BIDDER: Use BLACK ink or typewriter for completing this Bid Form.

INSTRUCTIONS TO BIDDERS

To: **City of Unalaska, Department of Public Works**

Address: **P.O. Box 610, Unalaska, Alaska 99685**

Project Identification: **City of Unalaska—AQUATICS CENTER IMPROVEMENTS
PROJECT**

DEFINITIONS

The terms used in this Bid which are defined in the General Conditions and Instructions to Bidders included as part of the Contract Documents are used with the same meaning in this Bid.

BIDDERS DECLARATION AND UNDERSTANDING

This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm, or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over the City.

In submitting this Bid, Bidder represents, as more fully set forth in the Agreement, that Bidder has examined copies of all the Bidding Documents.

Bidder has familiarized itself with the nature and extent of the Contract Documents, work, site, locality, general nature of work to be performed by Owner or others at the site that relates to work for which this Bid is submitted as indicated in the Contract Documents, and all local conditions and all federal, state, and local Laws and Regulations that in any manner may affect cost, progress, performance, or furnishing of the work.

Bidder has reviewed and checked all information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, investigations, explorations, tests, reports, or similar information or data in respect of said Underground Facilities are or will be required by Bidder in order to perform and furnish the work at the Contract Price, within the Contract Time, and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.3 of the General Conditions.

Bidder has correlated information known to Bidder and the results of all such observations, examinations, investigations, explorations, tests, and studies with the Contract Documents.

Bidder has given the City written notice of all conflicts, errors, ambiguities or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by the City is acceptable to Bidder, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the work for which this Bid is submitted.

CONTRACT EXECUTION AND BONDS

The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with the City in the form included in the Contract Documents to perform and furnish all work as specified or indicated in the Contract Documents for the Contract price and within the Contract Time indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.

Bidder accepts all of the terms and conditions of the Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the day of Bid opening. Bidder will sign and deliver the required number of counterparts of the Agreement with the Bonds and City of Unalaska business license and other documents required by the Bidding Requirements within 10 days after the date of Owner's Notice of Award.

CERTIFICATE OF INSURANCE

Bidder agrees to furnish the City, before commencing any Physical Work related to this Contract and as required elsewhere, the certificates of insurance as specified in these Documents.

Bidder further agrees that the amount stated herein includes specific consideration for the insurance coverages, including contractual liability, specified in the Contract Documents.

CONTRACT COMPLETION TIME

Bidder agrees that the work will be completed and ready for final payment in accordance with the number of calendar days or completion date indicated in the Agreement.

LIQUIDATED DAMAGES

Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the work within the times specified in the Agreement.

ADDENDA

The Bidder hereby acknowledges that it has received Addenda No's _____, _____, _____, _____, _____ (Bidder shall insert No. of each Addendum received) and agrees that all addenda issued are hereby made part of the Contract Documents, and the Bidder further agrees that its Bid(s) includes all impacts resulting from said addenda.

SALES AND USE TAXES

The Bidder agrees that all sales and use taxes are included in the stated bid prices for the work, unless provision is made herein for the Bidder to separately itemize the estimated amount of sales tax.

SUBCONTRACTORS

The Bidder further agrees that if the bid is the apparent low bid, he shall submit, within 5 days after the bid opening, a listing of subcontracting firms or businesses that will be awarded subcontracts for work in excess of \$5,000 and a copy of the City of Unalaska business license for the Contractor and each Subcontractor.

BID TABULATION AND SUMMARY

The Bidder further proposes to accept, as full payment for work proposed herein, the amount computed under provisions of the Contract Documents and based on the following Bid amounts, it being expressly understood that the unit quantities of work shown on the plans is independent of the exact quantities involved. The Bidder agrees that the bid amount represent(s) a true measure of the labor and materials required to furnish, install, or provide the item of Work, including all allowances for overhead and profit. The amount shall be shown in both words and figures. In case of a discrepancy, the amount shown in words shall govern.

Bidder agrees to perform all of the work described in the Documents including the specifications, special provisions, and as generally shown on the plans for the prices stated in the Bid Schedules. Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding. Bidder understands that the Owner reserves the right to pick and choose what bid items will be constructed as part of this work, recognizing that Mobilization and Demobilization will be common to the remaining items of Work.

City of Unalaska
AQUATICS CENTER IMPROVEMENTS PROJECT

BIDDER

If the Bidder is awarded a construction Contract on this Proposal, the surety who provides the Performance Bond and Payment Bond will be _____

_____ whose address is _____

_____, _____,

Street

City

_____.

State

Zip

BIDDER

An Individual

By

_____(SEAL)

(Individual's name)

doing business as

Business

address: _____

Phone No.: _____

Fax No.: _____

Email address: _____

A Partnership

By _____ (SEAL)

(Firm name)

(general partner)

Business address: _____

Phone No.: _____

Fax No.: _____

Email address: _____

A Corporation

By _____
(Corporation name)

(state of incorporation)

By _____
(name of person authorized to sign)

(Title)

(Corporate Seal)

Attest _____
(Secretary)

Business address: _____

Phone No.: _____

Fax No.: _____

Email address: _____

A Joint Venture

By _____
(Name)

(Address)

By _____
(Name)

(Address)

Phone Number and Address for receipt of official communications

Business address: _____

Phone No.: _____

Fax No.: _____

Email address: _____

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

SUBMITTED on _____, 20__.

BID PROPOSAL
City of Unalaska
Aquatics Center Improvements Project

Base Bid –AQUATICS CENTER IMPROVEMENTS PROJECT

TASK NO.	NAME OF ITEM	UNIT	QUANTITY	UNIT COST	AMOUNT
BB	BASE BID	LUMP SUM	1		

TOTAL BASE BID (NUMERICAL) _____

TOTAL BASE BID (WRITTEN TEXT) _____

Additive Alternate #1 – NEW CARD LOCK DOOR ENTRY SYSTEM

TASK NO.	NAME OF ITEM	UNIT	QUANTITY	UNIT COST	AMOUNT
AA1	NEW CARD LOCK DOOR ENTRY SYSTEM	LUMP SUM	1		

TOTAL ADDITIVE ALTERNATE #1 (NUMERICAL) _____

TOTAL ADDITIVE ALTERNATE #1 (WRITTEN TEXT) _____

Additive Alternate #2 – NEW CAMERA SURVEILLANCE SYSTEM

TASK NO.	NAME OF ITEM	UNIT	QUANTITY	UNIT COST	AMOUNT
AA2	NEW CAMEA SURVEILLANCE SYSTEM	LUMP SUM	1		

TOTAL ADDITIVE ALTERNATE #2 (NUMERICAL) _____

TOTAL ADDITIVE ALTERNATE #2 (WRITTEN TEXT) _____

Additive Alternate #3 – NEW SOUND SYSTEM

TASK NO.	NAME OF ITEM	UNIT	QUANTITY	UNIT COST	AMOUNT
AA3	NEW SOUND SYSTEM	LUMP SUM	1		

TOTAL ADDITIVE ALTERNATE #3 (NUMERICAL) _____

TOTAL ADDITIVE ALTERNATE #3 (WRITTEN TEXT) _____

Additive Alternate #4 – NEW ICE MAKER

TASK NO.	NAME OF ITEM	UNIT	QUANTITY	UNIT COST	AMOUNT
AA4	NEW ICE MAKER	LUMP SUM	1		

TOTAL ADDITIVE ALTERNATE #4 (NUMERICAL) _____

TOTAL ADDITIVE ALTERNATE #4 (WRITTEN TEXT) _____

Additive Alternate #5 –REMOVE EXISTING POOL DECK DRAIN AND INSTALL NEW DRAIN INCLUDING WORK TO REFINISH POOL DECK

TASK NO.	NAME OF ITEM	UNIT	QUANTITY	UNIT COST	AMOUNT
AA5	REMOVE EXISTING POOL DECK DRAIN AND INSTALL NEW DRAIN INCLUDING WORK TO REFINISH POOL DECK	LUMP SUM	1		

TOTAL ADDITIVE ALTERNATE #5 (NUMERICAL) _____

TOTAL ADDITIVE ALTERNATE #5 (WRITTEN TEXT) _____

Bidding Company: _____

Name (Printed): _____

Signature: _____ Date: _____

Contractor's License No. _____ Business License No. _____

BID BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

as Principal, hereinafter called Principal, and

(Name of Surety)

(Address of Surety)

a corporation duly organized under the laws of the State of Alaska as Surety, hereinafter called Surety,
are held and firmly bound unto

City of Unalaska

(Name of Owner)

PO Box 610, Unalaska, Alaska 99685

(Address of Owner)

as Obligee, hereinafter called Obligee, in the sum of _____
_____ Dollars, (\$ _____) for the payment of which sum well and truly to be
made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators,
successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for the City of Unalaska – **AQUATICS CENTER
IMPROVEMENTS PROJECT**, located in Unalaska, Alaska.

NOW THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into
a Contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as
may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful
performance of such Contract and for the prompt payment of labor and material furnished in the
prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such
bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof
between the amount specified in said bid and such larger amount for which the Obligee may in good faith
contract with another party to perform the Work covered by said bid, then this obligation shall be null and
void, otherwise to remain in full force and effect.

Signed and Sealed this _____ day of _____ 2015

(Principal)

Seal

(Surety)

Seal

(Printed Name & Title)

(Printed Name & Title)

BID FORM

00300-9

Section 00500
STANDARD FORM OF AGREEMENT
BETWEEN THE OWNER AND CONTRACTOR

THIS AGREEMENT is dated as of the _____ day of _____ in the year 2015, by and between the City of Unalaska (hereinafter called OWNER) and _____ (hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK

CONTRACTOR shall complete all work as specified or indicated in the Contract Documents. The work is generally described as follows:

The work will include, but not be limited to, furnishing all labor, tools, equipment, and materials and performing all operations in connection with the **AQUACTICS CENTER IMPROVEMENTS PROJECT**. This contract includes BASE BID, ADDITIVE ALTERNATE 1 (New Card Lock Door Entry System), ADDITIVE ALTERNATE 2 (New Camera Surveillance System), ADDITIVE ALTERNATE 3 (New Sound System), ADDITIVE ALTERNATE 4 (New Ice Maker), ADDITIVE ALTERNATE 5 (Remove existing pool deck drain and install new drain including work to refinish pool deck).

1. Project Locations: City of Unalaska; Aquatics Center, 55 E. Broadway Ave, Unalaska, AK 99685
2. Owner: City of Unalaska, Department of Parks, Recreation, and Culture.

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the WORK consists of the following:

- Construction Drawings (Plan Sheets)
- Technical Specifications
- Agreement
- Invitation to Bid
- Instructions to Bidders
- Bid Forms
- Performance Bond
- Payment Bond
- General Conditions
- Supplementary Conditions
- Addenda numbers _____ to _____, inclusive.
- Change Orders which may be delivered or issued after Effective Date of the Agreement and not attached hereto.

Article 2. CONTRACT TIME

- 2.1 For the Base Bid and any additive alternates that are awarded, the **Substantial Completion Date** shall be July 30th, 2016 and the **Final Completion Date** shall be August 13th, 2016. Final Completion Date of Additive Alternate #5 is August 1, 2016 in order to accommodate a swim meet. The earliest date which interior construction work can begin is April 25, 2016, however, material staging outdoors is allowable prior to April 25, 2016.

OWNER CONTRACTOR AGREEMENT

- 2.2 Liquidated Damages. The OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that the OWNER will suffer financial loss if the work is not completed within the times specified above, plus any extensions thereof allowed in accordance with Article 11 of the General Conditions. These types of losses are difficult to quantify. They include, but are not limited to, increased expenses associated with management, lost efficiency in the movement of City employees and materials, impacts to public health associated with drainage, loss of efficiency and impacts to local businesses, and general inconvenience to the public. They also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by the OWNER if the work is not completed on time. Accordingly, instead of requiring any such proof, the OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay the OWNER, for each project shown above, **Five Hundred Dollars (\$500.00) for each day** that expires after the time specified above for **Substantial Completion** and **One Thousand Dollars (\$1,000.00) for each day** that expires after the time specified above for **Final Completion** and readiness for final payment. Should Substantial Completion not be accomplished before the specified Final Completion date, then the combined liquidated damages shall be **One Thousand Five-Hundred Dollars (\$1,500.00) for each day**.

Article 3. CONTRACT PRICE

- 3.1 The OWNER shall pay CONTRACTOR for completion of the work in accordance with the Contract Documents an amount equal to sum of the established unit prices for each separately identified item of unit price work multiplied by the measured quantity of actual items installed plus the sum of the lump sum prices for each separately identified and selected bid item (herein referred to as the "Contract Sum").
- 3.2 The Contract sum is based upon the Bid Items which are set forth in the Contract Documents and which are hereby accepted by the OWNER.

Article 4. PAYMENT PROCEDURES

CONTRACTOR shall submit Applications for Payment in accordance with Article 13 of the General Conditions. Applications for Payment will be processed by the OWNER as provided in the General Conditions.

- 4.1. Progress Payments. The OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment on or about a day of the month mutually agreeable to the OWNER and CONTRACTOR as agreed to at the preconstruction conference. All progress payments will be on the basis of the progress of the work measured by the actual installed quantity of items, plus allowances for stockpiled materials.
- 4.1.1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below, but, in each case, less the aggregate of payments previously made and less such amounts as the OWNER shall determine, or the OWNER may withhold, in accordance with Article 13 (paragraph 13.8) of the General Conditions and the Supplemental Conditions.
- a. Ninety percent of work completed.
 - b. Once 50 percent of the work is complete as determined by the OWNER, and if the character and progress of the work have been satisfactory to the OWNER, the OWNER, may determine that, as long as the character and progress of the work

OWNER CONTRACTOR AGREEMENT

remain satisfactory to them, there will be no additional retainage on account of work completed; in which case, the remaining progress payments prior to Substantial Completion will be in an amount equal to 100 percent of the work completed.

4.1.2. Upon Substantial Completion, in an amount sufficient to increase total payments to CONTRACTOR to 95 percent of the Contract Price, less such amounts as the OWNER shall determine, or the OWNER may withhold, in accordance with Article 13 of the General Conditions.

4.2. Final Payment. Upon final completion and acceptance of the work in accordance with the General Conditions; Affidavit of Payment of Debts and Claims; Affidavit of Release of Liens; and Receipt of Consent of Surety Company to Final Payment, the OWNER shall pay the remainder of the Contract Price as provided in said Article 13.

4.2.1 Deductions. The City may deduct from the amount of any payment made to Contractor any sums owed to City by Contractor including, but not limited to, past due sales tax, port and harbor fees, property tax, or rent. Before making any such deduction the City shall have provided Contractor written notice of the amount claimed by City to be due and owing from Contractor.

Article 5. INTEREST ON RETAINAGE

All retainage shall bear interest at the rate required by AS 36.90.250, if applicable.

Article 6. CONTRACTOR'S REPRESENTATIONS

In order to induce the OWNER to enter into this agreement, CONTRACTOR makes the following representations:

- 6.1. CONTRACTOR has familiarized itself with the nature and extent of the Contract Documents, work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance, or furnishing of the work.
- 6.2. CONTRACTOR has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, reports, and studies which pertain to the subsurface or physical conditions at or contiguous to the site or which otherwise may affect the cost, progress, performance, or furnishing of the work as CONTRACTOR considers necessary for the performance or furnishing of the work at the Contract Price, within the Contract Time, and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.2 of the General Conditions; and no additional examinations, investigations, explorations, tests, reports, studies, or similar information or data are or will be required by CONTRACTOR for such purposes.
- 6.3. CONTRACTOR has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, investigations, explorations, tests, reports, studies, or similar information or data in respect of said Underground Facilities are or will be required by CONTRACTOR in order to perform and furnish the work at the Contract Price, within the Contract Time, and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.4 of the General Conditions.

OWNER CONTRACTOR AGREEMENT

- 6.4. CONTRACTOR has correlated the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Contract Documents.
- 6.5. CONTRACTOR has given the OWNER written notice of all conflicts, errors, or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by the OWNER is acceptable to CONTRACTOR.

Article 7. MISCELLANEOUS

- 7.1. Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.
- 7.2. The CONTRACTOR shall submit the Performance Bond, Labor and Material Payment Bonds, and Certification of Insurance and City of Unalaska business licenses and all Subcontractor City of Unalaska business licenses as required by the Contract Documents, prior to commencement of the Work. The Performance and Material Payment Bonds shall be in the amount of 100% of the contract bid price.
- 7.3. No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation monies that may become due and monies that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.
- 7.4. OWNER and CONTRACTOR each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect of all covenants, agreements, and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, The OWNER and CONTRACTOR have signed all counterparts of this Agreement. All portions of the Contract Documents have been signed or identified by the OWNER and - CONTRACTOR.

This Agreement will be effective on _____, 20__.

CITY OF UNALASKA

CONTRACTOR _____

By _____ By _____
David A. Martinson, City Manager

(CORPORATE SEAL)

(CORPORATE SEAL)

Attest _____ Attest _____
City Clerk

OWNER CONTRACTOR AGREEMENT

Address for giving notices
PO Box 610
Unalaska, Alaska 99685

Address for giving notices

Section 00610
PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

as Principal, hereinafter called Principal, and

(Name of Surety)

(Address of Surety)

as Surety, hereinafter called Surety, are held and firmly bound unto

City of Unalaska
(Name of Owner)

PO Box 610, Unalaska, Alaska 99685
(Address of Owner)

as Obligee, hereinafter called Obligee, in the sum of _____

Dollars, (\$ _____) for the
payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our
heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Contractor has a written agreement dated _____ day of _____ 20 ____,
entered into a Contract with Owner for the

CITY OF UNALASKA
AQUATICS CENTER IMPROVEMENTS PROJECT

in accordance with the Specifications prepared by **Wolf Architecture, Inc.** which Contract is by reference
made a part hereof, and is hereinafter referred to as the Contract.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly
and faithfully perform said Contract, then this obligation shall be null and void; otherwise it shall remain in
full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the Owner.

Whenever Contractor shall be, and declared by Owner to be in default under the Contract, the Owner having
performed Owner's obligations thereunder, the Surety may promptly remedy the default, or shall promptly

PERFORMANCE BOND

00610-1

1) Complete the Contract in accordance with its terms and conditions, or

2) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, or, if the Owner elects, upon determination by the Owner and the Surety jointly of the lowest responsible bidder, arrange for a contract between such bidder and Owner, and make available as the Work progresses (even though there should be a default or a succession of defaults under the contract or contracts completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the Contract price", as used in this paragraph, shall mean the total amount payable by Owner to the Contractor under the Contract and any amendments thereto, less the amount properly paid by Owner to Contractor.

Any suit under this bond must be instituted before the expiration of six (6) years from the date on which final payment under the Contract falls due.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Owner named herein or the heirs, executors, administrators, or successors of the Owner.

Signed and Sealed this _____ day of _____ 20__.

(Principal) Seal

(Witness) (Title) Seal

(Surety) Seal

(Witness) (Title) Seal

**Section 00620
PAYMENT BOND**

KNOW ALL MEN BY THESE PRESENTS,

That _____ as Contractor, and
_____ as Surety, are held and firmly bound unto
City of Unalaska hereinafter called "OWNER", in the sum of _____ dollars, for the
payment of which sum, well and truly made, we bind ourselves, our heirs, executors, administrators,
successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, said CONTRACTOR has been awarded and is about to enter into the annexed
Agreement with said OWNER to perform the WORK as specified or indicated in the Contract
Documents entitled

**CITY OF UNALASKA
AQUATICS CENTER IMPROVEMENTS PROJECT**

NOW THEREFORE, if said CONTRACTOR, or subcontractor, fails to pay for any materials,
equipment, or other supplies, or for rental of same, used in connection with the performance of work
contracted to be done, or for amounts due under applicable State law for any work or labor thereon,
said Surety will pay for the same in an amount not exceeding the sum specified above, and, in the
event suit is brought upon this bond, a reasonable attorney's fee to be fixed by the court. This bond
shall inure to the benefit of any persons, companies, or corporations entitled to file claims under
applicable State law.

PROVIDED, that any alterations in the WORK to be done or the materials to be furnished, or
changes in the time of completion, which may be made pursuant to the terms of said Contract
Documents, shall not in any way release said CONTRACTOR or said surety thereunder, nor shall
any extensions of time granted under the provisions of said Contract Documents release either said
CONTRACTOR or said Surety thereunder, nor shall any extensions of time granted under the
provisions of said Contract Documents release either said CONTRACTOR or said Surety, and notice
of such alterations or extensions of the Agreement is hereby waived by said Surety.

SIGNED AND SEALED, this _____ day of _____, 20____.

(SEAL)

(CONTRACTOR)

(Surety)

By: _____
(Signature)

By: _____
(Signature)

(SEAL AND NOTARIAL ACKNOWLEDGMENT OF SURETY)

City of Unalaska
Aquatics Center Improvements
Project No. 15101

Division 00
Section 00630
GENERAL CONDITIONS

SECTION 00630
GENERAL CONDITIONS

GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS

ARTICLE 2 -AUTHORITIES AND LIMITATIONS

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- 2.2 Evaluations by Contracting Officer
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- 2.4 Visits to Site

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- 3.2 Copies of Contract Documents
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- 3.4 Intent of Contract Documents
- 3.5 Discrepancy in Contract Documents
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- 4.1 Availability of Lands
- 4.2 Visit to Site
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- 4.4 Utilities
- 4.5 Damaged Utilities
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- 5.2 Bonds
- 5.3 Replacement of Bond and Surety
- 5.4 Insurance Requirements
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- 6.1 Supervision of Work
- 6.2 Superintendence by CONTRACTOR
- 6.3 Character of Workers
- 6.4 CONTRACTOR to Furnish
- 6.5 Materials and Equipment
- 6.6 Anticipated Schedules
- 6.7 Finalizing Schedules
- 6.8 Adjusting Schedules
- 6.9 Substitutes of "Or-Equal" Items
- 6.10 Substitute Means and Methods
- 6.11 Evaluation of Substitution
- 6.12 Dividing the Work
- 6.13 Subcontractors
- 6.14 Use of Premises

- 6.15 Structural Loading
- 6.16 Record Documents
- 6.17 Safety and Protection
- 6.18 Safety Representative
- 6.19 Emergencies
- 6.20 Shop Drawings and Samples
- 6.21 Shop Drawings and Sample Review
- 6.22 Maintenance During Construction
- 6.23 Continuing the Work
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- 7.2 Permits, Licenses, and Taxes
- 7.3 Patented Devices, Materials and Processes
- 7.4 Compliance of Specifications and Drawings
- 7.5 Accident Prevention
- 7.6 Sanitary Provisions
- 7.7 Business Registration
- 7.8 Professional Registration and Certification
- 7.9 Local Building Codes
- 7.10 Air Quality Control
- 7.11 Archaeological or Paleontological Discoveries
- 7.12 Alaska Forest Products
- 7.13 Preferential Employment
- 7.14 Wages and Hours of Labor
- 7.15 Overtime Work Hours and Compensation
- 7.16 Covenant Against Contingent Fees
- 7.17 Officials Not to Benefit
- 7.18 Personal Liability of Public Officials

ARTICLE 8 - OTHER WORK

- 8.1 Related Work at Site
- 8.2 Access, Cutting, and Patching
- 8.3 Defective Work by Others
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- 9.1 CITY's Right to Change
- 9.2 Authorization of Changes within the General Scope
- 9.3 Directives
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- 9.8 Notification of Surety
- 9.9 Differing Site Conditions

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- 10.1 Contract Price
- 10.2 Claim for Price Change
- 10.3 Change Order Price Determination
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GENERAL CONDITIONS

ACKNOWLEDGMENT

The City of Unalaska, "General Conditions" are based on the "Standard General Conditions of the Construction Contract" as published by the National Society of Professional Engineers (document number 1910-8, 1983 edition) on behalf of the Engineers Joint Construction Documents Committee. Portions of the NSPE General Conditions are reprinted herein by the express permission of NSPE to the State of Alaska, which supplied these General Conditions to the City of Unalaska. Modifications to the NSPE text are made to provide for State laws, regulations, and established procedures.

The granting of permission by NSPE to allow the State of Alaska to reprint portions of the NSPE document 1910-8, 1983 does not constitute approval of the State of Alaska General Conditions or the subsequently developed City of Unalaska General Conditions.

Insurance requirements were modified March, 2001. Brooks Chandler review comments were incorporated January, 2005 and March, 2008.

ARTICLE 1 - DEFINITIONS

Wherever used in the Contract Documents the following terms, or pronouns in place of them, are used, the intent and meaning, unless a different intent or meaning is clearly indicated, shall be interpreted as set forth below.

The titles and headings of the Sections, Subsections and Articles herein are intended for convenience of reference and shall not be considered as having bearing on their interpretation.

Whenever used in the Specifications or other Contract Documents the following terms have the meaning indicated which are applicable to both the singular and plural thereof. Working titles which have a masculine gender, are intended to refer to persons of either sex.

Terms not defined below shall have their ordinary accepted meanings within the context in which they are used. "Webster's Third New International Dictionary of the English Language, Unabridged, Copyright 1961", or subsequent revision thereof; shall provide ordinarily accepted meanings. Words which have a well-known technical or trade meaning when used to describe work, materials or equipment shall be interpreted in accordance with such meaning. Words defined in Article 1 are capitalized throughout these General Conditions.

Addenda - All clarifications, corrections, or changes issued graphically or in writing by the CITY after the advertisement but prior to the opening of bids.

Advertisement - The public announcement, as required by law, inviting Bids for work to be performed or materials to be furnished.

Application for Payment - The form provided by the CITY which is used by the CONTRACTOR in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract Documents.

Approved or Approval - Means written approval by Contracting Officer or his authorized representative as defined in Article 2.1.

A.S. - Initials which stand for Alaska Statute.

Award - The acceptance, by the City, of the successful Bid.

Bid - The offer of a bidder, on the prescribed form to perform the work at the prices quoted.

Bid Bond - A type of bid Guarantee.

Bid Guaranty - The security furnished with a bid to guarantee that the bidder will enter into a contract if his proposal is accepted by the Department.

Bidder - Any individual, firm, corporation or any acceptable combination thereof, or joint venture submitting a bid for the advertised Work.

Calendar Day - Every day shown on the calendar, beginning and ending at midnight.

Change Order - A written order by the CITY directing changes to the contract, within its general scope.

City - The City of Unalaska, Alaska. References to "owner" or "Contracting Agency" mean the city.

Conditions of the Contract - Those portions of the Contract Documents which define the rights and responsibilities of the contracting parties and of others involved in the Work. The Conditions of the Contract include General Conditions, Supplementary Conditions and other Conditions.

Contract - The written agreement between the CITY and the CONTRACTOR setting forth the obligations of the parties and covering the Work to be performed, all as required by the Contract Documents.

Contract Documents - The Contract Form, Addenda, the Bidding Requirements and CONTRACTOR's Bid (including all appropriate bid tender forms), the Bonds, the Conditions of the Contract and all other Contract Requirements, the Specifications, and the Drawings furnished by the CITY to the CONTRACTOR, together with all change orders and documents approved by the Contracting Officer for inclusion, modifications and supplements issued on or after the Effective Date of the Contract.

Contracting Officer - The person authorized to enter into and administer the contract on behalf of the CITY. He has authority to make findings, determinations and decisions with respect to the contract and, when necessary, to modify or terminate the contract. The Contracting Officer is identified on the Construction Contract.

Contractor - The individual, firm, corporation or any acceptable combination thereof, contracting with the CITY for performance of the Work.

Contract Price - The total moneys payable by the CITY to the CONTRACTOR under the terms of the Contract Documents.

Contract Time - The number of Calendar Days or the date specified in the Construction Contract and authorized time extensions which identify how much time the CONTRACTOR is allowed to achieve Final Completion.

Consultant - A person, firm, agency or corporation retained by the CITY to prepare Contract Documents, perform construction administration services, or other Project related services.

Defective - An adjective which refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to the CITY's approval of final payment.

Directive - A written communication to the CONTRACTOR from the Contracting Officer interpreting or enforcing a contract requirement or ordering commencement of an item of work.

Drawings - The drawings which show the character and scope of the Work to be performed and which have been furnished by the CITY or the CITY's Consultant and are by reference made a part of the Contract Documents.

Effective Date of the Contract - The date on which the Contract is fully executed by both CONTRACTOR and the CITY.

Final Completion - The Work (or specified part thereof) has progressed to the point that all Work is complete as determined by the Contracting Officer.

General Requirements - Sections of Division 1 of the Specifications which contain administrative and procedural requirements as well as requirements for temporary facilities which apply to Specification Divisions 2 through 16.

Holidays - The City of Unalaska recognizes the following holidays:

1. New Years Day - January 1
2. President's Day - Third Monday in February
3. Memorial Day - Last Monday in May
4. Independence Day - July 4
5. Labor Day - First Monday in September
6. Veteran's Day - November 11
7. Thanksgiving Day - Fourth Thursday in November
8. Christmas Day - December 25

If any holiday listed above falls on a Saturday, Saturday and the preceding Friday are both legal holidays. If the holiday should fall on a Sunday, Sunday and the following Monday are both legal holidays.

Install - Means to build into the Work, ready to be used in complete and operable condition and in compliance with Contract Documents.

Invitation for Bids or Invitation to Bid - A portion of the Bidding Documents soliciting bids for the Work to be performed.

Notice of Intent to Award - The written notice by the CITY to all Bidders identifying the apparent successful Bidder and establishing the CITY's intent to execute the Contract when all conditions required for execution of the Contract are met.

Notice to Proceed - A written notice to the CONTRACTOR to begin the Work and establishing the date on which the Contract Time begins.

Payment Bond - The security furnished by the CONTRACTOR and his surety to guarantee payment of the debts covered by the bond.

Performance Bond - The security furnished by the CONTRACTOR and his surety to guarantee performance and completion of the work in accordance with the contract.

Project - The total construction, of which the Work performed under the Contract Documents is the whole or a part, where such total construction may be performed by more than one prime contractor.

Project Manager - The authorized representative of the Contracting Officer who is responsible for administration of the Contract.

Proposal - The offer of a bidder, on the prescribed form to perform the work at the prices quoted.

Proposal Guaranty - The security furnished with a proposal to guarantee that the bidder will enter into a contract if his proposal is accepted by the Department.

Regulatory Requirement - Laws, rules, regulations, ordinances, codes and/or orders of the United States, State of Alaska or City of Unalaska to the extent applicable to the Work.

Shop Drawings - All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for the CONTRACTOR to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by the CONTRACTOR to illustrate material, equipment, fabrication, or erection for some portion of the Work.

Specification - Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative and procedural details applicable thereto.

Subcontractor - An individual, firm, or corporation to whom the CONTRACTOR sublets part of the contract.

Substantial Completion - Although not fully completed, the Work (or a specified part thereof) has progressed to the point where, in the opinion of the CITY as evidenced by the CITY's written notice, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended. The terms "Substantially Complete" and "Substantially Completed" as applied to any Work refer to Substantial Completion thereof.

Supplemental Agreement - A written agreement between the CONTRACTOR and the CITY covering work that is not within the general scope of the contract.

Surety - The corporation, partnership, or individual, other than the CONTRACTOR, executing a bond furnished by the CONTRACTOR.

Unit Price Work - Work to be paid for on the basis of unit prices.

Using Agency - The entity who will occupy or use the completed Work.

Work - Work is the act of, and the result of, performing services, furnishing labor, furnishing and incorporating materials and equipment into the Project and performing other duties and obligations, all as required by the Contract Documents. Such Work, however incremental, will culminate in the entire completed Project, or the various separately identifiable parts thereof.

ARTICLE 2 - AUTHORITIES AND LIMITATIONS

2.1 Authorities and Limitations:

- 2.1.1 The Contracting Officer alone, shall have the power to bind the CITY and to exercise the rights, responsibilities, authorities and functions vested in the Contracting Officer by the Contract Documents, except that the Contracting Officer shall have the right to designate in writing authorized representatives to act for him. Wherever any provision of the Contract Documents specifies an individual or organization, whether Governmental or private, to perform any act on behalf of or in the interests of the CITY that individual or organization shall be deemed to be the Contracting Officer's authorized representative under this Contract but only to the extent so specified. The Contracting Officer may, at any time during the performance of this Contract, vest in any such authorized representatives additional power and authority to act for the Contracting Officer or designate additional representatives, specifying the extent of their authority to act for the Contracting Officer; a copy of each document vesting additional authority in or removing that authority from an authorized representative or designating an additional authorized representative shall be furnished to the CONTRACTOR. The City Council reserves the right to appoint a new Contracting Officer without affecting any of the CONTRACTOR's obligations to the CITY under this Contract.
- 2.1.2 The CONTRACTOR shall perform the Work in accordance with any written order (including but not limited to instruction, direction, interpretation or determination) issued by an authorized representative in accordance with the authorized representative's authority to act for the Contracting Officer. The CONTRACTOR assumes all the risk and consequences of performing the Work in accordance with any order (including but not limited to instruction, direction, interpretation or determination) of anyone not authorized to issue such order, and of any order not in writing.
- 2.1.3 Should the Contracting Officer or his authorized representative designate Consultant(s) to act for the CITY as provided for in Paragraph 2.1.1, the performance or nonperformance of the Consultant under such authority to act, shall not give rise to any contractual obligation or duty of the Consultant to the CONTRACTOR, any Subcontractor, any Supplier, or any other organization performing any of the Work or any Surety representing them.
- 2.1.4 The term "Contracting Officer" when used in the text of these General Conditions or other Contract Documents following this section shall also mean any duly authorized representative of the Contracting Officer when authorized in accordance with Paragraph 2.1.1.

2.2 Evaluations by Contracting Officer:

- 2.2.1 The Contracting Officer will decide all questions which may arise as to;
 - a. Quality and acceptability of materials furnished;
 - b. Quality and acceptability of Work performed;
 - c. Compliance with the Schedule of Progress;
 - d. Interpretation of Contract Documents;
 - e. Acceptable fulfillment of the Contract on the part of the CONTRACTOR.
- 2.2.2 In order to avoid cumbersome terms and confusing repetition of expressions in the Contract Documents whenever the terms "as ordered", "as directed", "as required", "as approved", or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper" or "satisfactory" or adjectives of like effect or import are used it shall be understood as if the expression were followed by the words "the Contracting Officer". When such terms are used to describe a requirement, direction, review or judgment of the Contracting Officer as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise).

- 2.2.3 The use of any such term or adjective shall not be effective to assign to the CITY any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provision of paragraphs 2.3 or 2.4.

2.3 Means & Methods:

The means, methods, techniques, sequences or procedures of construction, or safety precautions and the program incident thereto, and the failure to perform or furnish the Work in accordance with the Contract Documents are the sole responsibility of the CONTRACTOR.

2.4 Visits to Site:

The Contracting Officer will make visits to the site and approved remote storage sites at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. Such observations or the lack of such observations shall in no way relieve the CONTRACTOR from his duty to perform the Work in accordance with the Contract Documents.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.1 Incomplete Contract Documents:

The submission of a Bid by the Bidder is considered a representation that the Bidder examined the Contract Documents to make certain that all sheets and pages were provided and that the Bidder is satisfied as to the conditions to be encountered in performing the Work. The CITY expressly denies any responsibility or liability for a Bid submitted on the basis of an incomplete set of Contract Documents.

3.2 Copies of Contract Documents:

The CITY shall furnish to the CONTRACTOR up to ten copies of the Contract Documents. Additional copies will be furnished, upon request, at the cost of reproduction.

3.3 Scope of Work:

The Contract Documents comprise the entire Contract between the CITY and the CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the Regulatory Requirements.

It is specifically agreed between the parties executing this Contract that it is not intended by any of the provisions of the Contract to create in the public or any member thereof a third party benefit, or to authorize anyone not a party to this Contract to maintain a suit pursuant to the terms or provisions of the Contract.

3.4 Intent of Contract Documents:

- 3.4.1 It is the intent of the Contract Documents to describe a functionally complete Project to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied, without any adjustment in Contract Price or Contract Time, whether or not specifically called for.
- 3.4.2 Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the Regulatory Requirements, whether such reference be specific or by implication, shall mean the edition stated in the Contract Documents or if not stated the latest standard specification, manual, code or Regulatory Requirements in effect at the time of Advertisement for the Project (or, in the Effective Date of the Contract if there was no Advertisement). However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of the CITY and the CONTRACTOR, or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to the CITY or any of the CITY's consultants, agents or employees, any duty or authority to supervise or direct the furnishing

or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraphs 2.3 or 2.4.

3.5 Discrepancy in Contract Documents:

3.5.1 Before undertaking the Work, the CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures, and dimensions shown thereon and all applicable field measurements. Work in the area by the CONTRACTOR shall imply verification of figures, dimensions and field measurements. If, during the above study or during the performance of the Work, the CONTRACTOR finds a conflict, error, discrepancy or omission in the Contract Document, or a discrepancy between the Contract Documents and any standard specification, manual, code, or Regulatory Requirement which affects the Work, The CONTRACTOR shall promptly report such discrepancy in writing to the Contracting Officer. The CONTRACTOR shall obtain a written interpretation or clarification from the Contracting Officer before proceeding with any Work affected thereby. Any adjustment made by the CONTRACTOR without this determination shall be at his own risk and expense. However, the CONTRACTOR shall not be liable to the CITY for failure to report any conflict, error or discrepancy in the Contract Documents unless the CONTRACTOR had actual knowledge thereof or should reasonably have knowledge thereof.

3.5.2 Discrepancy - Order of Precedence:

When conflicts, errors, or discrepancies within the Contract Documents exist, the order of precedence from most governing to least governing will be as follows:

Supplementary Conditions

General Conditions

General Requirements

Technical Specifications

Drawings (recorded dimensions will govern over scaled dimensions, large details over small scale, schedules over plans, architectural drawings over structural drawings over mechanical and electrical drawings)

3.6 Clarifications and Interpretations:

The Contracting Officer will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents as the Contracting Officer may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents.

3.7 Reuse of Documents:

Neither the CONTRACTOR nor any Subcontractor, or other person or organization performing or furnishing any of the Work under a direct or indirect contract with the CITY shall have or acquire any title to or ownership rights in any of the Contract Documents (or copies thereof) prepared by or for the CITY and they shall not reuse any of the Contract Documents on extensions of the Project or any other project without written consent of the Contracting Officer.

Contract Documents prepared by the CONTRACTOR in connection with the Work shall become the property of the CITY.

ARTICLE 4 - LANDS AND PHYSICAL CONDITIONS

4.1 Availability of Lands:

The CITY shall furnish as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for use of the CONTRACTOR in connection with the Work. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by the CITY, unless otherwise provided in the Contract Documents. The CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.2 Visit to Site:

The submission of a Bid by the CONTRACTOR is considered a representation that the CONTRACTOR has visited and carefully examined the site and is satisfied as to the conditions to be encountered in performing the Work and as to the requirements of the Contract Documents.

4.3 Explorations and Reports:

The Supplementary Conditions identify those reports of explorations and tests of subsurface conditions at the site that have been utilized by the CITY in preparation of the Contract Documents. The CONTRACTOR may rely upon the accuracy of the factual data contained in such reports, but not upon interpretations or opinions drawn from such factual data contained therein or for the completeness or sufficiency thereof. Except as indicated in the immediately preceding sentence and in paragraphs 4.4 and 9.9, CONTRACTOR shall have full responsibility with respect to surface and subsurface conditions at the site.

4.4 Utilities:

4.4.1 The horizontal and vertical locations of known underground utilities as shown or indicated by the Contract Documents are approximate and are based on information and data furnished to the CITY by the owners of such underground utilities.

4.4.2 The CONTRACTOR shall have full responsibility for:

- a. Reviewing and checking all information and data concerning utilities.
- b. Locating all underground utilities shown or indicated in the Contract Documents which are affected by the Work.
- c. Coordination of the Work with the owners of all utilities during construction.
- d. Safety and protection of all utilities as provided in paragraph 6.17.
- e. Repair of any damage to utilities resulting from the Work in accordance with 4.4.4 and 4.5.

4.4.3 If Work is to be performed by any utility owner, the CONTRACTOR shall cooperate with such owners to facilitate the Work.

4.4.4 In the event of interruption to any utility service as a result of accidental breakage or as a result of being exposed or unsupported, the CONTRACTOR shall promptly notify the utility owner and the Contracting Officer. If service is interrupted repair work shall be continuous until the service is restored. No Work shall be undertaken around fire hydrants until provisions for continued service have been approved by the local fire authority.

4.5 Damaged Utilities:

When utilities are damaged by the CONTRACTOR, the utility owner shall have the choice of repairing the utility or having the CONTRACTOR repair the utility. In the following circumstances, the CONTRACTOR shall reimburse the utility owner for repair costs or provide at no cost to the utility owner or the CITY, all materials, equipment and labor necessary to complete repair of the damage:

- a. When the utility is shown or indicated in the Contract Documents.
- b. When the utility has been located by the utility owner.
- c. When no locate was requested by the CONTRACTOR for utilities shown or indicated in the Contract Documents.
- d. All visible utilities.

- e. When the CONTRACTOR could have, otherwise, reasonably been expected to be aware of such utility.

4.6 Utilities Not Shown or indicated.

If, while directly performing the Work, an underground utility is uncovered or revealed at the site which was not shown or indicated in the Contract Documents and which the CONTRACTOR could not reasonably have been expected to be aware of, the CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work affected thereby (except in an emergency as permitted by paragraph 6.19) identify the owner of such underground facility and give written notice thereof to that owner and to the Contracting Officer. The Contracting Officer will promptly review the underground utility to determine the extent to which the Contract Documents and the Work should be modified to reflect the impacts of the discovered utility. The Contract Documents will be amended or supplemented to the extent necessary through the issuance of a change document by the Contracting Officer. During such time, the CONTRACTOR shall be responsible for the safety and protection of such underground utility as provided in paragraph 6.17. The CONTRACTOR may be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are directly attributable to the existence of any underground utility that was not shown or indicated in the Contract Documents and which the CONTRACTOR could not reasonably have been expected to be aware of.

4.7 Survey Control:

The CITY will identify sufficient horizontal and vertical control data to enable the CONTRACTOR to survey and layout the Work. All survey work shall be performed under the direct supervision of a registered Land Surveyor when required by paragraph 7.8.

ARTICLE 5 - BONDS, INSURANCE, AND INDEMNIFICATION

5.1 Delivery of Bonds:

When the CONTRACTOR delivers the executed Contract to the Contracting Officer, the CONTRACTOR shall also deliver to the Contracting Officer such bonds as the CONTRACTOR may be required to furnish in accordance with paragraph 5.2.

5.2 Bonds:

The CONTRACTOR shall furnish Performance and Payment Bonds, each in an amount as shown on the Contract as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These bonds shall remain in effect for one year after the date of Final Completion and until all obligations under this Contract, except special guarantees as per 12.7, have been met. All bonds shall be furnished on forms provided by the CITY (or copies thereof) and shall be executed by such Sureties as are authorized to do business in the State of Alaska. The contracting Officer may at his option copy the Surety with notice of any potential default or liability.

5.3 Replacement of Bond and Surety:

If the Surety on any bond furnished in connection with this Contract is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.2, or otherwise becomes unacceptable to the CITY, or if any such Surety fails to furnish reports as to his financial condition as requested by the CITY, the CONTRACTOR shall within five days thereafter substitute another bond and Surety, both of which must be acceptable to CITY.

5.4 Insurance Requirements:

- 5.4.1. The contractor shall carry and maintain throughout the life of this contract, at its own expense, insurance not less than the amounts and coverage herein specified, and the City of Unalaska, its employees and agents shall be named as additional insured under the insurance coverage so specified and where allowed, with respect to the performance of the work. There shall be no right of subrogation against the City or its agents performing work in connection with the work, and this **waiver of subrogation** shall be endorsed upon the policies. Insurance shall be placed with companies acceptable to the City of Unalaska; and these policies providing coverage thereunder shall contain provisions that no cancellation or material changes in the policy relative to this project shall become effective except upon **30 days** prior written notice thereof to the City of Unalaska.

- 5.4.2. Prior to commencement of the work, the contractor shall furnish certificates to the City of Unalaska, in duplicate, evidencing that the Insurance policy provisions required hereunder are in force. Acceptance by the City of Unalaska of deficient evidence does not constitute a waiver of contract requirements.
- 5.4.3. The contractor shall furnish the City of Unalaska with certified copies of policies upon request. The minimum coverages and limits required are as follows:
1. **Workers' Compensation** insurance in accordance with the statutory coverages required by the State of Alaska and **Employers Liability** insurance with limits not less than **\$1,000,000** and, where applicable, insurance in compliance with any other statutory obligations, whether State or Federal, pertaining to the compensation of injured employees assigned to the work, including but not limited to Voluntary Compensation, Federal Longshoremen and Harbor Workers Act, Maritime and the Outer Continental Shelf's Land Act.
 2. **Commercial General Liability** with limits not less than **\$1,000,000** per Occurrence and **\$2,000,000** Aggregate for Bodily Injury and Property Damage, including coverage for Premises and Operations Liability, Products and Completed Operations Liability, Contractual Liability, Broad Form Property Damage Liability and Personal Injury Liability. Coverage shall not contain any exclusion of Explosion, Collapse, or Underground. Coverage is to be endorsed to include a per project aggregate. Additionally, such insurance shall be considered primary to any other insurance carried by the City of Unalaska and the insurer will endorse the policy accordingly.
 3. **Commercial Automobile Liability** on all owned, non-owned, hired and rented vehicles with limits of liability of not less than **\$1,000,000** Combined Single Limit for Bodily Injury and Property Damage per each accident or loss.
 4. If applicable, Contractor's Equipment insurance covering all of the contractor's equipment and machinery to be used in connection with the performance of the work specified in this contract. This coverage requirement may be waived at the discretion of the City of Unalaska if the Contractor self-insures the equipment and will waive all right of recovery against the City of Unalaska in writing.
 5. **Umbrella/Excess Liability** insurance coverage of not less than **\$1,000,000** per occurrence and annual aggregate providing coverage in excess of General Liability, Auto Liability, and Employers Liability.
 6. If work involves use of aircraft, Aircraft Liability insurance covering all owned and non-owned aircraft with a per occurrence limit of not less than \$1,000,000.
 7. If work involves use of watercraft, Protection and Indemnity insurance with limits not less than \$1,000,000 per occurrence. Hull and Machinery coverage is to be carried on the vessel for the full current market value. This coverage requirement may be waived at the discretion of the City of Unalaska if the contractor self-insures the equipment and will waive all rights of recovery against the City of Unalaska in writing.
 8. Where applicable, **Professional Liability** insurance with limits of not less than \$1,000,000 per claim and \$1,000,000 aggregate, subject to a maximum deductible of \$10,000 per claim. The City of Unalaska has the right to negotiate increase of deductibles subject to acceptable financial information of the policyholder.
 9. Where applicable, Pollution Liability insurance with a project limit of not less than \$1,000,000 subject to a maximum deductible of \$10,000 to include coverage for Asbestos, Hazardous Materials, Lead or other related environmental hazards. The City of Unalaska has the right to negotiate increase of deductibles subject to acceptable financial information of the policyholder.

In the event Asbestos, Hazardous Materials, Lead or other related environmental hazards are transported by vehicle and/or marine vessel, the operator of such vehicles and vessels shall provide a Certificate of Insurance for the transportation of such materials (including loading and unloading) with limits of not less than \$1,000,000.

10. **Builder's Risk Insurance:** Coverage shall be provided on an "All Risk" completed value basis and protect the interests of the City, the contractor and his subcontractors. Coverage shall include all materials, equipment and supplies that are intended for specific installation in the project while such materials, supplies and equipment are located at the project site and in transit from port of arrival to job site and while temporarily located away from the project site.
- 5.4.4. Any deductibles or self-insured retentions must be declared to and approved by the City. At the option of the City, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the City, its officers, officials, employees and volunteers; or the contractor shall provide a financial guarantee satisfactory to the City guaranteeing payment of losses and related investigations, claim administration and defense expense.
- 5.4.5. All insurance policies as described above are required to be written on an "occurrence" basis. In the event occurrence coverage is not available, the contractor agrees to maintain "claims made" coverage for a minimum of two years after project completion.
- 5.4.6. If the contractor employs subcontractors to perform any work hereunder, the contractor agrees to require such subcontractors to obtain, carry, maintain, and keep in force during the time in which they are engaged in performing any work hereunder, policies of insurance which comply with the requirements as set forth in this section. This requirement is applicable to subcontractors of any tier.
- 5.4.7. The contractor is required to maintain all certificates of insurance during the course of the project and for a minimum of three (3) years following the completion of such project. It is further agreed, that upon request by the City of Unalaska, the Contractor will provide copies of any and all subcontractor certificates of insurance for review of compliance.
- 5.4.8. Failure by the Contractor to maintain the required insurance coverage or to comply with the above, may, at the option of the City of Unalaska, be deemed Defective Work and remedied in accordance with the contract.
- 5.5 Indemnification:
- 5.5.1 The CONTRACTOR and his Subcontractors will name the owner as "Additional Insured" and will provide a "Waiver of Subrogation" on all required policies of insurance.
- 5.5.2 The CONTRACTOR shall indemnify, save harmless, and defend the CITY and its agents and its employees from any and all claims or actions for injuries or damages sustained by any person or property arising directly or indirectly from the CONTRACTOR's performance of this contract; however, this provision has no effect if, but only if, the sole proximate cause of the injury or damage is the negligence of the City or its agents.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.1 Supervision of Work:

The CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. All Work under this Contract shall be performed in a skillful and workmanlike manner. The CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction.

6.2 Superintendence by CONTRACTOR:

The CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent. The Contracting Officer shall be advised in writing of the superintendent's name, local address, and telephone number. This written advice is to be kept current until Final Acceptance by the CITY. The superintendent will be the CONTRACTOR's representative at the site and shall have full authority to act and sign documents on behalf of the CONTRACTOR.

All communications given to the superintendent shall be as binding as if given to the CONTRACTOR. The CONTRACTOR shall cooperate with the Contracting Officer in every way possible.

6.3 Character of Workers:

The CONTRACTOR shall provide a sufficient number of competent, suitable qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. The CONTRACTOR shall at all times maintain good discipline and order at the site. The Contracting Officer may, in writing, require the CONTRACTOR to remove from the Work any employee the Contracting Officer deems incompetent, careless, or otherwise detrimental to the progress of the Work, but the Contracting Officer shall have no duty to exercise this right.

6.4 CONTRACTOR to Furnish:

Unless otherwise specified in the General Requirements, the CONTRACTOR shall furnish and assume full responsibility for all materials, equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

6.5 Materials and Equipment:

All materials and equipment shall be of specified quality and new, except as otherwise provided in the Contract Documents. If required by the Contracting Officer, the CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to the CITY or any of the CITY's Consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraphs 2.3 or 2.4.

6.6 Anticipated Schedules:

6.6.1 Within reasonable time prior to the preconstruction conference the CONTRACTOR shall submit to the Contracting Officer for review an anticipated progress schedule indicating the starting and completion dates of the various stages of the Work.

6.6.2 Within fifteen days after the date of the Notice to Proceed, the CONTRACTOR shall submit to the Contracting Officer for review:

Anticipated schedule of Shop Drawing submissions; and Anticipated Schedule of Values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work which will be confirmed in writing by the CONTRACTOR at the time of submission.

6.7 Finalizing Schedules:

Prior to processing the first Application for Payment the Contracting Officer and the CONTRACTOR will finalize schedules required by paragraph 6.6.

Acceptance by the CITY of the progress schedule, will neither impose on the CITY nor relieve the CONTRACTOR from full responsibility for the progress or scheduling of the Work. If accepted, the finalized schedule of Shop Drawing and other required submissions will be acceptable to the CITY as providing a workable arrangement for processing the submissions. If accepted the finalized Schedule of Values will be acceptable to the CITY as an approximation of anticipated value of Work accomplished over the anticipated Contract Time. Receipt and acceptance of a schedule submitted by the CONTRACTOR shall not be construed to assign responsibility for performance or contingencies to the CITY or relieve the CONTRACTOR of his responsibility to adjust his forces, equipment, and work schedules as may be necessary to insure completion of the Work within prescribed Contract Time. Should the progress of the Work be discontinued for any reason, the CONTRACTOR shall notify the Contracting Officer at least 24 hours in advance of resuming operations.

6.8 Adjusting Schedules:

Upon substantial changes to the schedule or upon request, the CONTRACTOR shall submit to the Contracting Officer for acceptance (to the extent indicated in paragraph 6.7 and the General Requirements) adjustments in the schedules to reflect the actual present and anticipated progress of the Work.

6.9 Substitutes or "Or-Equal" Items:

- 6.9.1 Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by the Contracting Officer only if sufficient information is submitted by the CONTRACTOR which clearly demonstrates to the Contracting Officer that the material or equipment proposed is equivalent or equal in all aspects to that named. The procedure for review by the Contracting Officer will include the following as supplemented in the General Requirements.
- 6.9.2 Requests for review of substitute items of material and equipment will not be accepted by the Contracting Officer from anyone other than the CONTRACTOR.
- 6.9.3 If the CONTRACTOR wishes to furnish or use a substitute item of material or equipment, the CONTRACTOR shall make written application to the Contracting Officer for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will state that the evaluation and acceptance of the proposed substitute will not delay the CONTRACTOR's achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with the CITY for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty.
- 6.9.4 All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by the Contracting Officer in evaluating the proposed substitute. The Contracting Officer may require the CONTRACTOR to furnish at the CONTRACTOR's expense additional data about the proposed substitute. The Contracting Officer may reject any substitution request which the Contracting Officer determines is not in the best interest of the CITY.

6.10 Substitute Means and Methods:

If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, the CONTRACTOR may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to the Contracting Officer, if the CONTRACTOR submits sufficient information to allow the Contracting Officer to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by the Contracting Officer will be similar to that provided in paragraph 6.9 as applied by the Contracting Officer and as may be supplemented in the General Requirements.

6.11 Evaluation of Substitution:

The Contracting Officer will be allowed a reasonable time within which to evaluate each proposed substitute. The Contracting Officer will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without the Contracting Officer's prior written acceptance which will be evidenced by either a Change Order or a Shop Drawing approved in accordance with Sections 6.20 and 6.21. The Contracting Officer may require the CONTRACTOR to furnish at the CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute.

6.12 Dividing the Work:

The divisions and sections of the Specifications and the identifications of any Drawings shall not control the CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

6.13 Subcontractors:

The CONTRACTOR may utilize the services of licensed specialty Subcontractors on those parts of the Work which, under normal contracting practices, are performed by licensed specialty Subcontractors, in accordance with the following conditions:

- 6.13.1 The CONTRACTOR shall not award any Work to any Subcontractor without prior written approval of the Contracting Officer. This approval will not be given until the CONTRACTOR submits to the Contracting Officer a written statement concerning the proposed award to the Subcontractor which shall contain required E.E.O. documents, evidence of insurance, and a copy of the proposed subcontract executed by the subcontractor. No acceptance by the Contracting Officer of any such Subcontractor shall constitute a waiver of any right of the CITY to reject Defective Work.
- 6.13.2 The CONTRACTOR shall be fully responsible to the CITY for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions.
- 6.13.3 All Work performed for CONTRACTOR by a Subcontractor will be pursuant to an appropriate written agreement between CONTRACTOR and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of the CITY and contains waiver provisions as required by paragraph 13.17 and termination provisions as required by Article 14.
- 6.13.4 Nothing in the Contract Documents shall create any contractual relationship between the CITY and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of the CITY to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Regulatory Requirements. The CITY will not undertake to settle any differences between or among the CONTRACTOR, Subcontractors, or Suppliers.
- 6.13.5 The CONTRACTOR and Subcontractors shall coordinate their work and facilitate general progress of Work. Each trade shall afford other trades every reasonable opportunity for installation of their work and storage of materials. If cooperative work of one trade must be altered due to lack of proper supervision, or failure to make proper provisions in time by another trade, such conditions shall be remedied by the CONTRACTOR with no change in Contract Price or Contract Time.
- 6.13.6 The CONTRACTOR shall include on his own payrolls any person or persons working on the contract who are not covered by written subcontract, and shall ensure that all Subcontractors include on their payrolls all persons performing work under the direction of the Subcontractor.

6.14 Use of Premises:

The CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Project limits and approved remote storage sites and lands and areas identified in and permitted by Regulatory Requirements, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. The CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against the CITY by any such owner or occupant because of the performance of the Work, the CONTRACTOR shall hold the CITY and its agencies harmless.

6.15 Structural Loading:

The CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall the CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.16 Record Documents:

The CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Field Memos, Work Orders, Change Orders, Supplemental Agreements, and written interpretations and clarifications (issued pursuant to paragraph 3.6) in good order and annotated to show all changes made during construction. These record documents together with all approved samples and a counterpart of all approved Shop Drawings will be available to the Contracting Officer for reference and copying. Upon completion of the Work, the annotated record documents, samples and Shop Drawings will be delivered to the Contracting Officer. Record documents shall accurately record variations in the Work which vary from requirements shown or indicated in the Contract Documents.

6.17 Safety and Protection:

The CONTRACTOR alone shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. The CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

- 6.17.1 All employees on the Work and other persons and organizations who may be affected thereby;
- 6.17.2 All the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and
- 6.17.3 Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation or replacement in the course of construction.
- 6.17.4 The CONTRACTOR shall comply with all applicable Regulatory Requirements enacted for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. The CONTRACTOR shall notify owners of adjacent property and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the Contractor, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by the CONTRACTOR with no change in Contract Price or Contract Time except as stated in 4.6, except damage or loss attributable to unforeseeable causes beyond the control of and without the fault or negligence of the CONTRACTOR, including but not restricted to acts of God or the public enemy. The CONTRACTOR's duties and responsibilities for the safety and protection of the Work shall continue until Final Acceptance (except as otherwise expressly provided in connection with Substantial Completion).

6.18 Safety Representative:

The CONTRACTOR shall designate a responsible safety representative at the site. This person shall be the CONTRACTOR's superintendent unless otherwise designated in writing by the CONTRACTOR to the Contracting Officer.

6.19 Emergencies:

In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, the CONTRACTOR, without special instruction or authorization from the CITY, is obligated to act to prevent threatened damage, injury or loss. The CONTRACTOR shall give the Contracting Officer prompt written notice if the CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents is required because of the action taken in response to an emergency, a change will be authorized by one of the methods indicated in Paragraph 9.2, as determined appropriate by the Contracting Officer.

6.20 Shop Drawings and Samples:

- 6.20.1 After checking and verifying all field measurements and after complying with applicable procedures specified in the General Requirements, the CONTRACTOR shall submit to the Contracting Officer for review and approval in accordance with the accepted schedule of Shop Drawing submissions the required number of all Shop Drawings, which will bear a stamp or specific written indication that the CONTRACTOR has satisfied CONTRACTOR's responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as the Contracting Officer may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable the Contracting Officer to review the information as required.
- 6.20.2 The CONTRACTOR shall also submit to the Contracting Officer for review and approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication that the CONTRACTOR has satisfied CONTRACTOR's responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended.
- 6.20.3 Before submission of each Shop Drawing or sample the CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.
- 6.20.4 At the time of each submission the CONTRACTOR shall give the Contracting Officer specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and, in addition, shall cause a specific notation to be made on each Shop Drawing submitted to the Contracting Officer for review and approval of each such variation. All variations of the proposed shop drawing from that specified will be identified in the submission and available maintenance, repair and replacement service will be indicated. The submittal will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such variation, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by the CITY in evaluating the proposed variation. If the variation may result in a change of Contract Time or Price, or contract responsibility, and is not minor in nature; the CONTRACTOR must submit a written request for Change Order with the variation to notify the CITY of his intent. The CITY may require the CONTRACTOR to furnish at the CONTRACTOR's expense additional data about the proposed variation. The Contracting Officer may reject any variation request which the Contracting Officer determines is not in the best interest of the CITY.

6.21 Shop Drawing and Sample Review:

- 6.21.1 The Contracting Officer will review with reasonable promptness Shop Drawings and samples, but the Contracting Officer's review will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review of a separate item as such will not indicate acceptance of the assembly in which the item functions. The CONTRACTOR shall make corrections required by the Contracting Officer and shall return the required number of corrected copies of Shop Drawings and submit as required new samples for review. The CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by the Contracting Officer on previous submittals.
- 6.21.2 The Contracting Officer's review of Shop Drawings or samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless the CONTRACTOR has in writing advised the Contracting Officer of each such variation at the time of submission as required by paragraph 6.20.4. The Contracting Officer if he so determines, may give written approval of each such variation by Change Order, except that, if the variation is minor and no Change Order has been requested a specific written notation thereof incorporated in or accompanying the Shop Drawing or sample review comments shall suffice as a modification. No approval by the Contracting Officer will relieve the

CONTRACTOR from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the provisions of paragraph 6.20.3.

- 6.21.3 Where a Shop Drawing or sample is required by the Specifications, any related Work performed prior to the Contracting Officer's review of the pertinent submission will be the sole expense and responsibility of the CONTRACTOR.

6.22 Maintenance During Construction:

The CONTRACTOR shall maintain the Work during construction and until Substantial Completion, at which time the responsibility for maintenance shall be established in accordance with paragraph 13.10.

6.23 Continuing the Work:

The CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with the CITY. No work shall be delayed or postponed pending resolution of any disputes, disagreements, or claims except as the CONTRACTOR and the Contracting Officer may otherwise agree in writing.

6.24 Consent to Assignment:

The CONTRACTOR shall obtain the prior written consent of the Contracting Officer to any proposed assignment of any interest in, or part of this Contract. The consent to any assignment or transfer shall not operate to relieve the CONTRACTOR or his Sureties of any of his or its obligations under this Contract or the Performance Bonds. Nothing herein contained shall be construed to hinder, prevent, or affect an assignment of monies due, or to become due hereunder, made for the benefit of the CONTRACTOR's creditors pursuant to law.

6.25 Use of Explosives:

- 6.25.1 When the use of explosives is necessary for the prosecution of the Work, the CONTRACTOR shall exercise the utmost care not to endanger life or property, including new Work and shall follow all Regulatory Requirements applicable to the use of explosives. The CONTRACTOR shall be responsible for all damage resulting from the use of explosives.
- 6.25.2 All explosives shall be stored in a secure manner in compliance with all Regulatory Requirements, and all such storage places shall be clearly marked. Where no Regulatory Requirements apply, safe storage shall be provided not closer than 1,000 feet from any building, camping area, or place of human occupancy.
- 6.25.3 The CONTRACTOR shall notify each public utility owner having structures in proximity to the site of his intention to use explosives. Such notice shall be given sufficiently in advance to enable utility owners to take such steps as they may deem necessary to protect their property from injury. However, the CONTRACTOR shall be responsible for all damage resulting from the use of the explosives, whether or not, utility owners act to protect their property.

6.26 CONTRACTOR's Records:

- 6.26.1 Records of CONTRACTOR and Subcontractors relating to personnel, payrolls, invoices of materials, and any and all other data relevant to the performance of the Contract, must be kept on a generally recognized accounting system. Such records must be available during normal work hours to the Contracting Officer for purposes of investigation to ascertain compliance with Regulatory Requirements and provision of the Contract Documents.
- 6.26.2 Payroll records must contain the name and address of each employee, his correct classification, rate of pay, daily and weekly number of hours of work, deductions made, and actual wages paid. The CONTRACTOR and Subcontractors shall make employment records available for inspection by the Contracting Officer and representatives of the State of Alaska Department of Labor and Workforce Development and will permit such representatives to interview employees during working hours on the Project.
- 6.26.3 Records of all communications between the CITY and the CONTRACTOR and other parties, where such communications affected performance of this Contract, must be kept by the CONTRACTOR and maintained

for a period of three years from Final Acceptance. The CITY or its assigned representative may perform an audit of these records during normal work hours after written notice to the CONTRACTOR.

ARTICLE 7 - LAWS AND REGULATIONS

7.1 Laws to be Observed:

The CONTRACTOR shall keep fully informed of all Regulatory Requirements and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the Work, or which in any way affect the conduct of the Work. The CONTRACTOR shall at all times observe and comply with all such Regulatory Requirements, orders and decrees; and shall protect and indemnify the CITY and its representatives against claim or liability arising from or based on the violation of any such Regulatory Requirement, order, or decree whether by the CONTRACTOR, Subcontractor, or any employee of either. Except where otherwise expressly required by applicable Regulatory Requirements, the CITY shall not be responsible for monitoring CONTRACTOR's compliance with any Regulatory Requirements.

7.2 Permits, Licenses, and Taxes:

- 7.2.1 The CONTRACTOR shall procure all permits and licenses, pay all charges, fees and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the Work. As a condition of performance of this Contract, the CONTRACTOR shall pay all Federal, State and local taxes incurred by the CONTRACTOR, in the performance of the Contract. Proof of payment of these taxes is a condition precedent to final payment by the CITY under this Contract.
- 7.2.2 The CONTRACTOR's certification that taxes have been paid (as contained in the Release of Contract) may be verified with the Department of Revenue and Department of Labor and Workforce Development and Unalaska City Clerk, prior to final payment.
- 7.2.3 If any Federal, State or local tax is imposed, charged, or repealed after the date of Bid opening and is made applicable to and paid by the CONTRACTOR on the articles or supplies herein contracted for, then the Contract shall be increased or decreased accordingly by a Change Order.
- 7.2.4 The Contractor shall require all Subcontractors to obtain a City of Unalaska Business License.

7.3 Patented Devices, Materials and Processes:

If the CONTRACTOR employs any design, device, material, or process covered by letters of patent, trademark or copyright, the CONTRACTOR shall provide for such use by suitable legal agreement with the patentee or owner. The CONTRACTOR and the Surety shall indemnify and save harmless the CITY and its agents, any affected third party, from any and all claims for infringement by reason of the use of any such patented design, device, material or process, or any trademark or copyright, and shall indemnify the CITY for any costs, expenses, and damages which it may be obliged to pay by reason of any infringement, at any time during the prosecution or after the completion of the Work.

7.4 Compliance of Specifications and Drawings:

If the CONTRACTOR observes that the Specifications and Drawings supplied by the CITY are at variance with any Regulatory Requirements, CONTRACTOR shall give the Contracting Officer prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in paragraph 9.2. as determined appropriate by the Contracting Officer. If the CONTRACTOR performs any Work knowing or having reason to know that it is contrary to such Regulatory Requirements, and without such notice to the Contracting Officer, the CONTRACTOR shall bear all costs arising therefrom; however, it shall not be the CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings supplied by the CITY are in accordance with such Regulatory Requirements.

7.5 Accident Prevention:

The CONTRACTOR shall comply with AS 18.60.075 and all pertinent provisions of the Construction Code Occupational Safety and Health Standards issued by the Alaska Department of Labor.

7.6 Sanitary Provisions:

The CONTRACTOR shall provide and maintain in a neat and sanitary condition such accommodations for the use of his employees and CITY representatives as may be necessary to comply with the Regulatory requirements.

7.7 Business Registration:

The Contractor shall comply with AS 08.18.011 which states, as follows: "it is unlawful for a person to submit a bid or work as a contractor until he has been issued a certificate of registration by the Department of Commerce. A partnership or joint venture shall be considered registered if one of the general partners or ventures whose name appears in the name under which the partnership or venture does business is registered." The Contractor shall obtain a City of Unalaska Business License prior to commencement of the Work to the extent required by the City of Unalaska Code of Ordinances section 9.30.101.

7.8 Professional Registration and Certification:

All craft trades, architects, engineers and land surveyors, electrical administrators, explosive handlers, and welders employed under the Contract shall specifically comply with applicable provisions of AS 08.18, 08.48, 08.40, 08.52, and 08.99. Provide copies of individual licenses within seven days following a request from the Contracting Officer.

7.9 Local Building Codes:

The CONTRACTOR shall comply with AS 35.10.025 which requires construction in accordance with applicable local building codes including the obtaining of required permits. City of Unalaska permits required for the work are identified in the Supplemental Conditions.

7.10 Air Quality Control:

The CONTRACTOR shall comply with all applicable provision of AS 46.03.04 as pertains to Air Pollution Control.

7.11 Archaeological or Paleontological Discoveries:

When the CONTRACTOR's operation encounters prehistoric artifacts, burials, remains of dwelling sites, or paleontological remains, such as shell heaps, land or sea mammal bones or tusks, the CONTRACTOR shall cease operations immediately and notify the Contracting Officer. No artifacts or specimens shall be further disturbed or removed from the ground and no further operations shall be performed at the site until so directed. Should the Contracting Officer order suspension of the CONTRACTOR's operations in order to protect an archaeological or historical finding, or order the CONTRACTOR to perform extra work, such shall be covered by an appropriate Contract change document.

7.12 Not used.

7.13 Preferential Employment:

To the fullest extent allowed by law, the CONTRACTOR shall comply with AS 36.10, as amended, which provides for preferential employment of Alaska residents.

7.14 Wages and Hours of Labor:

- 7.14.1 One certified copy of all payrolls shall be submitted weekly to the State Department of Labor to assure compliance with AS 36.05.040, Filing Schedule of Employees Wages Paid and Other Information. The prime CONTRACTOR shall be responsible for the submission of certified copies of payrolls of all Subcontractors. The certification shall affirm that the payrolls are current and complete, that the wage rates contained therein are not less than the applicable rates referenced in these Contract Documents, and that the classification set forth for each laborer or mechanic conforms with the work he performed. The CONTRACTOR and his Subcontractors shall attend all hearings and conferences and produce such books, papers, and documents all as requested by the Department of Labor. Should Federal funds be involved, the Contracting Agency shall also receive a copy of the CONTRACTOR's certified payrolls.

7.14.2 The following Labor provisions shall also apply to this Contract:

- a. The CONTRACTOR and his Subcontractors shall pay all employees unconditionally and not less than once a week;
- b. Wages may not be less than those stated in the advertised specifications, regardless of the contractual relationship between the CONTRACTOR or Subcontractors and laborers, mechanics, or field surveyors;
- c. The scale of wages to be paid shall be posted by the CONTRACTOR in a prominent and easily accessible place at the site of the work;
- d. The CITY shall withhold so much of the accrued payments as is necessary to pay laborers, mechanics, or field surveyors employed by the CONTRACTOR or Subcontractors the difference between
 1. the rates of wages required by the contract to be paid laborers, mechanics, or field surveyors on the work, and
 2. the rates of wages in fact received by laborers, mechanics or field surveyors.

7.15 Overtime Work Hours and Compensation:

Pursuant to 40 U.S.C. 327-330 and AS 23.10.060, the CONTRACTOR shall not require nor permit any laborer or mechanic in any workweek in which he is employed on any work under this Contract to work in excess of eight hours in any Calendar Day or in excess of forty hours in such workweek on work subject to the provisions of the Contract Work Hours and Safety Standards Act unless such laborer or mechanic receives compensation at a rate not less than one and one half times his basic rate of pay for all such hours worked in excess of eight hours in any Calendar Day or in excess of forty hours in such workweek whichever is the greater number of overtime hours. In the event of any violation of this provision, the CONTRACTOR shall be liable to any affected employee for any amounts due and penalties and to the CITY for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic employed in violation of this provision in the sum of \$10.00 for each Calendar Day on which such employee was required or permitted to be employed on such work in excess of eight hours or in excess of the standard workweek of forty hours without payment of the overtime wages required by this paragraph.

7.16 Covenant Against Contingent Fees:

The CONTRACTOR warrants that no person or selling agent has been employed or retained to solicit or secure this Contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee. For breach or violation of this warranty, the CITY shall have the right to annul this Contract without liability or, in its discretion, to deduct price of consideration from the Contract or otherwise recover the full amount of such commission, percentage, brokerage, or contingent fee.

7.17 Officials Not to Benefit:

No member of or delegate to the U.S. Congress, the State Legislature, Unalaska City Council or other State or City Officials shall be admitted to any share or part of this Contract, nor to any benefit that may arise there from. However, this provision shall not be construed to extend to this Contract if made with a corporation for its general benefits.

7.18 Personal Liability of Public Officials:

In carrying out any of the provisions thereof, or in exercising any power or authority granted to the Contracting Officer by the Contract, there will be no liability upon the City nor upon its agents or authorized as its representatives, either personally or as officials of the City of Unalaska, it being always understood that in such matters they act as agents and representatives of the CITY.

ARTICLE 8 - OTHER WORK

8.1 Related Work at Site:

- 8.1.1 The CITY reserves the right at any time to contract for and perform other or additional work on or near the Work covered by the Contract.
- 8.1.2 When separate contracts are let within the limits of the Project, the CONTRACTOR shall conduct his Work so as not to interfere with or hinder the work being performed by other contractors. The CONTRACTOR shall join his work with that of the others in an acceptable manner and shall perform it in proper sequence to that of others.
- 8.1.3 If the fact that other such work to be performed is identified or shown in the Contract Documents, the CONTRACTOR shall assume all liability, financial or otherwise, in connection with this Contract and indemnify and save harmless the City of Unalaska and its agents from any and all damages or claims that may arise because of inconvenience, delay, or loss experienced by the CONTRACTOR because of the presence and operations of other contractors.
- 8.1.4 If the fact that such other work to be performed was not identified or shown in the Contract Documents, written notice thereof will be given to the CONTRACTOR prior to starting any such other work. If the CONTRACTOR believes that such performance will require an increase in Contract Price or Contract Time, the CONTRACTOR shall notify the Contracting Officer of such required increase within fifteen (15) calendar days following receipt of the Contracting Officer's notice. Should the Contracting Officer find such increase(s) to be justified, a Change Order will be executed.

8.2 Access, Cutting, and Patching:

The CONTRACTOR shall afford each utility owner and any other contractor who is a party to such a direct contract with the CITY (or the CITY, if the CITY is performing the additional work with the CITY's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work and shall properly connect and coordinate the Work with the work of others. The CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work, the CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter such other work with the written consent of the Contracting Officer. The duties and responsibilities of the CONTRACTOR under this paragraph are for the benefit of other contractors to the extent that there are comparable provisions for the benefit of the CONTRACTOR in said direct contracts between the CITY and other contractors.

8.3 Defective Work by Others:

If any part of the CONTRACTOR's Work depends for proper execution or results upon the work of any such other contractor, utility owner, or the CITY, the CONTRACTOR shall inspect and promptly report to the Contracting Officer in writing any delays, defects or deficiencies in such work that render it unavailable or unsuitable for such proper execution and results. The CONTRACTOR's failure to so report will constitute an acceptance of the other work as fit and proper for integration with CONTRACTOR's Work except for latent or non apparent defects and deficiencies in the other work.

8.4 Coordination:

If the CITY contracts with others for the performance of other work at the site, Contracting Officer will have authority and responsibility for coordination of the activities among the various prime contractors.

ARTICLE 9 - CHANGES

9.1 CITY's Right to Change:

Without invalidating the Contract and without notice to any Surety, the CITY may, at any time or from time to time, order additions, deletions or revisions in the Work within the general scope of the Contract, including but not limited to changes:

- 9.1.1 In the Contract Documents;
- 9.1.2 In the method or manner of performance of the Work;
- 9.1.3 In City-furnished facilities, equipment, materials, services, or site;
- 9.1.4 Directing acceleration in the performance of the Work.

9.2 Authorization of Changes within the General Scope:

Additions, deletions, or revisions in the Work within the general scope of the Contract as specified in 9.1 shall be authorized by one or more of the following ways:

- 9.2.1 Directive (pursuant to paragraph 9.3)
- 9.2.2 A Change Order (pursuant to paragraph 9.5)
- 9.2.3 CITY's acceptance of Shop Drawing variations from the Contract Documents as specifically identified by the CONTRACTOR as required by paragraph 6.20.4.

9.3 Directives:

- 9.3.1 The Contracting Officer shall provide written clarification or interpretation of the contract documents (pursuant to paragraph 3.6).
- 9.3.2 The Contracting Officer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents.
- 9.3.3 The Contracting Officer may order the Contractor to correct Defective Work or methods which are not in conformance with the Contract Documents.
- 9.3.4 The Contracting Officer may direct the commencement or suspension of Work or emergency related work (as provided in paragraph 6.19).
- 9.3.5 Upon the issuance of a Directive to the CONTRACTOR by the Contracting Officer, the CONTRACTOR shall immediately proceed with the performance of the work as prescribed by such Directive.
- 9.3.6 If the CONTRACTOR believes that the changes noted in a Directive may cause an increase in the Contract Price or an extension of Contract Time, the CONTRACTOR shall immediately provide written notice to the Contracting Officer depicting such increases before proceeding with the Directive, except in the case of an emergency. If the Contracting Officer finds the increase in Contract Price or the extension of Contract Time justified, a Change Order will be issued. If however, the Contracting Officer does not find that a Change Order is justified, the Contracting Officer may direct the CONTRACTOR to proceed with the work. The CONTRACTOR shall cooperate with the Contracting Officer in keeping complete daily records of the cost of such work. If a Change Order is ultimately determined to be justified, in the absence of agreed prices and unit prices, payment for such work will be made on a cost of the work basis as provided in 10.4.

9.4 Change Order:

A change in Contract Time, Contract Price, or responsibility may be made for changes within the scope of the Work only by Change Order. Upon receipt of an executed Change Order, the CONTRACTOR shall promptly proceed with the work involved which will be performed under the applicable conditions of the Contract Documents except as otherwise specifically provided. Changes in Contract Price and Contract Time shall be made in accordance with Article 10 and 11.

9.5 Shop Drawing Variations:

Variations by shop drawings shall only be eligible for consideration under 9.4 when the conditions affecting the price, time, or responsibility are identified by the CONTRACTOR in writing and a request for a Change Order is submitted as per 6.20.4.

9.6 Changes Outside the General Scope; Supplemental Agreement:

Any change which is outside the general scope of the Contract, as determined by the Contracting Officer, must be authorized by the appropriate representatives of the CITY and the CONTRACTOR.

9.7 Unauthorized Work:

The CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in this Article 9, except in the case of an emergency as provided in paragraph 6.19 and except in the case of uncovering Work as provided in paragraph 12.4.2.

9.8 Notification of Surety:

If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents including, but not limited to, Contract Price or Contract Time is required by the provisions of any Bond to be given to a Surety, the giving of any such notice will be the CONTRACTOR's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

9.9 Differing Site Conditions:

9.9.1 The CONTRACTOR shall promptly, and before such conditions are disturbed (except in an emergency as permitted by paragraph 6.19), notify the Contracting Officer in writing of: (1) subsurface or latent physical conditions at the site differing materially from those indicated in the Contract, and which could not have been discovered by a careful examination of the site, or (2) unknown physical conditions at the site, or an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Contract. The Contracting Officer shall promptly investigate the conditions, and if the Contracting Officer finds that such conditions do materially so differ and cause an increase or decrease in the CONTRACTOR's cost of, or time required for, performance of this Contract, an equitable adjustment shall be made and the Contract modified in writing accordingly.

9.9.2 Any claim for additional compensation by the CONTRACTOR under this clause shall be made in accordance with Article 15 and shall not be allowed unless the CONTRACTOR has first given the notice required by this Contract. In the event that the Contracting Officer and the CONTRACTOR are unable to reach an agreement concerning an alleged differing site condition, the CONTRACTOR will be required to keep an accurate and detailed record which will indicate the actual cost of the work done under the alleged differing site condition. Failure to keep such a record shall be a bar to any recovery by reason of such alleged differing site conditions. The Contracting Officer shall be given the opportunity to supervise and check the keeping of such records.

ARTICLE 10 - CONTRACT PRICE; COMPUTATION AND CHANGE

10.1 Contract Price:

The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to the CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by the CONTRACTOR shall be at his expense without change in the Contract Price. The Contract Price may only be changed by a Change Order or Supplemental Agreement.

10.2 Claim for Price Change:

Any claim for an increase or decrease in the Contract Price shall be submitted in accordance with the terms of Article 15, and shall not be allowed unless notice requirements of this Contract have been met.

10.3 Change Order Price Determination:

The value of any work covered by a Change Order for an increase or decrease in the Contract Price shall be determined in one of the following ways:

- 10.3.1 Where the work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved (subject to the provisions of paragraphs 10.9.1
- 10.3.2 By mutual acceptance of a lump sum price which includes overhead and profit.
- 10.3.3 When 10.3.1 and 10.3.2 are inapplicable, on the basis of the Cost of the Work (determined as provided in paragraphs 10.4 and 10.5) plus a CONTRACTORS's fee for overhead and profit (determined as provided in paragraph 10.6).

10.4 Cost of the Work:

The term Cost of the Work means the sum of all costs necessarily incurred and paid by the CONTRACTOR in the proper performance of the work. Except as otherwise may be agreed to in writing by the CITY, such costs shall be in amount no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 10.5:

- 10.4.1 Payroll costs for employees in the direct employ of the CONTRACTOR in the performance of the work under schedules of job classifications agreed upon by the CITY and the CONTRACTOR. Payroll costs for employees not employed full time on the work shall be apportioned on the basis of their time spent on the work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by the CITY.
- 10.4.2 Cost of all materials and equipment furnished and incorporated in the work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to the CONTRACTOR unless the CITY deposits funds with the CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to the CITY. All trade discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to the CITY, and the CONTRACTOR shall make provisions so that they may be obtained.
- 10.4.3 Payments made by the CONTRACTOR to Subcontractors for work performed by Subcontractors. If required by the CITY, CONTRACTOR shall obtain competitive quotes from Subcontractors or Suppliers acceptable to the CONTRACTOR and shall deliver such quotes to the CITY who will then determine which quotes will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a Fee, the Subcontractor's Cost of the Work shall be determined in the same manner as the CONTRACTOR's Cost of Work. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.
- 10.4.4 Costs of special consultants (including but not limited to engineers, architects, testing laboratories, and surveyors) employed for services necessary for the completion of the work.
- 10.4.5 Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel and subsistence expenses of the CONTRACTOR's employees incurred in discharge of duties connected with the work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the work, and cost less market value of such items used but not consumed which remain the property of the CONTRACTOR.

- c. Rentals of all construction equipment and machinery and the parts thereof whether rented from the CONTRACTOR or others in accordance with rental agreements approved by the CITY and the costs of transportation, loading, unloading, installation, dismantling and removal thereof - all in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the work.
- d. Sales, consumer, use or similar taxes related to the work, and for which the CONTRACTOR is liable, imposed by Regulatory Requirements.
- e. Deposits lost for causes other than negligence of the CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses), not compensated by insurance or otherwise, to the Work or otherwise sustained by the CONTRACTOR in connection with the performance and furnishing of the Work provided they have resulted from causes other than the negligence of the CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of the CITY. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining the CONTRACTOR's Fee. If, however, any such loss or damage requires reconstruction and the CONTRACTOR is placed in charge thereof, the CONTRACTOR shall be paid for services a fee proportionate to that stated in paragraphs 10.6.2.a and 10.6.2.b.
- g. The cost of utilities, fuel and sanitary facilities at the site.
- h. Minor expenses such as long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the work.
- i. Cost of premiums for additional bonds and insurance required because of changes in the work and premiums for property insurance coverage within the limits of the deductible amounts established by the CITY in accordance with Article 5.

10.5 Excluded Costs:

The term Cost of the Work shall not include any of the following:

- 10.5.1 Payroll costs and other compensation of CONTRACTOR's officer, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agency, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR's principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 10.4.1 or specifically covered by paragraph 10.4.4 - all of which are to be considered administrative costs covered by the CONTRACTOR's Fee.
- 10.5.2 Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.
- 10.5.3 Any part of CONTRACTOR's capital expenses including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.
- 10.5.4 Cost of premiums for all bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 10.4.5.i above).
- 10.5.5 Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of Defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

- 10.5.6 Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 10.4.

10.6 CONTRACTOR's Fee:

The CONTRACTOR's Fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

- 10.6.1 A mutually acceptable fixed fee; or if none can be agreed upon.
- 10.6.2 A fee based on the following percentages of the various portions of the Cost of the Work:
- a. For costs incurred under paragraphs 10.4.1 and 10.4.2, the CONTRACTOR's Fee shall be twenty percent;
 - b. For costs incurred under paragraph 10.4.3, the CONTRACTOR's Fee shall be fifteen percent; and if a sub-contract is on the basis of Cost of the Work Plus a Fee, the maximum allowable to CONTRACTOR on account of overhead and profit of all subcontractors shall be fifteen percent;
 - c. No fee shall be payable on the basis of costs itemized under paragraphs 10.4.4, 10.4.5 and 10.5;
 - d. The amount of credit to be allowed by the CONTRACTOR to the CITY for any such change which results in a net decrease in cost will be the amount of the actual net decrease plus a deduction in CONTRACTOR's Fee by an amount equal to ten percent of the net decrease; and
 - e. When both additions and credits are involved in any one change, the adjustment in CONTRACTOR's Fee shall be computed on the basis of the net change in accordance with paragraphs 10.6.2.a through 10.6.2.d, inclusive.

10.7 Cost Breakdown:

Whenever the cost of any work is to be determined pursuant to paragraphs 10.4 and 10.5, the CONTRACTOR will submit in form acceptable to the CITY an itemized cost breakdown together with supporting data.

10.8 Cash Allowances:

It is understood the CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such Subcontractors or Suppliers and for such sums within the limit of the allowances as may be acceptable to the Contracting Officer. CONTRACTOR agrees that:

- 10.8.1 The allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and
- 10.8.2 CONTRACTOR's cost for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances. No demand for additional payment on account of any thereof will be valid.

Prior to final payment, an appropriate Change Order will be issued to reflect actual amounts due the CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

10.9 Unit Price Work:

- 10.9.1 Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit prices for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Contract. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by the CONTRACTOR will be made by the CITY in accordance with paragraph 10.9.3.

- 10.9.2 Each unit price will be deemed to include an amount considered by the CONTRACTOR to be adequate to cover the CONTRACTOR's overhead and profit for each separately identified item. If the "Basis of Payment" clause in the Contract Documents relating to any unit price in the bid schedule requires that the said unit price cover and be considered compensation for certain work or material essential to the item, this same work or material will not also be measured or paid for under any other pay item which may appear elsewhere in the Contract Documents.
- 10.9.3 Payment to the CONTRACTOR shall be made only for the actual quantities of work performed and accepted or materials furnished, in conformance with the Contract Documents. When the accepted quantities of work or materials vary from the quantities stated in the bid schedule, or change documents, the CONTRACTOR shall accept as payment in full, payment at the stated unit prices for the accepted quantities of work and materials furnished, completed and accepted; except as provided below:
- a. When the quantity of work to be done or material to be furnished under any item, for which the total cost of the item exceeds 10% of the total Contract Price, is increased by more than 25 per cent of the quantity stated in the bid schedule, or change documents, either party to the Contract, upon demand, shall be entitled to an equitable unit price adjustment on the portion of the work above 125 per cent of the quantity stated in the bid schedule.
 - b. When the quantity of work to be done or material to be furnished under any major item, for which the total cost of the item exceeds 10% of the total Contract Price, is decreased by more than 25 per cent of the quantity stated in the bid schedule, or change documents either party to the contract, upon demand, shall be entitled to an equitable price adjustment for the quantity of work performed or material furnished, limited to a total payment of not more than 75 per cent of the amount originally bid for the item.

10.10 Determinations for Unit Prices:

The Contracting Officer will determine the actual quantities and classifications of Unit Price Work performed by the CONTRACTOR. The Contracting Officer will review with the CONTRACTOR preliminary determinations on such matters before certifying the prices on the Bid Schedule. The Contracting Officer's certification thereon will be final and binding on the CONTRACTOR, unless, within ten days after the date of any such decisions, the CONTRACTOR delivers to the Contracting Officer written notice of intention to appeal from such a decision.

ARTICLE 11 - CONTRACT TIME; COMPUTATION AND CHANGE

11.1 Commencement of Contract Time; Notice to Proceed:

The Contract Time will commence to run on the day indicated in the Notice to Proceed.

11.2 Starting the Work:

No work on contract items shall be performed before the effective date of the Notice to Proceed. The CONTRACTOR shall notify the Contracting Officer at least 24 hours in advance of the time actual construction operations will begin. The CONTRACTOR may request a limited Notice to Proceed after award has been made, to permit him to order long lead materials which could cause delays in project completion. However, granting is within the sole discretion of the Contracting Officer, and refusal or failure to grant a limited Notice to Proceed shall not be a basis for claiming for delay, extension of time, or alteration of price.

11.3 Computation of Contract Time:

- 11.3.1 When the contract time is specified on a calendar days basis, all work under the contract shall be completed within the number of calendar days specified. The count of contract time begins on the day following receipt of the Notice to Proceed by the CONTRACTOR, if no starting day is stipulated therein. Calendar days shall continue to be counted against contract time until and including the date of Final Completion of the Work.
- 11.3.2 When the Contract completion time is specified as a fixed calendar date, it shall be the date of Final Completion.

11.4 Time Change:

The Contract Time may only be changed by a Change Order or Supplemental Agreement.

11.5 Extension Due to Delays:

The right of the CONTRACTOR to proceed shall not be terminated nor the CONTRACTOR charged with liquidated or actual damages because of any delays to the completion of the Work due to unforeseeable causes beyond the control and without the fault or negligence of the CONTRACTOR, including, but not restricted to the following: acts of God or of the public enemy, acts of the CITY in contractual capacity, acts of another contractor in the performance of a contract with the CITY, floods, fires, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe weather and delays of Subcontractors or Suppliers due to such causes. Any delay in receipt of materials on the site, caused by other than one of the specifically mentioned occurrences above, does not of itself justify a time extension. Provided, that the CONTRACTOR shall within twenty four (24) hours from the beginning of any such delay (unless the Contracting Officer shall grant a further period of the time prior to the date of final settlement of the Contract) notify the Contracting Officer in writing of the cause of delay. The Contracting Officer shall ascertain the facts and the extent of the delay and extend the time for completing the Work when the findings of fact justify such an extension.

11.6 Essence of Contract:

All time limits stated in the Contract Documents are of the essence of the Contract.

11.7 Reasonable Completion Time:

It is expressly understood and agreed by and between the CONTRACTOR and the CITY that the date of beginning and the time for Final Completion of the Work described herein are reasonable times for the completion of the Work.

11.8 Delay Damages:

Whether or not the CONTRACTOR's right to proceed with the Work is terminated, he and his sureties shall be liable for damages resulting from his refusal or failure to complete the Work within the specified time. Liquidated damages for delay shall be paid by the CONTRACTOR or his Surety to the City in the amount as specified in the Agreement or the Supplementary Conditions for each Calendar Day the completion of the Work or any part thereof is delayed beyond the Contract Time required by the Contract, or any extension thereof. If such amount of liquidated damages is not established by the Contract Documents, then the CONTRACTOR and his Surety shall be liable to the City for any actual damages occasioned by such delay. The CONTRACTOR acknowledges that the liquidated damages established herein are not a penalty but rather constitute an estimate of damages that the City will sustain by reason of delayed completion. These liquidated damages are intended as compensation for losses difficult to estimate, and include those items enumerated in the Supplementary Conditions or elsewhere in the Contract Documents. These damages will continue to run both before and after termination in the event of default termination. These liquidated damages do not cover excess costs of completion or the CITY's costs, fees, and charges related to reprocurement. If a default termination occurs, the Contractor or his Surety shall pay in addition to these damages, all excess costs and expenses related to completion as provided by Article 14.2.5.

ARTICLE 12 - QUALITY ASSURANCE

12.1 Warranty and Guaranty:

The CONTRACTOR warrants and guarantees to the CITY that all Work will be in accordance with the Contract Documents and will not be Defective. Prompt notice of all defects shall be given to the CONTRACTOR. All Defective Work, whether or not in place, may be rejected, corrected or accepted as provided for in this Article.

12.2 Access to Work:

The CITY and the CITY's representatives, testing agencies and governmental agencies with jurisdiction interests will have access to the Work at reasonable times for their observation, inspecting and testing. The CONTRACTOR shall provide proper and safe conditions for such access.

12.3 Tests and Inspections:

- 12.3.1 The CONTRACTOR shall give the Contracting Officer timely notice of readiness of the Work for all required inspections, tests or approvals.
- 12.3.2 If Regulatory Requirements require any Work (or part thereof) to specifically be inspected, tested or approved, the CONTRACTOR shall assume full responsibility therefor, pay all costs in connection therewith and furnish the Contracting Officer the required certificates of inspection, testing or approval. The CONTRACTOR shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with CITY's acceptance of a Supplier of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for approval prior to the CONTRACTOR's purchase thereof for incorporation in the Work. The cost of all inspections, tests and approvals in addition to the above which are required by the Contract Documents shall be paid by the CONTRACTOR. The CITY may perform additional tests and inspections which it deems necessary to insure quality control. All such failed tests or inspections shall be at the CONTRACTOR's expense.
- 12.3.3 If any Work (including the work of others) that is to be inspected, tested or approved is covered without written concurrence of the Contracting Officer, it must, if requested by the Contracting Officer, be uncovered for observation. Such uncovering shall be at the CONTRACTOR's expense unless the CONTRACTOR has given the Contracting Officer timely notice of CONTRACTOR's intention to cover the same and the Contracting Officer has not acted with reasonable promptness in response to such notice.
- 12.3.4 Neither observations nor inspections, test or approvals by the CITY of others shall relieve the CONTRACTOR from the CONTRACTOR's obligations to perform the Work in accordance with the Contract Documents.

12.4 Uncovering Work:

- 12.4.1 If any Work is covered contrary to the written request of the Contracting Officer, it must, if requested by the Contracting Officer, be uncovered for the contracting Officer's observation and replaced at the CONTRACTOR's expense.
- 12.4.2 If the Contracting Officer considers it necessary or advisable that covered Work be observed, inspected or tested, the CONTRACTOR, at the Contracting Officer's request, shall uncover, expose or otherwise make available for observation, inspection or testing as the Contracting Officer may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is Defective, the CONTRACTOR shall bear all direct, indirect and consequential costs of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) and the CITY shall be entitled to an appropriate decrease in the Contract Price. If, however, such Work is not found to be Defective, the CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction.

12.5 CITY May Stop the Work:

If the Work is Defective, or the CONTRACTOR fails to supply suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, the Contracting Officer may order the CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the Contracting Officer to stop the Work shall not give rise to any duty on the part of the Contracting Officer to exercise this right for the benefit of the CONTRACTOR.

12.6 Correction or Removal of Defective Work:

If required by the Contracting Officer, the CONTRACTOR shall promptly, as directed, either correct all Defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by the Contracting Officer, remove it from the site and replace it with Work which conforms to the requirements of the Contract Documents. The

CONTRACTOR shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

12.7 One Year Correction Period:

If within one year after the date of Final Completion or such longer period of time as may be prescribed by Regulatory Requirements or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be Defective, the CONTRACTOR shall promptly, without cost to the CITY and in accordance with the Contracting Officer's written instructions, either correct such Defective Work, or, if it has been rejected by the Contracting Officer, remove it from the site and replace it with conforming Work. If the CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, the CITY may have the Defective Work corrected or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) will be paid by the CONTRACTOR. In special circumstances where a particular item of equipment is placed in continuous service for the benefit of the CITY before Substantial Completion of all the Work, the correction period for the item may begin on an earlier date if so provided in the Specifications or by Change Order. Provisions of this paragraph are not intended to shorten the Statute of Limitations for bringing an action.

12.8 Acceptance of Defective Work:

Instead of requiring correction or removal and replacement of Defective Work, the Contracting Officer may accept Defective Work, the CONTRACTOR shall bear all direct, indirect and consequential costs attributable to the Contracting Officer's evaluation of and determination to accept such Defective Work (costs to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals). If any such acceptance occurs prior to final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and the CITY shall be entitled to an appropriate decrease in the Contract Price. If the CITY has already made final payment to the CONTRACTOR, an appropriate amount shall be paid by the CONTRACTOR or his Surety to the CITY.

12.9 CITY May Correct Defective Work:

If the CONTRACTOR fails within a reasonable time after written notice from the Contracting Officer to proceed to correct Defective Work or to remove and replace rejected Work as required by the Contracting Officer in accordance with paragraph 12.6, or if the CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if the CONTRACTOR fails to comply with any other provision of the Contract Documents, the CITY may, after seven days' written notice to the CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph the CITY shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, the Contracting Officer may exclude the CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend the CONTRACTOR's services related thereto, take possession of the CONTRACTOR's tool, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or approved remote storage sites or for which the CITY has paid the CONTRACTOR but which are stored elsewhere, the CONTRACTOR shall allow the Contracting Officer and his authorized representatives such access to the site as may be necessary to enable the Contracting Officer to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of the CITY or its agents in exercising such rights and remedies will be charged against the CONTRACTOR, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and the CITY shall be entitled to an appropriate decrease in the Contract Price. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court and arbitration costs and all cost of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of the CONTRACTOR's Defective Work. The CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by the Contracting Officer of the CITY's rights and remedies hereunder.

ARTICLE 13 - PAYMENTS TO CONTRACTOR AND COMPLETION

13.1 Schedule of Values:

The Schedule of Values established as provided in paragraph 6.6 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to the Contracting Officer. Progress payments on account of Unit Price Work will be based on the number of units completed.

13.2 Preliminary Payments:

Upon approval of the Schedule of Values the CONTRACTOR may be paid for direct costs substantiated by paid invoices and other prerequisite documents required by the General Requirements. Direct costs shall include the cost of Bonds, insurance, approved materials stored on the site or at approved remote storage sites, deposits required by a Supplier prior to fabricating materials, and other approved direct mobilization costs substantiated as indicated above. These payments shall be included as a part of the total Contract Price as stated in the Contract.

13.3 Application for Progress Payment:

The CONTRACTOR shall submit to the Contracting Officer for review an Application for Payment filled out and signed by the CONTRACTOR covering the Work completed as of the date of the Application for Payment and accompanied by such supporting documentation as is required by the Contract Documents. Progress payments will be made as the Work progresses on a monthly basis or twice a month when requested by the CONTRACTOR, but only when the approved invoice exceeds \$10,000.00.

13.4 Review of Applications for Progress Payments:

Contracting Officer will, either indicate in writing a recommendation of payment, or return the Application for Payment to the CONTRACTOR indicating in writing the Contracting Officer's reasons for refusing to recommend payment. If the latter case, the CONTRACTOR may make the necessary corrections and resubmit the Application for Payment.

13.5 Stored Materials and Equipment:

If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that the CITY has received the materials and equipment free and clear of all charges, security interests and encumbrances and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect the CITY's interest therein, all of which will be satisfactory to the Contracting Officer. No payment will be made for perishable materials that could be rendered useless because of long storage periods. No progress payment will be made for living plant materials until planted. The payment may be reduced by an amount equal to transportation and handling cost if the materials are stored offsite, in a remote location, or will require special handling.

13.6 CONTRACTOR's Warranty of Title:

The CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to the CITY no later than the time of payment free and clear of any claims, liens, security interests and further obligations.

13.7 Withholding of Payments:

The CITY may withhold or refuse payment for any of the reasons listed below provided it gives written notice of its intent to withhold and of the basis for withholding:

13.7.1 The Work is Defective, or completed Work has been damaged requiring correction or replacement, or has been installed without approval of Shop Drawing, or by an unapproved Subcontractor.

13.7.2 The Contract Price has been reduced by Change Order.

- 13.7.3 The CITY has been required to correct Defective Work or complete Work in accordance with paragraph 12.9.
- 13.7.4 The CITY's actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.2.1.a through 14.2.1.k inclusive.
- 13.7.5 Claims have been made against the CITY or against the funds held by the CITY on account of the CONTRACTOR's actions or inactions in performing this Contract, or there are other items entitling the CITY to a set off.
- 13.7.6 Subsequently discovered evidence or the results of subsequent inspections or test, nullify any previous payments for reasons stated in subparagraphs 13.7.1 through 13.7.5.
- 13.7.7 The CONTRACTOR has failed to fulfill or is in violation of any of his obligations under any provision of this Contract.

13.8 Retainage:

At any time the CITY finds that satisfactory progress is not being made it may in addition to the amounts withheld under 13.7 retain a maximum amount equal to 10% of the total amount earned on all subsequent progress payments. This retainage may be released at such time as the Contracting Officer finds that satisfactory progress is being made.

13.9 Request for Release of Funds:

If the CONTRACTOR believes the basis for withholding is invalid or no longer exists, immediate written notice of the facts and Contract provisions on which the CONTRACTOR relies, shall be given to the CITY, together with a request for release of funds and adequate documentary evidence proving that the problem has been cured. In the case of withholding which has occurred at the request of the Department of Labor and Workforce Development, the CONTRACTOR shall provide a letter from the Department of Labor stating that withholding is no longer requested. Following such a submittal by the CONTRACTOR, the CITY shall have a reasonable time to investigate and verify the facts and seek additional assurances before determining whether release of withheld payments is justified.

13.10 Substantial Completion:

When the CONTRACTOR considers the Work ready for its intended use the CONTRACTOR shall notify the Contracting Officer in writing that the Work or a designated portion thereof is substantially complete (except for items specifically listed by the CONTRACTOR as incomplete) and request that the CITY issue a certificate of Substantial Completion. Within a reasonable time thereafter, the Contracting Officer, the CONTRACTOR and appropriate Consultant(s) shall make an inspection of the Work to determine the status of completion. If the Contracting Officer does not consider the Work substantially complete, the Contracting Officer will notify the CONTRACTOR in writing giving the reasons therefor. If the Contracting Officer considers the Work substantially complete, the Contracting Officer will within fourteen days execute and deliver to the CONTRACTOR a certificate of Substantial Completion with tentative list of items to be completed or corrected. At the time of delivery of the certificate of Substantial Completion the Contracting Officer will deliver to the CONTRACTOR a written division of responsibilities pending Final Completion with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties which shall be consistent with the terms of the Contract Documents. The CITY shall be responsible for all CITY costs resulting from the initial inspection and the first re-inspection, the CONTRACTOR shall pay all costs incurred by the CITY resulting from re-inspections, thereafter.

13.11 Access Following Substantial Completion:

The CITY shall have the right to exclude the CONTRACTOR from the Work after the date of Substantial Completion, but the CITY shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

13.12 Final Inspection:

Upon written notice from the CONTRACTOR that the entire Work or an agreed portion thereof is complete, the Contracting Officer will make a final inspection with the CONTRACTOR and appropriate Consultants and will notify the CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or Defective.

The CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies. The CONTRACTOR shall pay for all costs incurred by the CITY resulting from re-inspections.

13.13 Final Application for Payment:

After the CONTRACTOR has completed all such corrections to the satisfaction of the Contracting Officer and delivered all maintenance and operating instructions, schedules, guarantees, bonds, certificates of payment to all laborers, Subcontractors and Suppliers, certificates of inspection, marked-up record documents and other documents - all as required by the Contract Documents, and after the Contracting Officer has indicated that the Work is acceptable (subject to the provisions of paragraph 13.17), the CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all certificates, warranties, guaranties, releases, affidavits, and other documentation required by the Contract Documents.

13.14 Final Payment and Final Completion:

13.14.1 If on the basis of the Contracting Officer's observation of the Work during construction and final inspection, and the Contracting Officer's review of the final Application for Payment and accompanying documentation - all as required by the Contract Documents, the Contracting Officer is satisfied that the Work has been completed and the CONTRACTOR's other obligations under the Contract Documents have been fulfilled, the CITY will process final Application for Payment. Otherwise, the Contracting Officer will return the Application for Payment to the CONTRACTOR, indicating in writing the reasons for refusing to process final payment, in which case the CONTRACTOR shall make the necessary corrections and resubmit the final Application for Payment.

13.14.2 If, through no fault of the CONTRACTOR, Final Completion of the Work is significantly delayed, the Contracting Officer shall, upon receipt of the CONTRACTOR's final Application for Payment, 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 to be held by the CITY for Work not fully completed or corrected is less than the retainage provided for in paragraph 13.8, and if Bonds have been furnished as required in paragraph 5.1, the written consent of the Surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the CONTRACTOR to the CITY with the application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

13.14.3 In addition to other requirements, final payment shall not be due until CITY's receipt of verification from the State of Alaska Department of Labor and Workforce Development ("the Department") that (i) Contractor has complied with AS 36.05.045(a) and (ii) the Department is not conducting an investigation and (iii) the Department has not issued a notice of violation of AS 36.05 to Contractor or to any subcontractor.

13.15 Final Acceptance:

Following receipt of the CONTRACTOR's Release with no exceptions, and certification that laborers, Subcontractors and materialmen have been paid, certification of payment of payroll and sales taxes and revenue taxes, and final payment to the CONTRACTOR, the CITY will issue a letter of Final Acceptance, releasing the CONTRACTOR from further obligations under the Contract, except as provided in paragraph 13.16.

13.16 CONTRACTOR's Continuing Obligation:

The CONTRACTOR's obligation to perform and complete the Work and pay all laborers, Subcontractors, and materialmen in accordance with the Contract Documents shall be absolute. Neither any progress or final payment by the CITY, nor the issuance of a certificate of Substantial Completion, nor any use or occupancy of the Work or any part thereof by the CITY, nor any act of acceptance by the CITY nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor any correction of Defective Work by the CITY will constitute an acceptance of Work not in accordance with the Contract Documents or a release of the CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents.

13.17 Waiver of Claims by CONTRACTOR:

The making and acceptance of final payment will constitute a waiver of all claims by the CONTRACTOR against the CITY other than those previously made in writing and still unsettled.

13.18 No Waiver of Legal Rights:

The CITY shall not be precluded or be stopped by any payment, measurement, estimate, or certificate made either before or after the completion and acceptance of the Work and payment therefor, from showing the true amount and character of the Work performed and materials furnished by the CONTRACTOR, nor from showing that any payment, measurement, estimate or certificate is untrue or is incorrectly made, or that the Work or materials are Defective. The CITY shall not be precluded or stopped, notwithstanding any such measurement, estimate, or certificate and payment in accordance therewith, from recovering from the CONTRACTOR or his Sureties, or both, such damages as it may sustain by reason of his failure to comply with requirements of the Contract Documents. Neither the acceptance by the CITY, or any representative of the CITY, nor any payment for or acceptance of the whole or any part of the Work, nor any extension of the Contract Time, nor any possession taken by the CITY, shall operate as a waiver of any portion of the Contract, or of the power herein reserved, or of any right to damages. A waiver by the CITY of any breach of the Contract shall not be held to be a waiver of any other subsequent breach.

ARTICLE 14 - SUSPENSION OF WORK, DEFAULT AND TERMINATION

14.1 CITY May Suspend Work:

14.1.1 The CITY may, at any time suspend the Work or any portion thereof by notice in writing to the CONTRACTOR. If the Work is suspended without cause the CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if the CONTRACTOR makes an approved claim therefor as provided in Article 15. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent that suspension is due to the fault or negligence of the CONTRACTOR, or that suspension is necessary for Contract compliance, or that performance would have been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the CONTRACTOR.

14.1.2 In case of suspension of Work, the CONTRACTOR shall be responsible for preventing damage to or loss of any of the Work already performed and of all materials whether stored on or off the site or approved remote storage sites.

14.2 Default of Contract:

14.2.1 If the CONTRACTOR:

- a. Fails to begin the Work under the Contract within the time specified in the "Proposal", or
- b. Fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workmen or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 6.6 as revised from time to time), or
- c. Performs the Work unsuitably or neglects or refuses to remove materials or to correct Defective Work.
- d. Discontinues the prosecution of the Work, or
- e. Fails to resume Work which has been discontinued within a reasonable time after notice to do so, or
- f. Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency except as prohibited by 11 U.S.C. 363e, or
- g. Allows any final judgment to stand against him unsatisfied for period of 60 days, or
- h. Makes an assignment for the benefit of creditors without the consent of the Contracting Officer, or

- i. Disregards Regulatory Requirements, or
- j. Otherwise violates in any substantial way any provisions of the Contract Documents, or
- k. For any cause whatsoever, fails to carry on the Work in an acceptable manner, the Contracting Officer may give notice in writing to the CONTRACTOR and his Surety of such delay, neglect, or default.

If the CONTRACTOR or Surety, within the time specified in the above Notice of Default, shall not proceed in accordance therewith, then the CITY may, upon written notification from the Contracting Officer of the fact of such delay, neglect or default and the CONTRACTOR's failure to comply with such notice, have full power and authority without violating the Contract, to take the prosecution of the Work out of the hands of the CONTRACTOR. The CITY may terminate the services of the CONTRACTOR, exclude the CONTRACTOR from the site and take possession of the Work and of all the CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by the CONTRACTOR (without liability to the CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which the CITY has paid the CONTRACTOR but which are stored elsewhere, and finish the Work as the CITY may deem expedient. The CITY may enter into an agreement for the completion of said Contract according to the terms and provisions thereof, or use such other methods that in the opinion of the Contracting Officer are required for the completion of said Contract in an acceptable manner.

- 14.2.3 The Contracting Officer may, by written notice to the CONTRACTOR and his Surety or his representative, transfer the employment of the Work from the CONTRACTOR to the Surety, or if the CONTRACTOR abandons the Work undertaken under the Contract, the Contracting Officer may, at his option with written notice to the Surety and without any written notice to the CONTRACTOR, transfer the employment for said Work directly to the Surety. The Surety shall submit its plan for completion of the Work, including any contracts or agreements with third parties for such completion, to the CITY for approval prior to beginning completion of the Work. Approval of such contracts shall be in accordance with all applicable requirements and procedures for approval of subcontracts as stated in the Contract Documents.
- 14.2.4 Upon receipt of the notice terminating the services of the CONTRACTOR, the Surety shall enter upon the premises and take possession of all materials, tools, and appliances thereon for the purpose of completing the Work included under the Contract and employ by contract or otherwise any person or persons to finish the Work and provide the materials therefor, without termination of the continuing full force and effect of this Contract. In case of such transfer of employment to the Surety, the Surety shall be paid in its own name on estimates covering Work subsequently performed under the terms of the Contract and according to the terms thereof without any right of the CONTRACTOR to make any claim for the same or any part thereof.
- 14.2.5 If the Contract is terminated for default, the CONTRACTOR and the Surety shall be jointly and severally liable for damages for delay as provided by Article 11.8, and for the excess cost of completion, and all costs and expenses incurred by the CITY in completing the Work or arranging for completion of the Work, including but not limited to costs of assessing the Work to be done, costs associated with advertising, soliciting or negotiating for bids or proposals for completion, and other procurement costs. Following termination the CONTRACTOR shall not be entitled to receive any further balance of the amount to be paid under the contract until the work is fully finished and accepted, at which time if the unpaid balance exceeds the amount due the CITY and any amounts due to persons for whose benefit the CITY has withheld funds, such excess shall be paid by the CITY to the CONTRACTOR. If the damages, costs, and expenses due the CITY exceed the unpaid balance, the CONTRACTOR and his Surety shall pay the difference.
- 14.2.6 If, after notice of termination of the CONTRACTOR's right to proceed under the provisions of this clause, it is determined for any reason that the CONTRACTOR was not in default under the provisions of this clause, or that the delay was excusable under the provisions of this clause, or that termination was wrongful, the rights and obligations of the parties shall be determined in accordance with the clause providing for convenience termination.

14.3 Rights or Remedies:

Where the CONTRACTOR's services have been so terminated by the CITY, the termination will not affect any rights or remedies of the CITY against the CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due the CONTRACTOR by the CITY will not release the CONTRACTOR from liability.

14.4 Convenience Termination:

14.4.1 The performance of the Work may be terminated by the CITY in accordance with this section in whole or in part, whenever, for any reason the Contracting Officer shall determine that such termination is in the best interest of the CITY. Any such termination shall be effected by delivery to the CONTRACTOR of a Notice of Termination, specifying termination is for the convenience of the CITY the extent to which performance of Work is terminated, and the date upon which such termination becomes effective. Immediately upon receipt of a Notice of Termination and except as otherwise directed by the Contracting Officer the CONTRACTOR shall:

- a. Stop Work on the date and to the extent specified in the Notice of Termination;
- b. Place no further orders or subcontracts for materials, services, or facilities except as may be necessary for completion of such portion of the Work as is not terminated;
- c. Terminate all orders and subcontracts to the extent that they relate to the performance of Work terminated by the Notice of Termination;
- d. With the written approval of the Contracting Officer, to the extent he may require, settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, the cost of which would be reimbursable, in whole, or in part, in accordance with the provisions of the Contract;
- e. Submit to the Contracting Officer a list, certified as to quantity and quality, of any or all items of termination inventory exclusive of items the disposition of which had been directed or authorized by the Contracting Officer;
- f. Transfer to the Contracting Officer the completed or partially completed record drawings, Shop Drawings, information, and other property which, if the Contract had been completed, would be required to be furnished to the CITY;
- g. Take such action as may be necessary, or as the Contracting Officer may direct, for the protection and preservation of the property related to the Contract which is in the possession of the CONTRACTOR and in which the CITY has or may acquire any interest. The CONTRACTOR shall proceed immediately with the performance of the above obligations.

14.4.2 When the CITY orders termination of the Work effective on a certain date, all Work in place as of that date will be paid for in accordance with the Basis of Payment clause of the Contract. Materials required for completion and on hand but not incorporated in the Work will be paid for at cost plus 15% with materials becoming the property of the CITY - or the CONTRACTOR may retain title to the materials and be paid an agreed upon lump sum. Materials on order shall be canceled, and the CITY shall pay reasonable factory cancellation charges with the option of taking delivery of the materials in lieu of payment of cancellation charges. The CONTRACTOR shall be paid 10% of the cost, freight not included, of materials canceled, and direct expenses only for CONTRACTOR chartered freight transport which cannot be canceled without charges, to the extent that the CONTRACTOR can establish them. The extra costs due to cancellation of Bonds and insurance and that part of job start-up and phase-out costs not amortized by the amount of Work accomplished shall be paid by the CITY. Charges for loss of profit or consequential damages shall not be recoverable except as provided above.

14.4.3 The termination claim shall be submitted promptly, but in no event later than 90 days from the effective date of termination, unless one or more extensions in writing are granted by the Contracting Officer upon request of the CONTRACTOR made in writing within the 90-day period. Upon failure of the CONTRACTOR to submit his termination claim within the time allowed, the Contracting Officer may determine, on the basis of

information available to him, the amount, if any, due to the CONTRACTOR by reason of the termination and shall thereupon pay to the CONTRACTOR so determined.

14.4.4 The CONTRACTOR and the Contracting Officer may agree upon whole or any part of the amount or amounts to be paid to the CONTRACTOR by reason of the total or partial termination of the Work pursuant to this section. The Contract shall be amended accordingly, and the CONTRACTOR shall be paid the agreed amount. In the event of the failure of the CONTRACTOR and the Contracting Officer to agree in whole or in part, as provided heretofore, as to the amounts with respect to costs to be paid to the CONTRACTOR in connection with the termination of the Work the Contracting Officer shall determine, on the basis of information available to him, the amount, if any, due to the CONTRACTOR by reason of the termination and shall pay to the CONTRACTOR the amount determined as follows:

- a. All costs and expenses reimbursable in accordance with the Contract not previously paid to the CONTRACTOR for the performance of the Work prior to the effective date of the Notice of Termination;
- b. So far as not included under "a" above, the cost of settling and paying claims arising out of the termination of the Work under subcontracts or orders which are properly chargeable to the terminated portions of the Contract;
- c. The reasonable costs of settlement with respect to the terminated portion of the Contract heretofore, to the extent that these costs have not been covered under the payment provisions of the Contract.

14.4.5 The CONTRACTOR shall have the right of appeal under the CITY's claim procedures, as defined in Article 15, for any determination made by the Contracting Officer, except if the CONTRACTOR has failed to submit his claim within the time provided and has failed to request extension of such time, CONTRACTOR shall have no such right of appeal. In arriving at the amount due the CONTRACTOR under this section, there shall be deducted:

- a. All previous payments made to the CONTRACTOR for the performance of Work under the Contract prior to termination;
- b. Any claim which the CITY may have against the CONTRACTOR;
- c. The agreed price for, or the proceeds of sale of, any materials, supplies, or other things acquired by the CONTRACTOR or sold pursuant to the provisions of this section and not otherwise recovered by or credited to the CITY; and,
- d. All progress payments made to the CONTRACTOR under the provisions of this section.

14.4.6 Where the Work has been terminated by the CITY said termination shall not affect or terminate any of the rights of the CITY against the CONTRACTOR or his Surety then existing or which may thereafter accrue because of such default. Any retention or payment of monies by the CITY due to the CONTRACTOR under the terms of the Contract shall not release the CONTRACTOR or his Surety from liability. Unless otherwise provided for in the Contract Documents, or by applicable statute, the CONTRACTOR, from the effective date of termination and for a period of three years after final settlement under this Contract, shall preserve and make available to the CITY at all reasonable times at the office of the CONTRACTOR, all its books, records, documents, and other evidence bearing on the cost and expenses of the CONTRACTOR under his Contract and relating to the Work terminated hereunder.

ARTICLE 15 - CLAIMS AND DISPUTES

15.1 Notification:

In addition to the notice requirements set out elsewhere in this Contract, if the CONTRACTOR becomes aware of any act or occurrence which may form the basis of a claim by the CONTRACTOR for additional compensation or an extension of time for performance, or if any dispute arises regarding a question of fact or interpretation of the contract, the CONTRACTOR shall immediately inform the Project Manager. If the matter cannot be resolved by agreement within 7 days, the CONTRACTOR shall, within the next 14 days, submit an Intent to Claim in writing to the Project Manager. The

Claim, if not resolved, shall be presented to the Project Manager, in writing, within 60 days following receipt of the Intent to Claim. Receipt of the Claim will be acknowledged in writing by the Project Manager. The CONTRACTOR agrees that unless these written notices are provided, the CONTRACTOR will have no entitlement to additional time or compensation for such act, event or condition. The CONTRACTOR shall in any case continue diligent performance of the Contract.

15.2 Presenting Claim:

The Claim shall specifically include the following:

- 15.2.1 The act, event or condition giving rise to the claim.
- 15.2.2 The Contract provisions which apply to the claim and under which relief is provided.
- 15.2.3 The item or items of Contract Work affected and how they are affected.
- 15.2.4 The specific relief requested, including contract time if applicable, and the basis upon which it was calculated.

15.3 Claim Validity, Additional Information, and Project Manager's Actions:

The Claim, in order to be valid, must not only show that the CONTRACTOR suffered damages or delay but that those conditions were actually a result of the act, event or condition complained of and that the Contract provides entitlement to relief to the CONTRACTOR for such act, event, or condition. The Project Manager reserves the right to make written request to the CONTRACTOR at any time for additional information which the CONTRACTOR may possess relative to the Claim. The CONTRACTOR agrees to provide the Project Manager such additional information within 30 days of receipt of such a request. Failure to furnish such additional information may be regarded as a waiver of the Claim. The Claim, if not resolved by agreement within 60 days of its receipt, will automatically be forwarded to the Contracting Officer for formal written decision.

15.4 Contracting Officer's Decision:

The CONTRACTOR will be furnished the Contracting Officer's Decision within the next 90 days, unless additional information is requested by the Contracting Officer. The Contracting Officer's Decision is final and conclusive unless fraudulent as to the Claim.

15.5 Notice of Appeal:

Within 30 days of receipt of the Decision, the CONTRACTOR may deliver a Notice of Appeal to the City Manager of Unalaska, Alaska. The Notice of Appeal shall include specific exceptions to the Contracting Officer's Decision, including specific provisions of the contract, which the CONTRACTOR intends to rely upon in the appeal. General assertions that the Contracting Officer's decision is contrary to law or fact are not sufficient.

15.6 City Manager's Decision:

The decision of the City Manager will be rendered within 120 days of Notice of Appeal. This decision constitutes the exhaustion of contractual and administrative remedies. The time limits given above may only be extended by mutual consent. The decision of the City Manager shall be final and conclusive unless the CONTRACTOR commences action through the court within 120 days from receipt thereof.

Section 00640
SUPPLEMENTARY CONDITIONS

REFERENCE: 1. "GENERAL CONDITIONS OF THE CONTRACT", constitutes the General Conditions of this Contract and is further revised and supplemented by the provisions of these Supplementary Conditions to the Contract, hereinafter called the "Supplementary Conditions." The General Conditions and the Supplementary Conditions are applicable to all of the Work under this Contract and shall apply to the Contractor and all Subcontractors.

SUPPLEMENTS: 2. The following supplements modify, change, delete, or add to the General Conditions. Where any article of the General Conditions is modified or any paragraph deleted, subparagraph or clause thereof is modified, or deleted by these supplements, the unaltered provisions of such article, paragraph, subparagraph or clause shall remain in effect.

SC-2 ARTICLE 11 - CONTRACT TIME; COMPUTATION AND CHANGE

11.5 Extension Due to Delays; Add the following sentence:

“Normal weather in Unalaska shall not be cause for time extension and the CONTRACTOR shall allow ample time in his schedule to accommodate normal weather delays.”

SC-3 ARTICLE 13 – PAYMENTS TO CONTRACTOR AND COMPLETION

13.8 Retainage:

“The CITY will retain a maximum amount equal to 10% of the total amount earned on all progress payments. Once 50 percent of the work is complete and if the character and progress of the work have been satisfactory to the City, the City may determine that, as long as the character and progress of the work remain satisfactory to them, there will be no additional retainage on account of work completed; in which case, the remaining progress payments prior to Substantial Completion will be in an amount equal to 100 percent of the work completed. All retainage shall bear interest at the rate required by AS 36.90.250”

SC-4 ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

Add the following sections:

6.15 Use of Premises; Add the following sentence:

“It is the responsibility of the CONTRACTOR to obtain all required staging area for the project.”

6..17.1 The Contractor is required to submit a copy of the current red-lined as-built construction drawings with each monthly pay application. The City may withhold payment from the Contractor if the submitted as-builts are not current or are not in accordance with the General Notes of the contract drawings and all related contract documents.

6.18.4 The CONTRACTOR shall do whatever work is necessary for overall project safety and be solely and completely responsible for affected conditions of the job site, including safety of all persons (including employees) and property during the Contract period. This requirement shall apply continuously and is not limited to normal working hours.

Safety provisions shall conform to Federal and State Departments of Labor Occupational Safety and Health Act (OSHA), and other applicable federal, state, county, and local laws, ordinances, codes, requirements set forth herein, and regulations that may be specified in other parts of these Contract Documents. Where these are in conflict, the more stringent requirements shall apply. CONTRACTOR shall become thoroughly familiar with governing safety provisions and shall comply with the obligations set forth therein.

The CONTRACTOR shall develop and maintain for the duration of the Contract, a safety program that will effectively incorporate and implement required safety provisions. CONTRACTOR shall appoint a qualified employee who is authorized to supervise and enforce compliance with the safety program.

The Contracting Officer's duty to conduct construction review of the CONTRACTOR's performance does not include a review or approval of the adequacy of CONTRACTOR's safety supervisor, safety program, or safety measures taken in, on, or near the construction site.

As part of safety program, CONTRACTOR shall maintain at its office or other well-known location at the job site, safety equipment applicable to the Work as prescribed by governing safety authorities, and articles necessary for giving first aid to the injured. CONTRACTOR shall establish procedures for the immediate removal to a hospital or a doctor's care of persons who may be injured on the job site.

- 6.18.6 CONTRACTOR shall do all work necessary to protect the general public from hazards, including but not limited to, surface irregularities, trenches, excavations, traffic control and blasting. Barricades, lanterns, temporary lighting and proper signs shall be furnished in sufficient amount to safeguard the public and the work. CONTRACTOR shall construct and maintain satisfactory and substantial fencing, railings, barricades, or steel plates, as applicable, at all openings, obstructions, or other hazards. Such barricades shall have adequate warning lights as necessary or required for safety.

CONTRACTOR shall submit a specific traffic control plan for temporary traffic routing and signage during construction. Traffic control plan shall comply with rules and regulations of the City and state authorities regarding closing or restricting the use of public streets or highways. No public or private road shall be closed, except by written permission of the proper authority. CONTRACTOR shall assure the least possible obstruction to traffic and normal commercial pursuits.

CONTRACTOR shall notify the Department of Public Works, and Department of Public Safety before closing any street or portion thereof and notify said departments when the streets are again possible for emergency vehicles. Do not block off emergency vehicle access without written permission from the Unalaska fire department. CONTRACTOR shall conduct operations with the least interference to fire equipment access, and at no time prevent such access.

CONTRACTOR shall leave a night emergency telephone number or numbers with the police department, so that contact may be made easily at all times in case of barricade and flare trouble or other emergencies.

6.18.7 The contractor's shall provide a site specific Safety Plan which shall include but not be limited to regulations outlined within the Code of Federal Regulations 29 CFR within Part 1910 Occupational Safety and Health Administration (OSHA) standard number 1910.120 Hazardous Waste Operations and Emergency Response (HAZWOPER) training. The Safety Plan will include all applicable parts of these regulations.

6.23.1 The CONTRACTOR shall assume the responsibility for protection of finished construction and shall repair and restore any and all damage to finished work to its original condition.

In unfinished areas, CONTRACTOR shall leave the site evenly graded as necessary, in a condition that will restore original drainage, and with an appearance equal to or better than original.

6.23.2 Any monument damaged or displaced by the Contractor shall be replaced in accordance with the Title 8 of the City of Unalaska Code of Ordinances. The cost of replacing or repairing damaged or displaced monuments shall be borne solely by the Contactor.

6.28 Meetings

The CONTRACTOR and all subcontractors currently working shall attend all weekly construction progress meetings held at the City Department of Public Works. CONTRACTOR shall provide construction progress update, weekly project schedule updates, construction issues, coordination with City, etc.

-END OF SUPPLEMENTARY CONDITIONS-

City of Unalaska
Aquatics Center Improvements
Project No. 15101

Division 00
Section 00650
MINIMUM RATES OF PAY

SECTION 00650

MINIMUM RATES OF PAY

Laborers' & Mechanics' Minimum Rates of Pay

Effective September 1, 2015

Issue 31



**Title 36. Public Contracts
AS 36.05 & AS 36.10
Wage & Hour Administration
Pamphlet No. 600**



**ALASKA DEPARTMENT OF LABOR
& WORKFORCE DEVELOPMENT**

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THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

**Department of Labor and
Workforce Development**

Office of the Commissioner

Post Office Box 111149
Juneau, Alaska 99811
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September 1, 2015

TO ALL CONTRACTING AGENCIES:

At the Alaska Department of Labor and Workforce Development, our goal is putting Alaskans to work. This pamphlet is designed to help contractors awarded public construction contracts understand the most significant laws of the State of Alaska pertaining to prevailing wage and resident hire requirements.

This pamphlet identifies current prevailing wage rates and resident hire classifications for public construction contracts (any construction projects awarded by the State of Alaska or its political subdivisions, such as local governments and certain non-profit organizations). Because these rates may change, this publication is printed in the spring and fall of every year, so please be sure you are using the appropriate rates. The rates published in this edition become effective September 1, 2015.

All projects with a final bid date of September 11, 2015, or later, must pay the prevailing wage rates contained in this pamphlet. As the law now provides, these rates will remain stable during the life of a contract or for 24 calendar months, whichever is shorter. **The 24 months period begins on the date the prime contract is awarded.** Upon expiration of the initial 24-month period, the latest wage rates issued by the department shall become effective for a subsequent 24-month period or until the original contract is completed, whichever occurs first. This process shall be repeated until the original contract is completed.

The term "original contract" means the signed contract that resulted from the original bid and any amendments, including changes of work scope, additions, extensions, change orders, and other instruments agreed to by the parties that have not been subject to subsequent open bid procedures.

If a higher federal rate is required due to partial federal funding or other federal participation, the higher rate must be paid.

For additional copies of this pamphlet, contact the nearest office of the Division of Labor Standards and Safety, Wage and Hour office or the Web address at: <http://labor.state.ak.us/lss/pamp600.htm>

For questions regarding prevailing wage or resident hire requirements, please contact the nearest Wage and Hour office. These offices are listed on Page x.

Sincerely,

A handwritten signature in black ink, reading "Heidi Drygas".

Heidi Drygas
Commissioner

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Wage Rates	Pages 1-25

Note to Readers: The statutes and administrative regulations listed in this publication were taken from the official codes, as of the effective date of the publication. However, there may be errors or omissions that have not been identified and changes that occurred after the publication was printed. This publication is intended as an informational guide only and is not intended to serve as a precise statement of the statutes and regulations of the State of Alaska. To be certain of the current laws and regulations, please refer to the official codes.

EXCERPTS FROM ALASKA LAW

(The following statute (36.05.005) applies to projects bid on or after October 20, 2011)

Sec. 36.05.005. Applicability.

This chapter applies only to a public construction contract that exceeds \$25,000.

Sec. 36.05.010. Wage rates on public construction.

A contractor or subcontractor who performs work on a public construction contract in the state shall pay not less than the current prevailing rate of wages for work of a similar nature in the region in which the work is done. The current prevailing rate of wages is that contained in the latest determination of prevailing rate of wages issued by the Department of Labor and Workforce Development at least 10 days before the final date for submission of bids for the contract. The rate shall remain in effect for the life of the contract or for 24 calendar months, whichever is shorter. At the end of the initial 24-month period, if new wage determinations have been issued by the department, the latest wage determination shall become effective for the next 24-month period or until the contract is completed, whichever occurs first. This process shall be repeated until the contract is completed.

Sec. 36.05.040. Filing schedule of employees, wages paid, and other information.

All contractors or subcontractors who perform work on a public construction contract for the state or for a political subdivision of the state shall, before the Friday of every second week, file with the Department of Labor and Workforce Development a sworn affidavit for the previous reporting period, setting out in detail the number of persons employed, wages paid, job classification of each employee, hours worked each day and week, and other information on a form provided by the Department of Labor and Workforce Development.

Sec. 36.05.045. Notice of work and completion; withholding of payment.

- (a) Before commencing work on a public construction contract, the person entering into the contract with a contracting agency shall designate a primary contractor for purposes of this section. Before work commences, the primary contractor shall file a notice of work with the Department of Labor and Workforce Development. The notice of work must list work to be performed under the public construction contract by each contractor who will perform any portion of work on the contract and the contract price being paid to each contractor. The primary contractor shall pay all filing fees for each contractor performing work on the contract, including a filing fee based on the contract price being paid for work performed by the primary contractor's employees. The filing fee payable shall be the sum of all fees calculated for each contractor. The filing fee shall be one percent of each contractor's contract price. The total filing fee payable by the primary contractor under this subsection may not exceed \$5,000. In this subsection, "contractor" means an employer who is using employees to perform work on the public construction contract under the contract or a subcontract.
- (b) Upon completion of all work on the public construction contract, the primary contractor shall file with the Department of Labor and Workforce Development a notice of completion together with payment of any additional filing fees owed due to increased contract amounts. Within 30 days after the department's receipt of the primary contractor's notice of completion, the department shall inform the contracting agency of the amount, if any, to be withheld from the final payment.
- (c) A contracting agency
 - (1) may release final payment of a public construction contract to the extent that the agency has received verification from the Department of Labor and Workforce Development that
 - (A) the primary contractor has complied with (a) and (b) of this section;
 - (B) the Department of Labor and Workforce Development is not conducting an investigation under this title; and
 - (C) the Department of Labor and Workforce Development has not issued a notice of a violation of this chapter to the primary contractor or any other contractors working on the public construction contract; and

- (2) shall withhold from the final payment an amount sufficient to pay the department's estimate of what may be needed to compensate the employees of any contractors under investigation on this construction contract, and any unpaid filing fees.
- (d) The notice and filing fee required under (a) of this section may be filed after work has begun if
 - (1) The public construction contract is for work undertaken in immediate response to an emergency; and
 - (2) The notice and fees are filed not later than 14 days after the work has begun.
- (e) A false statement made on a notice required by this section is punishable under AS 11.56.210.

Sec. 36.05.060. Penalty for violation of this chapter.

A contractor who violates this chapter is guilty of a misdemeanor and upon conviction is punishable by a fine of not less than \$100 nor more than \$1,000, or by imprisonment for not less than 10 days nor more than 90 days, or by both. Each day a violation exists constitutes a separate offense.

Sec. 36.05.070. Wage rates in specifications and contracts for public works.

- (a) The advertised specifications for a public construction contract that requires or involves the employment of mechanics, laborers, or field surveyors must contain a provision stating the minimum wages to be paid various classes of laborers, mechanics, or field surveyors and that the rate of wages shall be adjusted to the wage rate under AS 36.05.010.
- (b) Repealed by §17 ch 142 SLA 1972.
- (c) A public construction contract under (a) of this section must contain provisions that
 - (1) the contractor or subcontractors of the contractor shall pay all employees unconditionally and not less than once a week;
 - (2) wages may not be less than those stated in the advertised specifications, regardless of the contractual relationship between the contractor or subcontractors and laborers, mechanics, or field surveyors;
 - (3) the scale of wages to be paid shall be posted by the contractor in a prominent and easily accessible place at the site of the work;
 - (4) the state or a political subdivision shall withhold so much of the accrued payments as is necessary to pay to laborers, mechanics, or field surveyors employed by the contractor or subcontractors the difference between
 - (A) the rates of wages required by the contract to be paid laborers, mechanics, or field surveyors on the work; and
 - (B) the rates of wages in fact received by laborers, mechanics, or field surveyors.

Sec. 36.05.080. Failure to pay agreed wages.

Every contract within the scope of AS 36.05.070 shall contain a provision that if it is found that a laborer, mechanic, or field surveyor employed by the contractor or subcontractor has been or is being paid a rate of wages less than the rate of wages required by the contract to be paid, the state or its political subdivision may, by written notice to the contractor, terminate the contractor's right to proceed with the work or the part of the work for which there is a failure to pay the required wages and to prosecute the work to completion by contract or otherwise, and the contractor and the contractor's sureties are liable to the state or its political subdivision for excess costs for completing the work.

Sec. 36.05.090. Payment of wages from withheld payments and listing contractors who violate contracts.

- (a) The state disbursing officer in the case of a state public construction contract and the local fiscal officer in the case of a political subdivision public construction contract shall pay directly to laborers, mechanics, or field surveyors from accrued payments withheld under the terms of the contract the wages due laborers, mechanics, or field surveyors under AS 36.05.070.
- (b) The state disbursing officer or the local fiscal officer shall distribute to all departments of the state government and to all political subdivisions of the state a list giving the names of persons who have disregarded their obligations to employees. A person appearing on this list and a firm, corporation,

partnership, or association in which the person has an interest may not work as a contractor or subcontractor on a public construction contract for the state or a political subdivision of the state until three years after the date of publication of the list. If the accrued payments withheld under the contract are insufficient to reimburse all the laborers, mechanics, or field surveyors with respect to whom there has been a failure to pay the wages required under AS 36.05.070, the laborers, mechanics, or field surveyors have the right of action or intervention or both against the contractor and the contractor's sureties conferred by law upon persons furnishing labor or materials, and in the proceedings it is not a defense that the laborers, mechanics, or field surveyors accepted or agreed to accept less than the required rate of wages or voluntarily made refunds.

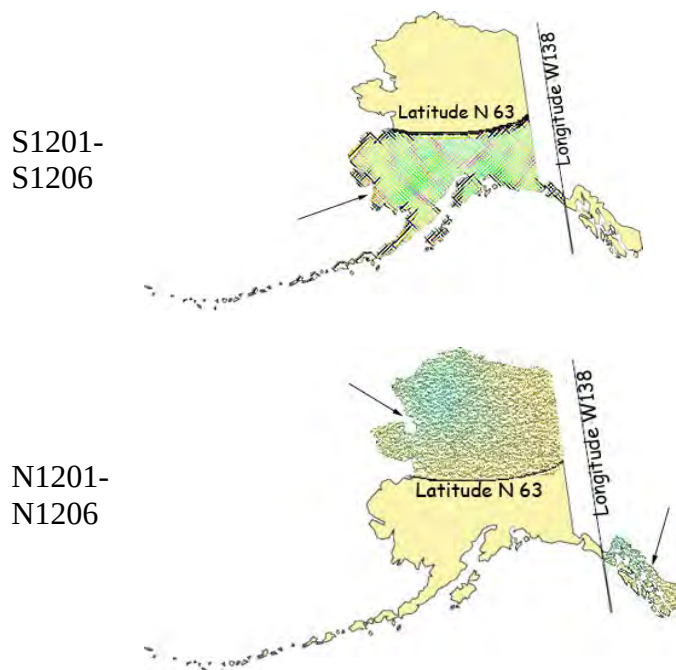
Sec. 36.05.900. Definition.

In this chapter, "contracting agency" means the state or a political subdivision of the state that has entered into a public construction contract with a contractor.

ADDITIONAL INFORMATION

LABORER CLASSIFICATION CLARIFICATION

The laborer rates categorized in class code S1201-S1206 apply in one area of Alaska; the area that is south of N63 latitude and west of W138 Longitude. The laborer rates categorized in class code N1201-N1206 apply in two areas of Alaska; the Alaska areas north of N63 latitude and east of W138 longitude. The following graphic representations should assist with clarifying the applicable wage rate categories:



ACCOMMODATIONS AND PER DIEM

The Alaska Department of Labor and Workforce Development has adopted a per diem requirement for blocklayers, bricklayers, carpenters, dredgemen, heat & frost insulators/asbestos workers, ironworkers, laborers, operative plasterers & cement masons, painters, piledrivers, power equipment operators, roofers, surveyors, truck

drivers/surveyors, and tunnel workers. This per diem rate creates an allowable alternative to providing board and lodging under the following conditions:

Employer-Provided Camp or Suitable Accommodations

Unless otherwise approved by the Commissioner, the employer shall ensure that a worker who is employed on a project that is 65 road miles or more from the international airport in either Fairbanks, Juneau or Anchorage or is inaccessible by road in a 2-wheel drive vehicle and who is not a domiciled resident of the locality of the project shall receive meals and lodging. Lodging shall be in accordance with all applicable state and federal laws. In cases where the project site is not road accessible, but the employee can reasonably get to the project worksite from their permanent residence within one hour, the Commissioner may waive these requirements for that employee upon a written request from the employer.

The term “domiciled resident” means a person living within 65 road miles of the project, or in the case of a highway project, the mid-point of the project, for at least 12 consecutive months prior to the award of the project. However, if the employer or person provides sufficient evidence to convince the department that a person has established a permanent residence and an intent to remain indefinitely within the distance to be considered a “domiciled resident,” the employer shall not be required to provide meals and lodging or pay per diem.

Where the employer provides or furnishes board, lodging or any other facility, the cost or amount thereof shall not be considered or included as part of the required prevailing wage basic hourly rate and cannot be applied to meet other fringe benefit requirements. The taxability of employer provided board and lodging shall be determined by the appropriate taxation enforcement authority.

Per Diem

Employers are encouraged to use commercial facilities and lodges; however, when such facilities are not available, per diem in lieu of meals and lodging must be paid at the basic rate of \$75.00 per day, or part thereof, the worker is employed on the project. Per diem shall not be allowed on highway projects west of Livengood on the Elliott Highway, at Mile 0 of the Dalton Highway to the North Slope of Alaska, north of Mile 20 on the Taylor Highway, east of Chicken, Alaska, on the Top of the World Highway and south of Tetlin Junction to the Alaska-Canada border.

The above-listed standards for room and board and per diem only apply to the crafts as identified in Pamphlet 600, *Laborers' and Mechanics' Minimum Rates of Pay*. Other crafts working on public construction projects shall be provided room and board at remote sites based on the department's existing policy guidelines. In the event that a contractor provides lodging facilities, but no meals, the department will accept payment of \$36 per day for meals to meet the per diem requirements.

APPRENTICE HIRING REQUIREMENTS

On July 24, 2005, Administrative Order No. 226 established a 15 percent goal for hiring apprentices in certain job categories on highway, airport, harbor, dam, tunnel, utility or dredging projects awarded by the Alaska Department of Transportation and Public Facilities that exceed \$2.5 million. This Order will apply to all projects in the referenced categories that are advertised after September 1, 2005. On these projects, the hours worked by apprentices will be compared to the hours worked by journeyman level workers to determine if the 15 percent goal has been met. This on-the-job training goal is critical to ensure that the Alaska work force is prepared for the future. For additional details, contact the nearest Wage and Hour office at the address listed on Page xi of this publication. Administrative Order No. 226 may be viewed in its entirety on the Internet at <http://www.gov.state.ak.us/admin-orders/226.html> or call any Wage and Hour office to receive a copy.

APPRENTICE RATES

Apprentice rates at less than the minimum prevailing rates may be paid to apprentices according to an apprentice program which has been registered and approved by the Commissioner of the Alaska Department of Labor and Workforce Development in writing or according to a bona fide apprenticeship program registered with the U.S. Department of Labor, Office of Apprenticeship. **Any employee listed on a payroll at an apprentice wage rate who is not registered as above shall be paid the journeyman prevailing minimum wage in that work classification.** Wage rates are based on prevailing crew makeup practices in Alaska and apply to work performed regardless of either the quality of the work performed by the employee or the titles or classifications which may be assigned to individual employees.

FRINGE BENEFIT PLANS

Contractors/subcontractors may compensate fringe benefits to their employees in any one of three methods. The fringe benefits may be paid into a union trust fund, into an approved benefit plan, or paid directly on the paycheck as gross wages.

Where fringe benefits are paid into approved plans, funds, or programs including union trust funds, the payments must be contributed at least monthly. If contractors submit their own payroll forms and are paying fringe benefits into approved plans, funds, or programs, the employer's certification must include, in addition to those requirements of 8 AAC 30.020(c), a statement that fringe benefit payments have been or will be paid at least monthly. Contractors who pay fringe benefits to a plan must ensure the plan is one approved by the Internal Revenue Service and that the plan meets the requirements of 8 AAC 30.025 (eff. 3/2/08) in order for payments to be credited toward the prevailing wage obligation.

SPECIAL PREVAILING WAGE RATE DETERMINATION

Special prevailing wage rate determinations may be requested for special projects or a special worker classification if the work to be performed does not conform to traditional public construction for which a prevailing wage rate has been established under 8 AAC 30.050(a) of this section. Requests for special wage rate determinations must be in writing and filed with the Commissioner at least 30 days before the award of the contract. An applicant for a special wage rate determination shall have the responsibility to support the necessity for the special rate. An application for a special wage rate determination filed under this section must contain:

- (1) a specification of the contract or project on which the special rates will apply and a description of the work to be performed;
- (2) a brief narrative explaining why special wage rates are necessary;
- (3) the job class or classes involved;
- (4) the special wage rates the applicant is requesting, including survey or other relevant wage data to support the requested rates;
- (5) the approximate number of employees who would be affected; and
- (6) any other information which might be helpful in determining if special wage rates are appropriate.

Requests made pursuant to the above should be addressed to:

Director
Alaska Department of Labor and Workforce Development
Labor Standards & Safety Division
Wage and Hour Administration
P.O. Box 111149
Juneau, AK 99811-1149

-or-

Email: anchorage.lss-wh@alaska.gov

LABOR STANDARDS REGULATIONS
NOTICE REQUEST

If you would like to receive ***notices of proposed changes to regulations*** for Wage and Hour or Mechanical Inspection, please indicate below the programs for which you are interested in receiving such notices, print your name and email or mailing address in the space provided, and send this page to:

Alaska Department of Labor and Workforce Development
Labor Standards & Safety Division
Wage and Hour Administration
1251 Muldoon Road, Suite 113
Anchorage, AK 99504-2098
Email: anchorage.lss-wh@alaska.gov

For *REGULATIONS* information relating to any of the following:

- ☐ Wage and Hour Title 23 Employment Practices
- ☐ Wage and Hour Title 36 Public Works
- ☐ Employment Agencies
- ☐ Child Labor
- ☐ Employment Preference (Local Hire)
- ☐ Plumbing Code
- ☐ Electrical Code
- ☐ Boiler/Pressure Vessel Construction Code
- ☐ Elevator Code
- ☐ Certificates of Fitness
- ☐ Recreational Devices

Request any of the following *PUBLICATIONS* by checking below:

☐ Wage and Hour Title 23 Employment Practices	☐ Public Construction Pamphlet
☐ Minimum Wage & Overtime Poster	☐ Public Construction Wage Rates
☐ Child Labor Poster	☐ Child Labor Pamphlet

PLEASE NOTE: DUE TO INCREASED MAILING AND PRINTING COSTS, ONLY ONE OF EACH PUBLICATION REQUESTED WILL BE MAILED TO YOU. IF YOU WISH TO RECEIVE ADDITIONAL COPIES OR SUBSEQUENT PUBLICATIONS, PLEASE CONTACT OUR OFFICE AT (907) 269-4900.

Name: _____

Mailing Address: _____

Email Address: _____

**DEPARTMENT OF LABOR & WORKFORCE DEVELOPMENT
ALASKA EMPLOYMENT PREFERENCE INFORMATION**

By authority of AS 36.10.150 and 8 AAC 30.064, the Commissioner of Labor and Workforce Development has determined the State of Alaska to be a Zone of Underemployment. A Zone of Underemployment requires that Alaska residents who are eligible under AS 36.10.140 be given a minimum of 90 percent employment preference on public works contracts throughout the state in certain job classifications. **This 90 percent Alaska resident hiring preference applies on a project-by-project, craft-by-craft or occupational basis and must be met each workweek by each contractor/subcontractor in each of the following classifications:**

Boilermakers	Electricians	Laborers	Roofers
Bricklayers	Engineers & Architects	Mechanics	Sheet Metal Workers
Carpenters	Equipment Operators	Millwrights	Surveyors
Cement Masons	Foremen & Supervisors	Painters	Truck Drivers
Culinary Workers	Insulation Workers	Piledriving Occupations	Tug Boat Workers
	Ironworkers	Plumbers & Pipefitters	Welders

This determination became effective July 1, 2015, and remains in effect through June 30, 2017. This determination will be applied to projects with a bid submission deadline on or after July 1, 2015 and to projects previously covered by the 2013 Alaska employment preference determination. This will afford contractors an opportunity to consider the impacts of Alaska resident hire in their bids.

The first person on a certified payroll in any classification is called the "first worker" and is not required to be an Alaskan resident. However, once the contractor adds any more workers in the classification, then all workers in the classification are counted, and the 90 percent calculation is applied to compute the number of required Alaskans to be in compliance. To compute the number of Alaskan residents required in a workweek in a particular classification, multiply the total number of workers in the classification by 90 percent. The result is then rounded down to the nearest whole number to determine the number of Alaskans that must be employed in that classification.

If a worker works in more than one classification during a week, the classification in which they spent the most time would be counted for employment preference purposes. If the time is split evenly between two classifications, the worker is counted in both classifications.

If you have difficulty meeting the 90 percent requirement, an approved waiver must be obtained before a non-Alaska resident is hired who would put the contractor/subcontractor out of compliance (8 AAC 30.081 (e) (f)). The waiver process requires proof of an adequate search for qualified Alaskan workers. Qualified Alaska residents identified through the search must be hired before waivers for non-resident workers may be granted. To apply for a waiver, contact the nearest Wage and Hour Office for instructions.

Here is an example to apply the 90 percent requirement to four boilermaker workers. Multiply four workers by 90% and drop the fraction ($.90 \times 4 = 3.6 - .6 = 3$). The remaining number is the number of Alaskan resident boilermakers required to be in compliance in that particular classification for that week.

The penalties for being out of compliance are serious. AS 36.10.100 (a) states "A contractor who violates a provision of this chapter shall have deducted from amounts due to the contractor under the contract the prevailing wages which should have been paid to a displaced resident and these amounts shall be retained by the contracting agency." If a contractor/subcontractor is found to be out of compliance, penalties accumulate until they come into compliance.

Contractors are responsible for determining residency status. If you have difficulty determining whether a worker is an Alaska resident, you should contact the nearest Wage and Hour Office. Contact Wage and Hour in Anchorage at (907) 269-4900, in Fairbanks at (907) 451-2886, or in Juneau at (907) 465-4842.

**Alaska Department of Labor and Workforce Development
Labor Standards & Safety Division
Wage and Hour Administration
Web site: <http://labor.state.ak.us/lss/pamp600.htm>**

Anchorage

1251 Muldoon Road, Suite 113
Anchorage, Alaska 99504-2098
Phone: (907) 269-4900

Email:
anchorage.lss-wh@alaska.gov

Juneau

1111 W. 8th Street, Suite 302
Juneau, Alaska 99801
Phone: (907) 465-4842

Email:
juneau.lss-wh@alaska.gov

Fairbanks

Regional State Office Building
675 7th Ave., Station J-1
Fairbanks, Alaska 99701-4593
Phone: (907) 451-2886

Email:
fairbanks.lss@alaska.gov

DEBARMENT LIST

AS 36.05.090(b) states that “the state disbursing officer or the local fiscal officer shall distribute to all departments of the state government and to all political subdivisions of the state a list giving the names of persons who have disregarded their obligations to employees.”

A person appearing on the following debarment list and a firm, corporation, partnership, or association in which the person has an interest may not work as a contractor or subcontractor on a public construction contract for the state or a political subdivision of the state for three years from the date of debarment.

Company Name

Debarment Expires

Bengal Groups, LLC
Mohammed Ali, Individual
Fry’s Services, LLC
John Paul Freie, Individual
Pyramid Audio & Video, Ltd.
Jeffrey P. Schneider, Individual

November 3, 2017
November 3, 2017
November 16, 2017
November 16, 2017
June 19, 2018
June 19, 2018

Laborers' & Mechanics' Minimum Rates of Pay

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR

Boilermakers

						VAC	SAF	
A0101	Boilermaker (journeyman)	44.01	8.57	15.34	1.60	3.00	0.34	72.86

Bricklayers & Blocklayers

**See note on last page if remote site

						L&M		
A0201	Blocklayer	39.81	9.53	8.50	0.55	0.15	0.43	58.97

Bricklayer
Marble or Stone Mason
Refractory Worker (Firebrick, Plastic, Castable, and Gunitite Refractory Applications)
Terrazzo Worker
Tile Setter

						L&M		
A0202	Tuck Pointer Caulker	39.81	9.53	8.50	0.55	0.15	0.43	58.97

Cleaner (PCC)

						L&M		
A0203	Marble & Tile Finisher	33.94	9.53	8.50	0.55	0.15	0.43	53.10

Terrazzo Finisher

						L&M		
A0204	Torginal Applicator	37.88	9.53	8.50	0.55	0.15	0.43	57.04

Carpenters, Statewide

**See note on last page if remote site

						L&M	SAF	
A0301	Carpenter (journeyman)	38.09	9.78	13.61	0.70	0.10	0.15	62.43

Lather/Drywall/Acoustical

Cement Masons, Region I (North of N63 latitude)

**See note on last page if remote site

						L&M		
N0401	Group I, including:	36.69	7.24	11.80	1.18	0.10		57.01

Application of Sealing Compound
Application of Underlayment
Building, General
Cement Mason (journeyman)
Concrete

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR

Cement Masons, Region I (North of N63 latitude)

**See note on last page if remote site

N0401	Group I, including:	36.69	7.24	11.80	1.18	L&M 0.10	57.01

Concrete Paving
Curb & Gutter, Sidewalk
Curing of All Concrete
Grouting & Caulking of Tilt-Up Panels
Grouting of All Plates
Patching Concrete
Screed Pin Setter
Spackling/Skim Coating

N0402	Group II, including:	36.69	7.24	11.80	1.18	L&M 0.10	57.01

Form Setter

N0403	Group III, including:	36.69	7.24	11.80	1.18	L&M 0.10	57.01

Concrete Saw (self-powered)
Curb & Gutter Machine
Floor Grinder
Pneumatic Power Tools
Power Chipping & Bushing
Sand Blasting Architectural Finish
Screed & Rodding Machine Operator
Troweling Machine Operator

N0404	Group IV, including:	36.69	7.24	11.80	1.18	L&M 0.10	57.01

Application of All Composition Mastic
Application of All Epoxy Material
Application of All Plastic Material
Finish Colored Concrete
Guniting Nozzleman
Hand Powered Grinder
Tunnel Worker

N0405	Group V, including:	36.94	7.24	11.80	1.18	L&M 0.10	57.26

Plasterer

Cement Masons, Region II (South of N63 latitude)

**See note on last page if remote site

S0401	Group I, including:	36.44	7.24	11.80	1.18	L&M 0.10	56.76

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund;
PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate;
VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR
Cement Masons, Region II (South of N63 latitude)								
**See note on last page if remote site								
S0401	Group I, including:	36.44	7.24	11.80	1.18	L&M	0.10	56.76
	Application of Sealing Compound							
	Application of Underlayment							
	Building, General							
	Cement Mason (journeyman)							
	Concrete							
	Concrete Paving							
	Curb & Gutter, Sidewalk							
	Curing of All Concrete							
	Grouting & Caulking of Tilt-Up Panels							
	Grouting of All Plates							
	Patching Concrete							
	Screed Pin Setter							
	Spackling/Skim Coating							
S0402	Group II, including:	36.44	7.24	11.80	1.18	L&M	0.10	56.76
	Form Setter							
S0403	Group III, including:	36.44	7.24	11.80	1.18	L&M	0.10	56.76
	Concrete Saw (self-powered)							
	Curb & Gutter Machine							
	Floor Grinder							
	Pneumatic Power Tools							
	Power Chipping & Bushing							
	Sand Blasting Architectural Finish							
	Screed & Rodding Machine Operator							
	Troweling Machine Operator							
S0404	Group IV, including:	36.44	7.24	11.80	1.18	L&M	0.10	56.76
	Application of All Composition Mastic							
	Application of All Epoxy Material							
	Application of All Plastic Material							
	Finish Colored Concrete							
	Guniting Nozzleman							
	Hand Powered Grinder							
	Tunnel Worker							
S0405	Group V, including:	36.69	7.24	11.80	1.18	L&M	0.10	57.01
	Plasterer							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Culinary Workers * See note on last page							
A0501	Baker/Cook	25.67	6.53	6.37		LEG 0.07	38.64
A0503	General Helper	22.62	6.53	6.37		LEG 0.07	35.59
	Housekeeper						
	Janitor						
	Kitchen Helper						
A0504	Head Cook	26.22	6.53	6.37		LEG 0.07	39.19
A0505	Head Housekeeper	23.04	6.53	6.37		LEG 0.07	36.01
	Head Kitchen Help						
Dredgemen **See note on last page if remote site							
A0601	Assistant Engineer, including:	39.26	9.60	10.50	1.00	L&M 0.10	60.46
	Craneman						
	Electrical Generator Operator (primary pump/power barge/dredge)						
	Engineer						
	Welder						
A0602	Assistant Mate (deckhand)	38.10	9.60	10.50	1.00	L&M 0.10	59.30
A0603	Fireman	38.54	9.60	10.50	1.00	L&M 0.10	59.74
A0605	Leverman Clamshell	41.79	9.60	10.50	1.00	L&M 0.10	62.99
A0606	Leverman Hydraulic	40.03	9.60	10.50	1.00	L&M 0.10	61.23
A0607	Mate & Boatman	39.26	9.60	10.50	1.00	L&M 0.10	60.46
A0608	Oiler (dredge)	38.54	9.60	10.50	1.00	L&M 0.10	59.74
Electricians							
A0701	Inside Cable Splicer	39.82	11.61	12.59	0.95	L&M 0.20 LEG 0.15	65.32

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR
Electricians								
A0702	Inside Journeyman Wireman, including: Technicians	39.49	11.61	12.83	0.95	L&M 0.20	LEG 0.15	65.23
A0703	Power Cable Splicer	52.27	11.61	17.34	0.95	L&M 0.20	LEG 0.15	82.52
A0704	Tele Com Cable Splicer	47.45	11.61	15.02	0.95	L&M 0.20	LEG 0.15	75.38
A0705	Power Journeyman Lineman, including: Power Equipment Operator Technician	50.52	11.61	17.29	0.95	L&M 0.20	LEG 0.15	80.72
A0706	Tele Com Journeyman Lineman, including: Technician Tele Com Equipment Operator	45.70	11.61	14.97	0.95	L&M 0.20	LEG 0.15	73.58
A0707	Straight Line Installer - Repairman	45.70	11.61	14.97	0.95	L&M 0.20	LEG 0.15	73.58
A0708	Powderman	48.52	11.61	17.23	0.95	L&M 0.20	LEG 0.15	78.66
A0710	Material Handler	26.18	11.11	4.54	0.15	L&M 0.15	LEG 0.15	42.28
A0712	Tree Trimmer Groundman	26.67	11.61	10.55	0.15	L&M 0.15	LEG 0.15	49.28
A0713	Journeyman Tree Trimmer	35.34	11.61	10.81	0.15	L&M 0.15	LEG 0.15	58.21
A0714	Vegetation Control Sprayer	38.79	11.61	10.91	0.15	L&M 0.15	LEG 0.15	61.76
A0715	Inside Journeyman Communications CO/PBX	38.07	11.61	12.54	0.95	L&M 0.20	LEG 0.15	63.52
Elevator Workers								
A0802	Elevator Constructor	35.94	13.58	14.21	0.60	L&M 0.30	VAC 3.27	67.90
A0803	Elevator Constructor Mechanic	51.34	13.58	14.21	0.60	L&M 0.30	VAC 5.70	85.73

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund;
PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate;
VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Heat & Frost Insulators/Asbestos Workers							
**See note on last page if remote site							
A0902	Asbestos Abatement-Mechanical Systems	36.18	8.84	9.51	0.60	SAF 0.12	55.25
A0903	Asbestos Abatement/General Demolition All Systems	36.18	8.84	9.51	0.60	SAF 0.12	55.25
A0904	Insulator, Group II	36.18	8.84	9.51	0.60	SAF 0.12	55.25
A0905	Fire Stop	36.18	8.84	9.51	0.60	SAF 0.12	55.25
IronWorkers							
**See note on last page if remote site							
A1101	Ironworkers, including:	36.25	7.83	19.25	0.97	L&M 0.46 IAF 0.10	64.86
	Bender Operators						
	Bridge & Structural						
	Machinery Mover						
	Ornamental						
	Reinforcing						
	Rigger						
	Sheeter						
	Signalman						
	Stage Rigger						
	Toxic Haz-Mat Work						
	Welder						
A1102	Helicopter	37.25	7.83	19.25	0.97	L&M 0.46 IAF 0.10	65.86
	Tower (energy producing windmill type towers to include nacelle and blades)						
A1103	Fence/Barrier Installer	32.75	7.83	19.00	0.97	L&M 0.46 IAF 0.10	61.11
	Guard Rail Installer						
A1104	Guard Rail Layout Man	33.49	7.83	19.00	0.97	L&M 0.46 IAF 0.10	61.85
Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)							
**See note on last page if remote site							
N1201	Group I, including:	29.79	7.53	15.95	1.20	L&M 0.20 LEG 0.15	54.82
	Asphalt Worker (shovelman, plant crew)						

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)

**See note on last page if remote site

						L&M	LEG	
N1201	Group I, including:	29.79	7.53	15.95	1.20	0.20	0.15	54.82
	Brush Cutter							
	Camp Maintenance Laborer							
	Carpenter Tender or Helper							
	Choke Setter, Hook Tender, Rigger, Signalman							
	Concrete Labor (curb & gutter, chute handler, grouting, curing, screeding)							
	Crusher Plant Laborer							
	Demolition Laborer							
	Ditch Digger							
	Dumpman							
	Environmental Laborer (hazard/toxic waste, oil spill)							
	Fence Installer							
	Fire Watch Laborer							
	Flagman							
	Form Stripper							
	General Laborer							
	Guardrail Laborer, Bridge Rail Installer							
	Hydro-seeder Nozzleman							
	Laborer, Building							
	Landscaper or Planter							
	Laying of Mortarless Decorative Block (retaining walls, flowered decorative block 4 feet or less - highway or landscape work)							
	Material Handler							
	Pneumatic or Power Tools							
	Portable or Chemical Toilet Serviceman							
	Pump Man or Mixer Man							
	Railroad Track Laborer							
	Sandblast, Pot Tender							
	Saw Tender							
	Slurry Work							
	Steam Cleaner Operator							
	Steam Point or Water Jet Operator							
	Storm Water Pollution Protection Plan Worker (SWPPP Worker - erosion and sediment control Laborer)							
	Tank Cleaning							
	Utiliwalk & Utilidor Laborer							
	Watchman (construction projects)							
	Window Cleaner							

						L&M	LEG	
N1202	Group II, including:	30.79	7.53	15.95	1.20	0.20	0.15	55.82

Burning & Cutting Torch

Cement or Lime Dumper or Handler (sack or bulk)

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)

**See note on last page if remote site

						L&M	LEG	
N1202	Group II, including:	30.79	7.53	15.95	1.20	0.20	0.15	55.82
	Certified Erosion Sediment Control Lead (CESCL Laborer)							
	Choker Splicer							
	Chucktender (wagon, air-track & hydraulic drills)							
	Concrete Laborer (power buggy, concrete saws, pumpcrete nozzleman, vibratorman)							
	Culvert Pipe Laborer							
	Cured Inplace Pipelayer							
	Environmental Laborer (asbestos, marine work)							
	Foam Gun or Foam Machine Operator							
	Green Cutter (dam work)							
	Guniting Operator							
	Hod Carrier							
	Jackhammer or Pavement Breaker (more than 45 pounds)							
	Laser Instrument Operator							
	Laying of Mortarless Decorative Block (retaining walls, flowered decorative block over 4 feet - highway or landscape work)							
	Mason Tender & Mud Mixer (sewer work)							
	Pilot Car							
	Pipelayer Helper							
	Plasterer, Bricklayer & Cement Finisher Tender							
	Powderman Helper							
	Power Saw Operator							
	Railroad Switch Layout Laborer							
	Sandblaster							
	Scaffold Building & Erecting							
	Sewer Caulker							
	Sewer Plant Maintenance Man							
	Thermal Plastic Applicator							
	Timber Faller, Chainsaw Operator, Filer							
	Timberman							

						L&M	LEG	
N1203	Group III, including:	31.69	7.53	15.95	1.20	0.20	0.15	56.72
	Bit Grinder							
	Camera/Tool/Video Operator							
	Guardrail Machine Operator							
	High Rigger & Tree Topper							
	High Scaler							
	Multiplate							
	Plastic Welding							
	Slurry Seal Squeegee Man							
	Traffic Control Supervisor							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR
Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)								
**See note on last page if remote site								
N1203	Group III, including:	31.69	7.53	15.95	1.20	L&M	LEG	
	Welding Certified (in connection with laborer's work)					0.20	0.15	56.72
N1204	Group IIIA	34.97	7.53	15.95	1.20	L&M	LEG	
	Asphalt Raker, Asphalt Belly Dump Lay Down					0.20	0.15	60.00
	Drill Doctor (in the field)							
	Driller (including, but not limited to, wagon drills, air-track drills, hydraulic drills)							
	Licensed Powderman							
	Pioneer Drilling & Drilling Off Tugger (all type drills)							
	Pipelayers							
	Storm Water Pollution Protection Plan Specialist (SWPPP Specialist)							
N1205	Group IV	19.36	7.53	15.95	1.20	L&M	LEG	
	Final Building Cleanup					0.20	0.15	44.39
	Permanent Yard Worker							
N1206	Group IIIB	35.80	7.53	15.95	1.20	L&M	LEG	
	Federally Licensed Powderman (Responsible Person in Charge)					0.20	0.15	60.83
	Grade Checking (setting or transferring of grade marks, line and grade, Stake Hopper)							
Laborers (The area that is south of N63 latitude and west of W138 longitude)								
**See note on last page if remote site								
S1201	Group I, including:	29.79	7.53	15.95	1.20	L&M	LEG	
	Asphalt Worker (shovelman, plant crew)					0.20	0.15	54.82
	Brush Cutter							
	Camp Maintenance Laborer							
	Carpenter Tender or Helper							
	Choke Setter, Hook Tender, Rigger, Signalman							
	Concrete Labor (curb & gutter, chute handler, grouting, curing, screeding)							
	Crusher Plant Laborer							
	Demolition Laborer							
	Ditch Digger							
	Dumpman							
	Environmental Laborer (hazard/toxic waste, oil spill)							
	Fence Installer							
	Fire Watch Laborer							
	Flagman							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Laborers (The area that is south of N63 latitude and west of W138 longitude)

**See note on last page if remote site

						L&M	LEG	
S1201	Group I, including:	29.79	7.53	15.95	1.20	0.20	0.15	54.82

Form Stripper
General Laborer
Guardrail Laborer, Bridge Rail Installer
Hydro-seeder Nozzleman
Laborer, Building
Landscape or Planter
Laying of Mortarless Decorative Block (retaining walls, flowered decorative block 4 feet or less - highway or landscape work)
Material Handler
Pneumatic or Power Tools
Portable or Chemical Toilet Serviceman
Pump Man or Mixer Man
Railroad Track Laborer
Sandblast, Pot Tender
Saw Tender
Slurry Work
Steam Cleaner Operator
Steam Point or Water Jet Operator
Storm Water Pollution Protection Plan Worker (SWPPP Worker - erosion and sediment control Laborer)
Tank Cleaning
Utiliwalk & Utilidor Laborer
Watchman (construction projects)
Window Cleaner

						L&M	LEG	
S1202	Group II, including:	30.79	7.53	15.95	1.20	0.20	0.15	55.82

Burning & Cutting Torch
Cement or Lime Dumper or Handler (sack or bulk)
Certified Erosion Sediment Control Lead (CESCL Laborer)
Choker Splicer
Chucktender (wagon, air-track & hydraulic drills)
Concrete Laborer (power buggy, concrete saws, pumpcrete nozzleman, vibratorman)
Culvert Pipe Laborer
Cured Inplace Pipelayer
Environmental Laborer (asbestos, marine work)
Foam Gun or Foam Machine Operator
Green Cutter (dam work)
Guniting Operator
Hod Carrier
Jackhammer or Pavement Breaker (more than 45 pounds)

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR

Laborers (The area that is south of N63 latitude and west of W138 longitude)

**See note on last page if remote site

						L&M	LEG	
S1202	Group II, including:	30.79	7.53	15.95	1.20	0.20	0.15	55.82

Laser Instrument Operator
Laying of Mortarless Decorative Block (retaining walls, flowered decorative block over 4 feet - highway or landscape work)
Mason Tender & Mud Mixer (sewer work)
Pilot Car
Pipelayer Helper
Plasterer, Bricklayer & Cement Finisher Tender
Powderman Helper
Power Saw Operator
Railroad Switch Layout Laborer
Sandblaster
Scaffold Building & Erecting
Sewer Caulker
Sewer Plant Maintenance Man
Thermal Plastic Applicator
Timber Faller, Chainsaw Operator, Filer
Timberman

						L&M	LEG	
S1203	Group III, including:	31.69	7.53	15.95	1.20	0.20	0.15	56.72

Bit Grinder
Camera/Tool/Video Operator
Guardrail Machine Operator
High Rigger & Tree Topper
High Scaler
Multiplate
Plastic Welding
Slurry Seal Squeegee Man
Traffic Control Supervisor
Welding Certified (in connection with laborer's work)

						L&M	LEG	
S1204	Group IIIA	34.97	7.53	15.95	1.20	0.20	0.15	60.00

Asphalt Raker, Asphalt Belly Dump Lay Down
Drill Doctor (in the field)
Driller (including, but not limited to, wagon drills, air-track drills, hydraulic drills)
Licensed Powderman
Pioneer Drilling & Drilling Off Tugger (all type drills)
Pipelayers
Storm Water Pollution Protection Plan Specialist (SWPPP Specialist)

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR

Laborers (The area that is south of N63 latitude and west of W138 longitude)

**See note on last page if remote site

S1205	Group IV	19.36	7.53	15.95	1.20	L&M	LEG	
						0.20	0.15	44.39

Final Building Cleanup
Permanent Yard Worker

S1206	Group IIIB	35.80	7.53	15.95	1.20	L&M	LEG	
						0.20	0.15	60.83

Federally Licensed Powderman (Responsible Person in Charge)
Grade Checking (setting or transferring of grade marks, line and grade,
Stake Hopper)

Millwrights

A1251	Millwright (journeyman)	36.49	9.78	11.26	1.00	L&M		
						0.40	0.05	58.98

A1252	Millwright Welder	37.49	9.78	11.26	1.00	L&M		
						0.40	0.05	59.98

Painters, Region I (North of N63 latitude)

**See note on last page if remote site

N1301	Group I, including:	32.07	7.83	11.10	1.08	L&M		
						0.07		52.15

Brush
General Painter
Hand Taping
Hazardous Material Handler
Lead-Based Paint Abatement
Roll

N1302	Group II, including:	32.59	7.83	11.10	1.08	L&M		
						0.07		52.67

Bridge Painter
Epoxy Applicator
General Drywall Finisher
Hand/Spray Texturing
Industrial Coatings Specialist
Machine/Automatic Taping
Pot Tender
Sandblasting
Specialty Painter
Spray
Structural Steel Painter

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund;
PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate;
VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Painters, Region I (North of N63 latitude)							
**See note on last page if remote site							
N1302	Group II, including:	32.59	7.83	11.10	1.08	L&M 0.07	52.67
	Wallpaper/Vinyl Hanger						
N1304	Group IV, including:	37.88	7.83	11.16	1.05	0.05	57.97
	Glazier						
	Storefront/Automatic Door Mechanic						
N1305	Group V, including:	29.51	7.83	5.02	0.83	0.07	43.26
	Carpet Installer						
	Floor Coverer						
	Heat Weld/Cove Base						
	Linoleum/Soft Tile Installer						
Painters, Region II (South of N63 latitude)							
**See note on last page if remote site							
S1301	Group I, including :	30.31	7.83	10.85	1.08	L&M 0.07	50.14
	Brush						
	General Painter						
	Hand Taping						
	Hazardous Material Handler						
	Lead-Based Paint Abatement						
	Roll						
	Spray						
S1302	Group II, including :	31.56	7.83	10.85	1.08	L&M 0.07	51.39
	General Drywall Finisher						
	Hand/Spray Texturing						
	Machine/Automatic Taping						
	Wallpaper/Vinyl Hanger						
S1303	Group III, including :	31.66	7.83	10.85	1.08	L&M 0.07	51.49
	Bridge Painter						
	Epoxy Applicator						
	Industrial Coatings Specialist						
	Pot Tender						
	Sandblasting						
	Specialty Painter						
	Structural Steel Painter						

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund;
PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate;
VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR

Painters, Region II (South of N63 latitude)

**See note on last page if remote site

S1304	Group IV, including:	37.88	7.83	10.41	1.08	L&M	0.07	57.27

Glazier

Storefront/Automatic Door Mechanic

S1305	Group V, including:	29.51	7.83	5.02	0.83	L&M	0.07	43.26

Carpet Installer

Floor Coverer

Heat Weld/Cove Base

Linoleum/Soft Tile Installer

Piledrivers

**See note on last page if remote site

A1401	Piledriver	38.09	9.78	13.61	0.70	L&M	IAF	62.43

Assistant Dive Tender

Carpenter/Piledriver

Rigger

Sheet Stabber

Skiff Operator

A1402	Piledriver-Welder/Toxic Worker	39.09	9.78	13.61	0.70	L&M	IAF	63.43

A1403	Remotely Operated Vehicle Pilot/Technician	42.40	9.78	13.61	0.70	L&M	IAF	66.74

Single Atmosphere Suit, Bell or Submersible Pilot

A1404	Diver (working) ***See note on last page	82.20	9.78	13.61	0.70	L&M	IAF	106.54

A1405	Diver (standby) ***See note on last page	42.40	9.78	13.61	0.70	L&M	IAF	66.74

A1406	Dive Tender ***See note on last page	41.40	9.78	13.61	0.70	L&M	IAF	65.74

A1407	Welder (American Welding Society, Certified Welding Inspector)	43.65	9.78	13.61	0.70	L&M	IAF	67.99

Plumbers, Region I (North of N63 latitude)

N1501	Journeyman Pipefitter	41.21	7.75	13.45	1.25	L&M	S&L	64.76

Plumber

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund;
PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate;
VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR
Plumbers, Region I (North of N63 latitude)								
N1501	Journeyman Pipefitter	41.21	7.75	13.45	1.25	L&M	S&L	64.76
	Welder							
Plumbers, Region II (South of N63 latitude)								
S1501	Journeyman Pipefitter	40.00	8.88	11.57	1.25	L&M		61.90
	Plumber							
	Welder							
Plumbers, Region IIA (1st Judicial District)								
X1501	Journeyman Pipefitter	37.27	12.72	11.25	2.50	L&M		63.98
	Plumber							
	Welder							
Power Equipment Operators								
**See note on last page if remote site								
A1601	Group I, including:	40.03	9.60	10.50	1.00	L&M		61.23
	Asphalt Roller: Breakdown, Intermediate, and Finish							
	Back Filler							
	Barrier Machine (Zipper)							
	Beltcrete with Power Pack & similar conveyors							
	Bending Machine							
	Boat Coxswain							
	Bulldozer							
	Cableways, Highlines & Cablecars							
	Cleaning Machine							
	Coating Machine							
	Concrete Hydro Blaster							
	Cranes (45 tons & under or 150 feet of boom & under (including jib & attachments))							
	(a) Hydralifts or Transporters, (all track or truck type)							
	(b) Derricks							
	Crushers							
	Deck Winches, Double Drum							
	Ditching or Trenching Machine (16 inch or over)							
	Drag Scraper, Yarder, and similar types							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR

Power Equipment Operators

**See note on last page if remote site

							L&M	
A1601	Group I, including:	40.03	9.60	10.50	1.00	0.10		61.23
	Drilling Machines, Core, Cable, Rotary and Exploration							
	Finishing Machine Operator, Concrete Paving, Laser Screed, Sidewalk, Curb & Gutter Machine							
	Helicopters							
	Hover Craft, Flex Craft, Loadmaster, Air Cushion, All-Terrain Vehicle, Rollagon, Bargecable, Nodwell, & Snow Cat							
	Hydro Ax, Feller Buncher & similar							
	Licensed Line & Grade							
	Loaders (2 1/2 yards through 5 yards, including all attachments):							
	(a) Forklifts (with telescopic boom & swing attachment)							
	(b) Front End & Overhead, (2-1/2 yards through 5 yards)							
	(c) Loaders, (with forks or pipe clamp)							
	(d) Loaders, (elevating belt type, Euclid & similar types)							
	Mechanic, Welder, Bodyman, Electrical, Camp & Maintenance Engineer							
	Micro Tunneling Machine							
	Mixers: Mobile type with hoist combination							
	Motor Patrol Grader							
	Mucking Machine: Mole, Tunnel Drill, Horizontal/Directional Drill							
	Operator and/or Shield							
	Operator on Dredges							
	Piledriver Engineer, L.B. Foster, Puller or similar paving breaker							
	Plant Operator (Asphalt & Concrete)							
	Power Plant, Turbine Operator 200 k.w & over (power plants or combination of power units over 300 k.w.)							
	Remote Controlled Equipment							
	Scraper (through 40 yards)							
	Service Oiler/Service Engineer							
	Shot Blast Machine							
	Shovels, Backhoes, Excavators with all attachments, and Gradealls (3 yards & under)							
	Sideboom (under 45 tons)							
	Spreaders, Blaw Knox, Cedarapids, Barber Greene, Slurry Machine							
	Sub Grader (Gurries, Reclaimer & similar types)							
	Tack Tractor							
	Truck Mounted Concrete Pump, Conveyor & Creter							
	Unlicensed Off-Road Hauler							
	Wate Kote Machine							

							L&M	
A1602	Group IA, including:	41.79	9.60	10.50	1.00	0.10		62.99
	Camera/Tool/Video Operator (Slipline)							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR

Power Equipment Operators

**See note on last page if remote site

A1602	Group IA, including:	41.79	9.60	10.50	1.00	L&M 0.10	62.99

Certified Welder, Electrical Mechanic, Camp Maintenance Engineer,
 Mechanic (over 10,000 hours)
 Cranes (over 45 tons or 150 feet including jib & attachments)
 (a) Clamshells & Draglines (over 3 yards)
 (b) Tower Cranes
 Licensed Water/Waste Water Treatment Operator
 Loaders (over 5 yards)
 Motor Patrol Grader, Dozer, Grade Tractor, Roto-Mill/Profiler (finish:
 when finishing to final grade and/or to hubs, or for asphalt)
 Power Plants (1000 k.w. & over)
 Quad
 Scrapers (over 40 yards)
 Screed
 Shovels, Backhoes, Excavators with all attachments (over 3 yards)
 Sidebooms (over 45 tons)
 Slip Form Paver, C.M.I. & similar types

A1603	Group II, including:	39.26	9.60	10.50	1.00	L&M 0.10	60.46

Boiler - Fireman
 Cement Hogs & Concrete Pump Operator
 Conveyors (except those listed in Group I)
 Hoists on Steel Erection, Towermobiles & Air Tuggers
 Horizontal/Directional Drill Locator
 Licensed Grade Technician
 Loaders (i.e., Elevating Grader & Material Transfer Vehicle)
 Locomotives, Rod & Geared Engines
 Mixers
 Screening, Washing Plant
 Sideboom (cradling rock drill, regardless of size)
 Skidder
 Trenching Machines (under 16 inches)
 Water/Waste Water Treatment Operator

A1604	Group III, including:	38.54	9.60	10.50	1.00	L&M 0.10	59.74

"A" Frame Trucks, Deck Winches
 Bombardier (tack or tow rig)
 Boring Machine
 Brooms, Power
 Bump Cutter
 Compressor

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund;
 PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate;
 VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR

Power Equipment Operators

**See note on last page if remote site

							L&M	
A1604	Group III, including:	38.54	9.60	10.50	1.00	0.10		59.74

Farm Tractor
 Forklift, Industrial Type
 Gin Truck or Winch Truck (with poles when used for hoisting)
 Grade Checker & Stake Hopper
 Hoists, Air Tuggers, Elevators
 Loaders:
 (a) Elevating-Athey, Barber Greene & similar types
 (b) Forklifts or Lumber Carrier (on construction job sites)
 (c) Forklifts, (with tower)
 (d) Overhead & Front End, (under 2-1/2 yards)
 Locomotives: Dinkey (air, steam, gas & electric) Speeders
 Mechanics, Light Duty
 Oil, Blower Distribution
 Posthole Digger, Mechanical
 Pot Fireman (power agitated)
 Power Plant, Turbine Operator, (under 200 k.w.)
 Pumps, Water
 Roller (other than Asphalt)
 Saws, Concrete
 Skid Hustler
 Skid Steer (with all attachments)
 Straightening Machine
 Tow Tractor

							L&M	
A1605	Group IV, including:	32.33	9.60	10.50	1.00	0.10		53.53

Crane Assistant Engineer/Rig Oiler
 Drill Helper
 Parts & Equipment Coordinator
 Spotter
 Steam Cleaner
 Swamper (on trenching machines or shovel type equipment)

Roofers

**See note on last page if remote site

							L&M	
A1701	Roofer & Waterproofer	42.95	7.43	2.91	0.81	0.10	0.02	54.22

							L&M	
A1702	Roofer Material Handler	30.07	7.43	2.91	0.81	0.10	0.02	41.34

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund;
 PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate;
 VAC=vacation

Sheet Metal Workers, Region I (North of N63 latitude)

							L&M	
N1801	Sheet Metal Journeyman	45.93	9.50	10.64	1.32	0.25		67.64

Air Balancing and duct cleaning of HVAC systems
 Brazing, soldering or welding of metals
 Demolition of sheet metal HVAC systems
 Fabrication and installation of exterior wall sheathing, siding, metal roofing, flashing, decking and architectural sheet metal work
 Fabrication and installation of heating, ventilation and air conditioning ducts and equipment
 Fabrication and installation of louvers and hoods
 Fabrication and installation of sheet metal lagging
 Fabrication and installation of stainless steel commercial or industrial food service equipment
 Manufacture, fabrication assembly, installation and alteration of all ferrous and nonferrous metal work
 Metal lavatory partitions
 Preparation of drawings taken from architectural and engineering plans required for fabrication and erection of sheet metal work
 Sheet Metal shelving
 Sheet Metal venting, chimneys and breaching
 Skylight installation

Sheet Metal Workers, Region II (South of N63 latitude)

							L&M	
S1801	Sheet Metal Journeyman	40.79	9.50	11.72	1.18	0.33		63.52

Air Balancing and duct cleaning of HVAC systems
 Brazing, soldering or welding of metals
 Demolition of sheet metal HVAC systems
 Fabrication and installation of exterior wall sheathing, siding, metal roofing, flashing, decking and architectural sheet metal work
 Fabrication and installation of heating, ventilation and air conditioning ducts and equipment
 Fabrication and installation of louvers and hoods
 Fabrication and installation of sheet metal lagging
 Fabrication and installation of stainless steel commercial or industrial food service equipment
 Manufacture, fabrication assembly, installation and alteration of all ferrous and nonferrous metal work
 Metal lavatory partitions
 Preparation of drawings taken from architectural and engineering plans required for fabrication and erection of sheet metal work
 Sheet Metal shelving
 Sheet Metal venting, chimneys and breaching

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Sheet Metal Workers, Region II (South of N63 latitude)							
						L&M	
S1801	Sheet Metal Journeyman	40.79	9.50	11.72	1.18	0.33	63.52
	Skylight installation						
Sprinkler Fitters							
						L&M	
A1901	Sprinkler Fitter	43.75	8.52	13.20	0.45	0.25	66.17
Surveyors							
**See note on last page if remote site							
						L&M	
A2001	Chief of Parties	42.51	9.98	9.99	1.30	0.10	63.88
						L&M	
A2002	Party Chief	40.92	9.98	9.99	1.30	0.10	62.29
						L&M	
A2003	Line & Grade Technician/Office Technician	40.32	9.98	9.99	1.30	0.10	61.69
						L&M	
A2004	Associate Party Chief (including Instrument Person & Head Chain Person)	38.20	9.98	9.99	1.30	0.10	59.57
						L&M	
A2005	Stake Hop/Grademan	35.27	9.98	9.99	1.30	0.10	56.64
						L&M	
A2006	Chain Person (for crews with more than 2 people)	33.86	9.98	9.99	1.30	0.10	55.23
Truck Drivers							
**See note on last page if remote site							
						L&M	
A2101	Group I, including:	39.29	9.98	9.99	1.30	0.10	60.66
	Air/Sea Traffic Controllers						
	Ambulance/Fire Truck Driver (EMT certified)						
	Boat Coxswain						
	Captains & Pilots (air & water)						
	Deltas, Commanders, Rollagons, & similar equipment (when pulling sleds, trailers or similar equipment)						
	Dump Trucks (including rockbuggy & trucks with pups) over 40 yards up to & including 60 yards						
	Helicopter Transporter						
	Lowboys, including attached trailers & jeeps, up to & including 12 axles (over 12 axles or 150 tons to be negotiated)						

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR

Truck Drivers

**See note on last page if remote site

A2101	Group I, including:	39.29	9.98	9.99	1.30	L&M 0.10	60.66

Material Coordinator and Purchasing Agent
 Ready-mix (over 12 yards up to & including 15 yards) (over 15 yards to be negotiated)
 Semi with Double Box Mixer
 Tireman, Heavy Duty/Fueler
 Water Wagon (250 Bbls and above)

A2102	Group 1A including:	40.56	9.98	9.99	1.30	L&M 0.10	61.93

Dump Trucks (including rockbuggy & trucks with pups) over 60 yards up to & including 100 yards (over 100 yards to be negotiated)
 Jeeps (driver under load)

A2103	Group II, including:	38.03	9.98	9.99	1.30	L&M 0.10	59.40

All Deltas, Commanders, Rollagons, & similar equipment
 Boom Truck/Knuckle Truck (over 5 tons)
 Construction and Material Safety Technician
 Dump Trucks (including rockbuggy & trucks with pups) over 20 yards up to & including 40 yards
 Gin Pole Truck, Winch Truck, Wrecker (truck mounted "A" frame manufactured rating over 5 tons)
 Lowboys (including attached trailers & jeeps up to & including 8 axles)
 Mechanics
 Partsman
 Ready-mix (over 7 yards up to & including 12 yards)
 Stringing Truck
 Super Vac Truck/Cacasco Truck/Heat Stress Truck
 Turn-O-Wagon or DW-10 (not self loading)

A2104	Group III, including:	37.21	9.98	9.99	1.30	L&M 0.10	58.58

Batch Trucks (8 yards & up)
 Boom Truck/Knuckle Truck (up to & including 5 tons)
 Dump Trucks (including rockbuggy & trucks with pups) over 10 yards up to & including 20 yards
 Expeditor (electrical & pipefitting materials)
 Gin Pole Truck, Winch Truck, Wrecker (truck mounted "A" frame manufactured rating 5 tons & under)
 Greaser - Shop
 Oil Distributor Driver
 Thermal Plastic Layout Technician
 Traffic Control Technician

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Truck Drivers							
**See note on last page if remote site							
A2104	Group III, including:	37.21	9.98	9.99	1.30	L&M 0.10	58.58
	Trucks/Jeeps (push or pull)						
A2105	Group IV, including:	36.63	9.98	9.99	1.30	L&M 0.10	58.00
	Air Cushion or similar type vehicle						
	All Terrain Vehicle						
	Buggymobile						
	Bull Lift & Fork Lift, Fork Lift with Power Boom & Swing Attachment (over 5 tons)						
	Bus Operator (over 30 passengers)						
	Combination Truck-Fuel & Grease						
	Compactor (when pulled by rubber tired equipment)						
	Dump Trucks (including Rockbuggy & trucks with pups up to & including 10 yards)						
	Dumpster						
	Expeditor (general)						
	Fire Truck/Ambulance Driver						
	Flat Beds, Dual Rear Axle						
	Foam Distributor Truck Dual Axle						
	Front End Loader with Fork						
	Grease Truck						
	Hydro Seeder, Dual Axle						
	Hyster Operators (handling bulk aggregate)						
	Loadmaster (air & water operations)						
	Lumber Carrier						
	Ready-mix, (up to & including 7 yards)						
	Rigger (air/water/oilfield)						
	Semi or Truck & Trailer						
	Tireman, Light Duty						
	Track Truck Equipment						
	Vacuum Truck, Truck Vacuum Sweeper						
	Warehouseperson						
	Water Truck (Below 250 Bbls)						
	Water Truck, Dual Axle						
	Water Wagon, Semi						
A2106	Group V, including:	35.87	9.98	9.99	1.30	L&M 0.10	57.24
	Batch Truck (up to & including 7 yards)						
	Buffer Truck						
	Bull Lifts & Fork Lifts, Fork Lifts with Power Boom & Swing Attachments (up to & including 5 tons)						

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR

Truck Drivers

**See note on last page if remote site

						L&M		
A2106	Group V, including:	35.87	9.98	9.99	1.30	0.10		57.24

Bus Operator (up to 30 passengers)
 Farm Type Rubber Tired Tractor (when material handling or pulling wagons on a construction project)
 Flat Beds, Single Rear Axle
 Foam Distributor Truck Single Axle
 Fuel Handler (station/bulk attendant)
 Gear/Supply Truck
 Gravel Spreader Box Operator on Truck
 Hydro Seeders, Single axle
 Pickups (pilot cars & all light-duty vehicles)
 Rigger/Swamper
 Tack Truck
 Team Drivers (horses, mules, & similar equipment)

Tunnel Workers, Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)

**See note on last page if remote site

						L&M	LEG	
N2201	Group I, including:	32.77	7.53	15.95	1.20	0.20	0.15	57.80

Brakeman
 Mucker
 Nipper
 Storm Water Pollution Protection Plan Worker (SWPPP Worker - erosion and sediment control Laborer)
 Topman & Bull Gang
 Tunnel Track Laborer

						L&M	LEG	
N2202	Group II, including:	33.87	7.53	15.95	1.20	0.20	0.15	58.90

Burning & Cutting Torch
 Certified Erosion Sediment Control Lead (CESCL Laborer)
 Concrete Laborer
 Jackhammer
 Laser Instrument Operator
 Nozzlemen, Pumpcrete or Shotcrete
 Pipelayer Helper

						L&M	LEG	
N2203	Group III, including:	34.86	7.53	15.95	1.20	0.20	0.15	59.89

Miner
 Retimberman

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund;
 PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate;
 VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR

Tunnel Workers, Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)

**See note on last page if remote site

						L&M	LEG	
N2204	Group IIIA, including:	38.47	7.53	15.95	1.20	0.20	0.15	63.50

Asphalt Raker, Asphalt Belly Dump Lay Down
Drill Doctor (in the field)
Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills)
Licensed Powderman
Pioneer Drilling & Drilling Off Tugger (all type drills)
Pipelayer
Storm Water Pollution Protection Plan Specialist (SWPPP Specialist)

						L&M	LEG	
N2206	Group IIIB, including:	39.38	7.53	15.95	1.20	0.20	0.15	64.41

Federally Licensed Powderman (Responsible Person in Charge)
Grade Checking (setting or transferring of grade marks, line and grade, Stake Hopper)

Tunnel Workers, Laborers (The area that is south of N63 latitude and west of W138 longitude)

**See note on last page if remote site

						L&M	LEG	
S2201	Group I, including:	32.77	7.53	15.95	1.20	0.20	0.15	57.80

Brakeman
Mucker
Nipper
Storm Water Pollution Protection Plan Worker (SWPPP Worker - erosion and sediment control Laborer)
Topman & Bull Gang
Tunnel Track Laborer

						L&M	LEG	
S2202	Group II, including:	33.87	7.53	15.95	1.20	0.20	0.15	58.90

Burning & Cutting Torch
Certified Erosion Sediment Control Lead (CESCL Laborer)
Concrete Laborer
Jackhammer
Laser Instrument Operator
Nozzlemen, Pumpcrete or Shotcrete
Pipelayer Helper

						L&M	LEG	
S2203	Group III, including:	34.86	7.53	15.95	1.20	0.20	0.15	59.89

Miner
Retimberman

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR
Tunnel Workers, Laborers (The area that is south of N63 latitude and west of W138 longitude)								
**See note on last page if remote site								

						L&M	LEG	
S2204	Group IIIA, including:	38.47	7.53	15.95	1.20	0.20	0.15	63.50

Asphalt Raker, Asphalt Belly Dump Lay Down
Drill Doctor (in the field)
Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills)
Licensed Powderman
Pioneer Drilling & Drilling Off Tugger (all type drills)
Pipelayer
Storm Water Pollution Protection Plan Specialist (SWPPP Specialist)

						L&M	LEG	
S2206	Group IIIB, including:	39.38	7.53	15.95	1.20	0.20	0.15	64.41

Federally Licensed Powderman (Responsible Person in Charge)
Grade Checking (setting or transferring of grade marks, line and grade, Stake Hopper)

Tunnel Workers, Power Equipment Operators								
**See note on last page if remote site								

						L&M		
A2207	Group I	44.03	9.60	10.50	1.00	0.10		65.23

						L&M		
A2208	Group IA	45.97	9.60	10.50	1.00	0.10		67.17

						L&M		
A2209	Group II	43.19	9.60	10.50	1.00	0.10		64.39

						L&M		
A2210	Group III	42.39	9.60	10.50	1.00	0.10		63.59

						L&M		
A2211	Group IV	35.56	9.60	10.50	1.00	0.10		56.76

* A remote site is isolated and relatively distant from the amenities of civilization, and usually far from the employee's home. As a condition of employment, the workers must eat, sleep, and socialize at the worksite and remain there for extended periods.

** This classification must receive board and lodging under certain conditions. A per diem option of \$75 is an alternative to providing meals and lodging. See Page v for an explanation.

*** Work in combination of classifications: Employees working in any combination of classifications within the diving crew (working diver, standby diver, and tender) in a shift are paid in the classification with the highest rate for a minimum of 8 hours per shift.

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Contractor Performance Assessment Report

City of Unalaska



March 1, 2015

CONTRACTOR PERFORMANCE ASSESSMENT REPORT

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1.1 INTRODUCTION.

Since the implementation of the Contractor Performance Assessment Reporting System (CPARS) by the Federal Government in 1994, other agencies (school districts, municipalities, private industry) have initiated their own procedures to record contractor performance. Experience has demonstrated that recording contractor performance information periodically during performance of the contract and discussing the results with contractors is a powerful motivator for contractors to maintain high quality performance or improve inadequate performance before the next reporting cycle. Current performance assessment is a basic “best practice” for good contract administration, and is one of the most important tools available for ensuring good contractor performance.

Properly completed performance assessments become past performance information for use in future source selections. Completion of these assessments improves the amount and quality of performance information available to source selection teams. The use of past performance as a major Assessment factor in the contract award process is instrumental in making “best value” selections. It enables agencies to better predict the quality of, and satisfaction with, future work.

How well the City’s purchasing and Contracting Officer administer in-process contracts and discuss with contractors their current performance determines to a great extent how well the City can achieve its mission and provide value to the taxpayers. By increasing attention to contractor performance on in-process contracts and ensuring past performance data is readily available for selection teams, the City is reaping two benefits: 1. Better current performance because of the active dialog between the contractor and the City; and 2. Better ability to select high-quality contractors for new contracts because contractors know the assessments will be used in future award decisions.

1.2 Assessment Areas

It is imperative that assessments be completed, be completed consistently, be completed objectively, and be completed in a timely manner. Inflated assessments are just as detrimental as poor assessments because inflated assessments unfairly skew results, thereby helping poor contractors and hurting good contractors. Contractors will receive frank discussions early in the process so they have an opportunity to improve performance, if necessary, before final assessments are given. Contractors will be advised of any negative comments being entered into official reports and given ample opportunity for a rebuttal.

1.3 Frequency of Assessments

Interim assessments are strongly recommended as part of good contract management. If the performance period is expected to exceed 12 months, then interim assessments will be conducted at least every 4 months. Interim assessments provide essential feedback to contractors on their performance. They provide an opportunity to give contractors performing well a “pat on the back” and encouragement to keep up the good work. Interim assessments give contractors experiencing problems the opportunity to correct problems before they jeopardize contract completion. They also provide current performance information on comparable contracts to source selection teams. However, assessments will be prepared and discussed with contractors more often depending on contractor performance problems. An *honest* discussion of the contractor’s performance is important. Contractors know past performance assessments directly affect their ability to compete for future contracts and will normally take actions necessary to improve their rating. The contractor should always know how the City rates its performance -- no surprises! Likewise, during discussions, the contractor will be asked if there are areas in which the City could improve its performance, such as in partnerships, contributions to achieving mission success, etc. The key to the process is *communication*!

1.4 Performance Indicators

Four performance indicators will be evaluated:

1. Quality of Performance - as defined in the contract standards.
2. Cost Performance - how close to project bid and/or cost estimate.
3. Schedule Performance - timeliness of completion of milestones and contract dates.
4. Business Relations - history of professional behavior and overall business-like concern for the interests of the City including customer satisfaction.

1.5 Performance Ratings

Problems with poor performance can lead to frustrations for both the contractor and the City. Early identification of concerns and open lines of communication (e.g., interim reports) can lead to constructive dialog that can help to improve performance and avoid adversarial feelings that might otherwise develop if potential misunderstandings are ignored until late into contract performance.

The ratings given will reflect how well the contractor met the cost, schedule, and performance requirements of the contract, and the business relationship. Contractors are not expected to be perfect in their execution to reach contract requirements. A critical aspect of the assessment rating system described below is the second sentence of each rating, which recognizes the contractor's resourcefulness in overcoming challenges that arise in the context of contract performance. The City is looking for overall results, not problem free management of the contract.

Five ratings will be used to rate each of the four performance indicators:

- 5 Exceptional
- 4 Very good
- 3 Satisfactory
- 2 Marginal
- 1 Unsatisfactory

Exceptional (5). Performance meets contract requirements and *significantly exceeds* contract requirements to the City's benefit. For example, the contractor implemented innovative or business process reengineering techniques, which resulted in added value to the City. The contractual performance of the element or sub-element being assessed was accomplished with few minor problems for which corrective actions taken by the contractor were highly effective.

Very Good (4). Performance meets contractual requirements and *exceeds some* to the City's benefit. The contractual performance of the element or sub-element being assessed was accomplished with some minor problems for which corrective actions taken by the contractor were effective.

Satisfactory (3). Performance *meets* contractual requirements. The contractual performance of the element or sub-element contains some minor problems for which proposed corrective actions taken by the contractor appear satisfactory, or completed corrective actions were satisfactory.

Marginal (2). Performance *does not meet some* contractual requirements. The contractual performance of the element or sub-element being assessed reflects a serious problem for which the contractor has submitted minimal corrective actions, if any. The contractor's proposed actions appear only marginally effective or were not fully implemented.

Unsatisfactory (1). Performance *does not meet* contractual requirements and *recovery is not likely* in a timely or cost effective manner. The contractual performance of the element or sub-element contains serious problem(s) for which the contractor's corrective actions appear or were ineffective.

1.6 Contractor Response and City Review

While the ultimate conclusion on the performance assessment is a decision of the City, the Contractor Performance Assessment provides for contractor comment. Upon completion of the initial assessment by the Contracting Officer, the assessment should be signed by the person most familiar with the contractor's performance and initialed by the Contracting Officer. The Contracting Officer should sign the final assessments. As soon as practicable after the form is signed, and ordinarily within a day, it should be sent to the contractor for comments. The required turnaround time for contractor response may not be less than thirty days, but in most cases, 30 days should be a sufficient response time. Contracting Officers may extend the response period as warranted. If the contractor fails to provide a response by the established deadline, the Contracting Officer should call the contractor and initiate discussions on the performance and request a written reply. If all attempts fail, then the City's comments can stand alone.

If the contractor submits a rebuttal for any or all of the ratings and an agreement on the ratings cannot be reached by the contractor and lead assessor, the contractor may seek review at least one level above the Contracting Officer. In the event the contractor and Contracting Officer do not agree on the performance rating(s), the Contracting Officer and lead assessor should make every effort to discuss with the contractor the details of the performance assessment and the contractor's response. In these cases, such effort should require a face-to-face meeting between the parties. The contractor's statement and agency review must be attached to the performance report and must be provided to source selection officials requesting a reference check.

When the City has completed its review of the contractor's comments, the Contracting Officer must send a copy of the completed assessment to the contractor. The completed assessments, including any contractor response or rebuttal, and agency reviews above the Contracting Officer, should be filed in the contract file, in a separate file, or automated database where they can be readily accessible by contracting office personnel. Automated databases should be accessible by source selection teams in other agencies through use of a secure system. Interim assessments should be retained for the duration of the contract and included with the final assessment in the file. The interim assessment allows source selection teams to analyze performance trends during the contract.

1.7 Release of Contractor Assessment

Contractor assessments shall not be released to anyone other than City personnel needing the information for contract selection purposes, however, Freedom of Information Act rules apply.

1.0 SCOPE

This document provides guidance on the policies and procedures pertaining to contractor performance Assessments.

2.0 PURPOSE

This document is intended to serve as an authoritative source for coordinating the activities of the various Departments within the City of Unalaska with regard to the completion, distribution, and storage of Contractor Performance Assessments.

3.0 REFERENCES

Chapter 6.24 of the Unalaska Code of Ordinances (UCO).

4.0 DEFINITIONS

For purposes of this policy, the terms defined in this section have meanings ascribed to them in this section unless the context clearly indicated that another meaning is intended.

Bidder: Any individual, firm, corporation, or any acceptable combination thereof, or joint venture submitting a bid for the advertised Work.

City: The City of Unalaska, Alaska. References to "owner" or "Contracting Agency" mean the City.

Construction: Building, altering repairing, improving, or demolishing any structure, building, road, street or highway, sewer, water line, and any draining, dredging, excavation, grading, or similar work upon real property.

Construction Contract: A contract awarded by the City for construction as defined in UCO 6.24, as opposed to a contract for goods and services.

Consultant: A person, firm, agency, or corporation retained by the City to prepare Contract Documents, perform construction administration services, or other Project related services.

Contracting Officer: The Contracting Officer shall be the City of Unalaska Director of Public Works. The Contracting Officer alone shall have the power to bind the City and to exercise the rights, responsibilities, authorities, and functions vested in the Contracting Officer by the Contract Documents, except that the Contracting Officer shall have the right to designate in writing authorized representatives to act for him. Wherever any provision of the Contract Documents specifies an individual or organization, whether Governmental or private, to perform any act on behalf of or in the interests of the City, that individual or organization shall be deemed to be the Contracting Officer's authorized representative under this Contract but only to the extent so specified. The Contracting Officer may, at any time during the performance of this Contract, vest in any such authorized representatives additional power and authority to act for the Contracting Officer or designate additional representatives, specifying the extent of their authority to act for the Contracting Officer; a copy of each document vesting additional authority in or removing that authority from an authorized representative or designating an additional authorized representative shall be furnished to the contractor. The City Council reserves the right to appoint a new Contracting Officer without affecting any of the contractor's obligations to the city under this Contract.

Contractor: The individual, firm, corporation, or any acceptable combination thereof, contracting with the City for performance of the Work.

Contractor Performance Assessment: A process by which the City formally evaluates the overall contract performance by the Contractor and his subcontractors/suppliers.

Project Manager: The authorized representative of the Contracting Officer who is responsible for administration of the Contract.

Responsible Bidder: A person who has the capability, in all respects, to perform fully the contract requirements and the moral and business integrity and reliability which will ensure good faith performance, and who has been prequalified, if required.

Subcontractor: An individual, firm, or corporation to whom the contractor sublets part of the contract.

Using Agency: The entity who will occupy or use the completed Work.

5.1 DISCUSSION: Chapter 6.24.060 of Unalaska Code of Ordinances

Chapter 6.24.060 of Unalaska Code of Ordinances states that contracts shall be awarded to the lowest responsible bidder. In determining the lowest responsible bidder, in addition to price, there shall be considered:

- A. The ability, capacity, and skill of the bidder to perform the contract.
- B. Whether the bidder can perform the contract within the time specified, without delay or interference.
- C. The character, integrity, reputation, judgment, experience, and efficiency of the bidder. When considering the character, integrity, and reputation of the bidder, the City Council or its delegate may consider any past conduct of the bidder which the City Council or its delegate in the exercise of their discretion determines is evidence of poor character, integrity, or reputation sufficient to conclude that award of the contract to the low bidder is not in the best interest of the citizens of Unalaska. This would include past instances in which the bidder has submitted grossly inflated claims for additional compensation for work done on a city project either as a subcontractor or as a general contractor and past conduct of the bidder in meetings with city employees or consultants.
- D. The quality of performance of previous contracts. In considering the quality of performance of previous contracts, the City Council or its delegate may consider any of the following factors:
 - 1) Whether contracts were completed on time.
 - 2) Whether the bidder promptly corrected defective work.
 - 3) Whether the bidder fully performed the contract, including submission of as-built drawings.
 - 4) The number and validity of claims for additional compensation submitted by the bidder.
 - 5) The conducts of the bidder during meetings with city employees and consultants.
 - 6) Previously completed Assessments of bidder performance by any city department.
- E. The previous and existing compliance by the bidder with laws and ordinances relating to the contract.
- F. The sufficiency of the financial resources and ability of the bidder to perform the contract.
- G. The number and scope of conditions attached to the bid.
- H. Whether there are any unresolved claims between the bidder and the City under any existing city contract in which the bidder is either a general contractor or a subcontractor. Unresolved claims alone may be a sufficient basis for an award to other than the low bidder.

6.1 POLICY

6.2 Contractor Performance Assessment Form.

The Contractor Performance Assessment Form, as shown in Section 9, shall be the only performance Assessment form used for documenting the performance of a contractor at the close of a contract or for annual service contracts. The form shall be used at the end of each contract term.

6.3 Bid Document Inclusion.

The Contractor Performance Assessment form should be included in all published construction bid documents as part of the front-end project book (Spec Book) composed by the Department of Public Works or its designee.

6.4 Completion of Contractor Performance Assessment Form.

The Contractor Performance Assessment form shall be completed at the close of each contract. Completion should be done prior to issuance of final payment to the Contractor.

6.5 Distribution of Completed Contractor Performance Assessment Form.

The completed Contractor Performance Assessment form will be distributed by the Contracting Officer to the Department of Public Works and the Contractor upon completion.

6.6 Presentation of Contractor Performance Assessment to Contractor

Upon completion of the Contractor Performance Assessment, the Contractor shall be notified and a meeting shall be setup between the Contracting Officer and the Contractor. During this meeting, the Contracting Officer shall review the completed Contractor Performance Assessment Form with the Contractor and discuss the performance of the project. Upon the completion of this meeting, the Contractor shall sign the Contractor Performance Assessment form verifying that the Contracting Officer's opinion of the performance of the contract by the Contractor has been discussed. Refusal of a Contractor to sign the Contractor Performance Assessment form shall be noted by the Contracting Officer.

6.7 Electronic Storage & Accessibility of Contractor Performance Assessments.

All completed Contractor Performance Assessments shall be posted and maintained on the City's Intranet under the Department of Public Works site. All City personnel shall have access to all past completed Contractor Performance Assessments.

6.8 Storage of the Contractor Performance Assessments.

All completed Contractor Performance Assessments shall be stored with the official contract file maintained by the Department of Finance. As well, the Using Agency shall maintain a copy of the completed Assessment in their official project file as part of the contract close-out procedures.

7.1 PROCEDURES

7.2 Project Manager Procedures.

The Contracting Officer shall assign a Project Manager to each construction contract. The Project Manager shall perform all duties involved in project management with a construction contract. At the close of the construction contract (prior to final payment being made to the contractor), the Project Manager shall complete the required Contractor Performance Assessment form to document the contractor's performance, compliance and non-compliance with the contract's terms and conditions. Upon completion of the Contractor Performance Assessment form, the Project Manager shall contact the contractor and schedule a date and time for a meeting at which the Project Manager will discuss with the contractor the Project Manager's opinion on the performance of the contract. This meeting shall be conducted prior to final payment being made to the contractor. The Project Manager shall have the contractor sign and date the completed Assessment and provide the contractor with a copy for their records. The Project Manager shall provide the assigned Contracting Officer a completed and fully signed copy of the Contractor Assessment form. The Project Manager shall maintain a copy of the completed Assessment form in their official project file as part of the contract close-out procedures. If the contractor refuses to sign the Assessment form, the Project Manager will document the reasoning for the refusal and attach it to the Contractor Performance Assessment form upon submittal to the Contracting Officer for review.

7.3 Contracting Officer Procedures.

The Contracting Officer shall receive a copy of the completed Contractor Performance Assessment form from the Project Manager. The Contracting Officer shall review the Assessment to verify that the Project Manager has met with the contractor and discussed the Contractor Performance Assessment. The Contracting Officer shall verify that a copy of the completed Contractor Performance Assessment Form is in the official construction contract file.

8.1 RESPONSIBILITIES

8.2 Project Manager.

The Project Manager is responsible for:

- A. Completion of the Contractor Performance Assessment Form;
- B. Meeting with the Contractor to discuss the Contractor Performance Assessment;
- C. Obtaining the Contractor's signature on the Contractor Performance Assessment Form;
- D. Providing a copy of the completed and signed Contractor Performance Assessment Form to the Contractor and the Contracting Officer; and
- E. Maintaining a copy of the completed and signed Contractor Performance Assessment form for their official project file as part of the contract close-out procedures.
- F. Documenting any reason(s) that a Contractor refuses to sign the Contractor Performance Assessment form and attach to the Contractor Performance Assessment form upon submittal to the Contracting Officer.

8.3 Contracting Officer

The Contracting Officer is responsible for:

- A. Receiving a copy of the completed Construction Contractor Performance Assessment Form from the Project Manager;
- B. Review the Assessment to verify that the Project Manager has met with the Contractor and discussed the Contractor Performance Assessment;
- C. Verify that a copy of the completed Contractor Performance Assessment Form is in the official construction contract file; and

9.1 CONTRACTOR PERFORMANCE ASSESSMENT

9.2 Contractor Performance Assessment Report (CPAR) Form: Attachment A

9.3 Guidelines for Completing Contractor Performance Assessment Report: Attachment B

CONTRACTOR PERFORMANCE ASSESSMENT REPORT (CPAR)

1. NAME/ADDRESS OF CONTRACTOR		2. INITIAL ☐		INTER-MEDIATE ☐		FINAL REPORT ☐		OUT OF CYCLE ☐		ADDENDUM ☐	
		3. PERIOD OF PERFORMANCE BEING ASSESSED									
OWNER / CEO		PHONE		4a. CONTRACT NUMBER				4b.			
SUPERINTENDENT		PHONE		5.							
6. LOCATION OF PROJECT				7a. CONTRACTING OFFICER				7b. PHONE NUMBER			
				8a. CONTRACT AWARD DATE		8b. SUBSTANTIAL COMPLETION DATE		9. FINAL COMPLETION DATE			
				10. CONTRACT PERCENT COMPLETE / DELIVERY ORDER STATUS							
				11. AWARDED VALUE				12. CURRENT CONTRACT DOLLAR VALUE			
				13. ☐ COMPETITIVE BID		☐ NEGOTIATED PRICE					
14. CONTRACT TYPE											
☐ UNIT PRICE ☐ BID ☒ Negotiated ☐ ☐ ☐ ☐ OTHER											
15. KEY SUBCONTRACTORS AND DESCRIPTION OF EFFORT PERFORMED											
16. CONTRACTOR TYPE											
☐		☐		☐		☐		☐		☐	
☐		☐		☐		☐		☐		☐	
17. CONTRACT EFFORT DESCRIPTION (Highlight key components, technologies and requirements; key milestone events and major modifications to contract during this period.)											
18. EVALUATE PERFORMANCE INDICATORS:											
		Exceptional		Very Good		Satisfactory		Marginal		Unsatisfactory	
a. QUALITY OF PERFORMANCE											
(1) PRODUCT PERFORMANCE											
(2) VALUE ENGINEERING											
(3) LOGISTICAL SUPPORT											
(4) PRODUCT ASSURANCE / WARRANTY											
(5) OTHER											
(6) OTHER											
b. COST CONTROL											
c. SCHEDULE PERFORMANCE											
d. BUSINESS RELATIONS											
(1) MANAGEMENT RESPONSIVENESS											
(2) SUBCONTRACT MANAGEMEN											
(3) PROFESSIONAL BEHAVIOR											
e. OTHER AREAS											
(1)											
(2)											

19. VARIANCE (Contract to date)		CURRENT	COMPLETION
COST VARIANCE (%)			
SCHEDULE VARIANCE (%)			
20. ASSESSING OFFICIAL or CONTRACTING OFFICER NARRATIVE			
21. TITLE OF ASSESSING OFFICIAL		DEPARTMENT	PHONE NUMBER
EMAIL ADDRESS:			
SIGNATURE		DATE	
22. CONTRACTOR COMMENTS (Contractor's Option)			
23. NAME AND TITLE OF CONTRACTOR'S REPRESENTATIVE		PHONE NUMBER	
EMAIL ADDRESS:		FAX NUMBER	
SIGNATURE		DATE	
24. REVIEW BY REVIEWING OFFICIAL (Comments Optional)			

Guidelines for completing Contractor Performance Assessment Report

Exceptional: Performance meets contractual requirements and exceeds many to the City's benefit. The contractual performance of the element or sub-element being assessed was accomplished with few minor problems for which corrective actions taken by the Contractor were highly effective.

Note: To justify an Exceptional rating, you should identify multiple significant events in each category and state how it was a benefit to the City. However, a singular benefit could be of such magnitude that it alone constitutes an Exceptional rating. Also, there should have been NO significant weaknesses identified.

Very Good: Performance meets contractual requirements and exceeds some to the Government's benefit. The contractual performance of the element or sub-element being assessed was accomplished with some minor problems for which corrective actions taken by the Contractor were effective.

Note: To justify a Very Good rating, you should identify a significant event in each category and state how it was a benefit to the City. Also there should have been no significant weaknesses identified.

Satisfactory: Performance meets contractual requirements. The contractual performance of the element or sub-element contains some minor problems for which corrective actions taken by the Contractor appear or were satisfactory.

Note: To justify a Satisfactory rating, there should have been only minor problems, or major problems the contractor recovered from without impact to the contract. Also there should have been NO significant weaknesses identified. A fundamental principle of assigning ratings is that Contractors will not be assessed a rating lower than Satisfactory solely for not performing beyond the requirements of the contract.

Marginal: Performance does not meet some contractual requirements. The contractual performance of the element or sub-element being assessed reflects a serious problem for which the Contractor has not yet identified corrective actions. The Contractor's proposed actions appear only marginally effective or were not fully implemented.

Note: To justify Marginal performance, you should identify a significant event in each category that the Contractor had trouble overcoming and state how it impacted the City. A Marginal rating should be supported by referencing the management tool that notified the Contractor of the contractual deficiency (e.g. Management, Quality, Safety, or Environmental Deficiency Report or letter).

Unsatisfactory: Performance does not meet most contractual requirements and recovery is not likely in a timely manner. The contractual performance of the element or sub-element contains a serious problem(s) for which the Contractor's corrective actions appear or were ineffective.

Note: To justify an Unsatisfactory rating, you should be able to identify multiple significant events in each category that the contractor had trouble overcoming and state how it impacted the City. However, a singular problem could be of such serious magnitude that it alone constitutes an unsatisfactory rating.

SECTION 01010
SUMMARY OF WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Work covered by the Contract Documents.
 - 2. Type of the Contract.
 - 3. Work phases.
 - 4. Products ordered in advance.
 - 5. Use of premises.
 - 6. Owner's occupancy requirements.
 - 7. Work restrictions.
 - 8. Specification formats and conventions.
- B. Related Sections include the following:
 - 1. Division 1 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.03 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: Unalaska Aquatic Center Improvements
 - 1. Project Location: 55 E. Broadway Ave, Unalaska, Alaska 99685
- B. Owner: City of Unalaska, 1035 E. Broadway Ave, Unalaska, Alaska 99685
 - 1. Owner's Representative: Tom Cohenour, Project Manager
- C. Architect: Wolf Architecture, 625 S. Cobb St, Suite 200, Palmer, Alaska 99645
- D. The Work consists of the following:
 - 1. The Work in the Base Bid includes:

- a. Architectural, Mechanical, and Electrical work to remodel the existing locker rooms.
 - b. Converting an existing office to a new sauna room.
 - c. Removal of existing sauna and converting the area into a new staff locker room.
 - d. Removal of existing staff locker rooms and converting the area into new ADA compliant family locker room.
 - e. Reconfiguration of an existing storage room into a new communications room on the second level.
 - f. Mechanical modifications and pump upgrades
 - g. Electrical modifications and upgrades
 - h. Misc. repairs.
 - i. Contractor is responsible for coordinating and designing extensions or reconfiguration of existing sprinkler system and submitting design of the sprinkler system to the Fire Marshal.
2. Alternates include:
- 1) New Card Lock Door Entry System
 - 2) New camera surveillance System
 - 3) New Sound System
 - 4) New ice maker
 - 5) Remove existing pool deck drain and install new drain including work to refinish pool deck.

1.04 TYPE OF CONTRACT

- A. Project will be constructed under a single prime contract.

1.05 USE OF PREMISES

- A. General: Contractor shall have limited use of premises for construction operations as indicated on Drawings by the Contract limits.
- B. Use of Site: Limit use of premises to be coordinated with Owner. Do not disturb portions of Project site beyond areas in which the Work is indicated.
1. Limits: Confine constructions operations to areas where work is permitted as shown on drawings.
 - a. Limit the exposure of paint fumes to the area of work only. Coordinate the shut down of existing ventilation system with Owner when paint is applied or when other chemicals are being installed.
 2. Owner Occupancy: Owner will continuously occupy the existing adjacent school structure. Allow for Owner full access to pool area during construction.
 3. Driveways and Entrances: Keep, loading areas and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all

times. Do not use these areas for parking or storage of materials. Coordinate location of staging area with Owner.

1.06 OWNER'S OCCUPANCY REQUIREMENTS

- A. Full Owner Occupancy: Owner will occupy adjacent existing building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits, unless otherwise indicated.
 - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
 - 2. Provide not less than 72 hours notice to Owner of activities that will affect Owner's operations.
 - 3. Contractor to obtain any necessary permits required for construction and occupancy of the project.
 - 4. Notify school district to lower temp control settings.
 - 5. The City of Unalaska Pool locker room is scheduled to be closed from 4/1/2016 – 8/3/2016. All work must be completed in this time frame, which includes:
 - a. 3 days allowed to drain pool (completed by Owner)
 - b. 10 days to fill pool (Completed by Owner)

1.07 WORK RESTRICTIONS

- A. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Owner not less than two days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Owner's written permission.

1.08 SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the 16-division format and CSI/CSC's "MasterFormat" numbering system.
 - 1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.

2. Division 1: Sections in Division 1 govern the execution of the Work of all Sections in the Specifications.
- B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
 2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
 - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

END OF SECTION 01100

APPENDIX 1
VICINITY MAP
CONTRACTOR STAGING

SECTION 01027

APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.
 - 1. Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule, Submittal Schedule, and List of Subcontracts.
- B. Related Sections: The following Sections contain requirements that relate to this Section.
 - 1. Schedules: The Contractor's Construction Schedule and Submittal Schedule are specified in Division 1 Section "Submittals."

1.03 SCHEDULE OF VALUES (Ref. General Conditions Article 9.2)

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.
 - 1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
 - a. Contractor's Construction Schedule.
 - b. Application for Payment forms, including Continuation Sheets.
 - c. List of subcontractors.
 - d. List of products.
 - e. List of principal suppliers and fabricators.
 - f. Schedule of submittals.
- C. Format and Content: Use the Project Manual table of contents as a guide to establish the format for the Schedule of Values. Provide at least one line item for each Specification Section.
 - 1. Identification: Include the following Project identification on the Schedule of Values:
 - a. Project name and location.
 - b. Name of the Owner.

- c. Project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value.
 - 1) Percentage of Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Break principal subcontract amounts down into several line items.
4. Round amounts to nearest whole dollar; the total shall equal the Contract Sum.
5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site.
6. Provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

1.04 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by and paid for by the Owner.
 1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.
- B. Payment-Application Times: The date for each progress payment and the period covered by each Application for Payment is outlined in the General and Supplementary General Conditions, Article 9.
- C. Payment-Application Forms: Acquire and utilize AIA Document G702 and Continuation Sheets G703 as the form for Applications for Payment.
- D. Application Preparation: Complete every entry on the form. Include notarization and execution by a person authorized to sign legal documents on behalf of the Contractor. The Project Manager will return incomplete applications without action.

1. Entries shall match data on the Schedule of Values and the Contractor's Construction Schedule. Use updated schedules if revisions were made.
 2. Include amounts of Change Orders issued prior to the last day of the construction period covered by the application.
- E. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to the Owner by a method ensuring receipt within 24 hours. One copy shall be complete, when required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to the Owner.
- F. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment.
1. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
 2. Administrative actions and submittals that shall precede or coincide with this application include:
 - a. Warranties (guarantees) and maintenance agreements.
 - b. Maintenance instructions.
 - c. Final cleanup of construction debris.
 - d. Application for reduction of retainage and consent of surety.
 - e. List of incomplete Work, recognized as exceptions to Substantial Completion
- G. Final Payment Application: Administrative actions and submittals that must precede or coincide with submittal of the final Application for Payment include the following:
1. Completion of Project closeout requirements.
 2. Completion of items specified for completion after Substantial Completion.
 3. Affidavits and Consent of Surety per General Conditions 9.7.3.
 3. Provide documentation regarding status of any unsettled claims and pending resolution of any such claims.
 4. Complete all unfinished work.
 5. Transmittal of required Project construction records to the Owner.
 6. Removal of surplus materials, rubbish, and similar elements.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01027

SECTION 01035

MODIFICATION PROCEDURES

PART 1 - GENERAL

RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

SUMMARY

- A. This Section specifies administrative and procedural requirements for addressing and processing contract modifications.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Submittals" for requirements for the Contractor's Construction Schedule.
 - 2. Division 1 Section "Applications for Payment" for administrative procedures governing Applications for Payment.
 - 3. Division 1 Section "Substitutions" for administrative procedures for handling requests for substitutions made after award of the Contract.

MINOR CHANGES IN THE WORK

- A. The Project Manager will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or Contract Time, on a City of Unalaska Field Memo form.

CHANGE ORDER PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: The Project Manager will issue a detailed description of proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Proposal requests issued by the Project Manager are for information only and are not to be considered as instructions to stop work in progress or to execute the proposed change.
 - 2. Estimates of any costs related to a change proposed by the Project Manager must be submitted to the Owner for review within 14 days of receipt of a proposal request

- a. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.
- B. Contractor-Initiated Proposals: When latent or unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Project Manager.
 1. Include a statement outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.
 2. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 4. Comply with requirements in Section "Product Substitutions" if the proposed change requires substitution of one product or system for a product or system specified.
- C. Proposal Request Form: Use AIA Document G709 or similar form acceptable to the City of Unalaska for Change Order Proposal Requests.

CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: When the Owner and the Contractor disagree on the terms of a Proposal Request, the Project Manager may issue a Construction Change Directive. The Construction Change Directive instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 1. The Construction Change Directive contains a complete description of the change in the Work. It also designates the method to be followed to determine change in the Contract Sum or Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 1. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

CHANGE ORDER PROCEDURES

- A. Upon the Owner's approval of a Proposal Request, the Project Manager will issue a Change Order for signatures of the Owner and the Contractor on the Change Order Form included with the sample forms in the Project Manual.

END OF SECTION 01035

SECTION 01040

COORDINATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes administrative and supervisory requirements necessary for coordinating construction operations including, but not necessarily limited to, the following:
 - 1. General project coordination procedures.
 - 2. Coordination Drawings.
 - 3. Administrative and supervisory personnel.
 - 4. Cleaning and protection.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Project Meetings" for progress meetings, coordination meetings, and preinstallation conferences.
 - 2. Division 1 Section "Submittals" for preparing and submitting the Contractor's Construction Schedule.

1.03 COORDINATION

- A. Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in the sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.
 - 3. Make provisions to accommodate items scheduled for later installation.

- B. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
 - 1. Prepare similar memoranda for the Owner and separate contractors where coordination of their work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of schedules.
 - 2. Installation and removal of temporary facilities.
 - 3. Delivery and processing of submittals.
 - 4. Progress meetings.
 - 5. Project closeout activities.
 - 6. Progress Payment Reviews

1.04 SUBMITTALS

- A. Coordination Drawings: Prepare coordination drawings where careful coordination is needed for installation of products and materials fabricated by separate entities. Prepare coordination drawings where limited space availability necessitates maximum utilization of space for efficient installation of different components.
 - 1. Show the relationship of components shown on separate Shop Drawings.
 - 2. Indicate required installation sequences.
 - 3. Comply with requirements contained in Section 01500 "Submittals."
- B. Staff Names: Within 15 days of commencement of construction operations, submit a list of the Contractor's Project Manager, Project Superintendent and key subcontractors in attendance at the Project Site. Identify individuals and their duties and responsibilities, list the names and telephone numbers of key staff. Post copies of the list in the Project meeting room, the temporary field office, and each temporary telephone.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 GENERAL COORDINATION PROVISIONS

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be

performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

- B. Coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.

3.02 CLEANING AND PROTECTION

- A. Clean and protect construction in progress and adjoining materials in place, during handling and installation. Apply protective covering where required to assure protection from damage or deterioration at Substantial Completion.
- B. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to assure operability without damaging effects.
- C. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:
 - 1. Excessive static or dynamic loading.
 - 2. Excessive internal or external pressures.
 - 3. Excessively high or low temperatures.
 - 4. Thermal shock.
 - 5. Excessively high or low humidity.
 - 6. Air contamination or pollution.
 - 7. Water or ice.
 - 8. Solvents.
 - 9. Chemicals.
 - 10. Light.
 - 11. Radiation.
 - 12. Puncture.
 - 13. Abrasion.
 - 14. Heavy traffic.
 - 15. Soiling, staining, and corrosion.
 - 16. Rodent and insect infestation.
 - 17. Combustion.
 - 18. Electrical current.
 - 19. Improper lubrication.
 - 20. Unusual wear or other misuse.
 - 21. Contact between incompatible materials.
 - 22. Destructive testing.
 - 23. Misalignment.
 - 24. Excessive weathering.

- 25. Unprotected storage.
- 26. Improper shipping or handling.
- 27. Theft.
- 28. Vandalism.

END OF SECTION 01040

SECTION 01045

CUTTING AND PATCHING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes administrative and procedural requirements for cutting and patching.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Coordination" for procedures for coordinating cutting and patching with other construction activities.
 - 2. Division 2 Section "Selective Demolition" for demolition of selected portions of the building for alterations.
 - 3. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
 - a. Requirements of this Section apply to mechanical and electrical installations. Refer to Division 15 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.03 PRE-CONSTRUCTION CONFERENCE

- A. Cutting and Patching. :
 - 1. Describe the extent of cutting and patching required.
 - 2. Describe anticipated results in terms of changes to existing construction, Including any anticipated changes to structural elements and/or operating components as well as changes in the building's appearance and other significant visual elements.
 - 3. List products to be used and firms or entities that will perform Work.
 - 4. Indicate dates when cutting and patching will be performed.
 - 5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.

6. Where cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with the original structure.
7. Review plan and procedure for removing existing deck drain and location of drain tie in at the mechanical room with Owner / Architect.
7. Approval by the Owner to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of unsatisfactory work.

1.04 QUALITY ASSURANCE

- A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio unless reinforcement of the elements is specifically addressed in the Contract Documents.
- B. Operational Limitations: Unless specifically indicated, do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Unless specifically indicated, do not cut and patch operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safety.
- C. Visual Requirements: Unless specifically indicated, do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Owner's opinion, reduce the building's aesthetic qualities. Unless specifically indicated, do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace construction cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

- A. Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible if identical materials are unavailable or cannot be used. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.

3.02 PREPARATION

- A. Temporary Support: Provide temporary support of work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

3.03 PERFORMANCE

- A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining construction. Where possible, review proposed procedures with the original Installer; comply with the original Installer's recommendations.
 - 1. In general, where cutting, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. To avoid marring existing finished surfaces to remain, cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Cut through concrete and masonry using a cutting machine, such as a Carborundum saw or a diamond-core drill.
 - 4. Where services are required to be removed, relocated, or abandoned, such as pipe or conduit. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.
- C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
 - 1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.

2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Where removing walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing the patch after the area has received primer and second coat.
4. Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.04 CLEANING

- A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

END OF SECTION 01045

SECTION 01230

ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A.** This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A.** Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1.** The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A.** Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1.** Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B.** Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- C.** Execute accepted alternates under the same conditions as other work of the Contract.
- D.** Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A.** Alternate # One (1) – Provide a card lock door entry system. (Refer to Electrical and specification 13700 and 08710)
- B.** Alternate # Two (2) – Provide camera Surveillance System. (Refer to Electrical and specification section 13700)
- C.** Alternate # Three (3) – Provide new Sound System (Refer to Electrical and Specification Section 11130)
- D.** Alternate # Four (4) – Provide work necessary to accommodate the installation of a new Ice Machine. (Refer to Architectural Mechanical and Electrical). Ice Machine to be Owner Furnished /Contractor Installed
- E.** Alternate # Five (5) – Remove existing Pool Perimeter Drain cover and existing deck surfacing. Replace deck drain with new 2 piece drain and refinish entire surface of pool deck with new epoxy surfacing.

END OF SECTION 01230

SECTION 01290

PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A.** This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B.** Related Sections include the following:
 - 1.** Division 1 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
 - 2.** Division 1 Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.

1.3 DEFINITIONS

- A.** Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

- A.** Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule. A cost-loaded CPM Schedule may serve to satisfy requirements for the Schedule of Values.
 - 1.** Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
 - a.** Application for Payment forms with Continuation Sheets.
 - b.** Submittals Schedule.
 - c.** Contractor's Construction Schedule.
 - 2.** Submit the Schedule of Values to Architect through the Project Manager at the earliest possible date but no later than fourteen days before the date scheduled for submittal of initial Applications for Payment.

- B. Format and Content:** Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
1. Identification: Include the following Project identification on the Schedule of Values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Architect's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Change Orders (numbers) that affect value.
 - f. Dollar value.
 - 1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
 3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate. Include separate line items under required principal subcontracts for operation and maintenance manuals, punch list activities, Project Record Documents, and demonstration and training in the amount of 5 percent of the Contract Sum.
 4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
 5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.
 6. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
 7. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
 8. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.

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

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and Project Manager and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Forms: Use forms provided by Owner for Applications for Payment. Sample copies are included at end of this Section.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect or Project Manager will return incomplete applications without action.
 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
 2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 3. Indicate percentage complete for work complete for each item listed on pay request.
- E. Transmittal: Submit three, (3) signed and notarized original copies of each Application for Payment to the Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
 1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 5. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.

- G.** Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of Values.
 3. Contractor's Construction Schedule (preliminary if not final).
 4. Products list.
 5. Schedule of unit prices.
 6. Submittals Schedule (preliminary if not final).
 7. Copies of building permits.
 8. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 9. Certificates of insurance and insurance policies.
 10. Performance and payment bonds.
- H.** Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- I.** Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 6. AIA Document G707, "Consent of Surety to Final Payment."
 7. Evidence that claims have been settled.
 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 9. Final, liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01290

SECTION 01310

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A.** This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1.** Coordination Drawings.
 - 2.** Administrative and supervisory personnel.
 - 3.** Project meetings.
 - 4.** Requests for Interpretation (RFIs), which are referred to as Field Memos (FMs) by the Owner and are shown in Division 00 as a Owner-provided form. These may be issued by Owner, Contractor or Architect.
- B.** Each contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific contractor.
- C.** Related Sections include the following:
 - 1.** Division 1 Section "Construction Progress Documentation" for preparing and submitting Contractor's Construction Schedule.
 - 2.** Division 1 Section "Execution Requirements" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 3.** Division 1 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

- A.** RFI: Request from Contractor seeking interpretation or clarification of the Contract Documents.

1.4 COORDINATION

- A.** Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work.

Coordinate construction operations, included in different sections, which depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
 4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.
 5. Contractor is required to plan for **rough in** and **substantial inspections** by the Owner. Contractor is to coordinate and schedule these inspections and notify the Architect one week in advance of the inspections.
- B.** Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C.** Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's Construction Schedule.
 2. Preparation of the Schedule of Values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Pre-installation conferences.
 7. Project closeout activities.
 8. Startup and adjustment of systems.
 9. Project closeout activities.
- D.** Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.5 SUBMITTALS

- A.** Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.

1. Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:
 - a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - b. Indicate required installation sequences.
 - c. Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
 2. Sheet Size: At least 8-1/2 by 11 inches(215 by 280 mm) but no larger than 30 by 42 inches.
 3. Number of Copies: Submit drawings in PDF format and post on project internet based posting site.
 4. Refer to individual Sections for Coordination Drawing requirements for Work in those Sections.
- B. Key Personnel Names:** Within fifteen (15) days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.6 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

- A. General:** In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

1.7 PROJECT MEETINGS

- A. General:** Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
- B. Preconstruction Conference:** Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than fifteen (15) days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

1. Attendees: Authorized representatives of Owner, Construction Manager, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - a. Due to remoteness of project teleconference is a suitable method of meeting for initial meeting
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing and long-lead items.
 - d. Designation of key personnel and their duties.
 - e. Procedures for processing field decisions and Change Orders.
 - f. Procedures for RFIs.
 - g. Procedures for testing and inspecting.
 - h. Procedures for processing Applications for Payment.
 - i. Distribution of the Contract Documents.
 - j. Submittal procedures.
 - k. Preparation of Record Documents.
 - l. Use of the premises
 - m. Work restrictions.
 - n. Owner's occupancy requirements.
 - o. Responsibility for temporary facilities and controls.
 - p. Parking availability.
 - q. Office, work, and storage areas.
 - r. Equipment deliveries and priorities.
 - s. Security.
 - t. Progress cleaning.
 - u. Working hours.
- C. Pre-installation Conferences: Conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Owner and Construction Manager of scheduled meeting dates.
 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. The Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.

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- h. Owner Access.
 - i. Possible conflicts.
 - j. Compatibility problems.
 - k. Time schedules.
 - l. Weather limitations.
 - m. Manufacturer's written recommendations.
 - n. Warranty requirements.
 - o. Compatibility of materials.
 - p. Acceptability of substrates.
 - q. Temporary facilities and controls.
 - r. Space and access limitations.
 - s. Regulations of authorities having jurisdiction.
 - t. Testing and inspecting requirements.
 - u. Installation procedures.
 - v. Coordination with other work.
 - w. Required performance results.
 - x. Protection of adjacent work.
 - y. Protection of construction and personnel.
 - 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 - 4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
 - 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Progress Meetings:** Conduct progress meetings at weekly intervals. Coordinate dates of meetings with preparation of payment requests.
- 1. Attendees: In addition to representatives of Owner, Construction Manager, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Contractor shall record progress meeting minutes and have meeting minutes reviewed by all involved. Once reviewed and agreed upon, the contractor is to distribute the meeting minutes to all involved.
 - 3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.

- b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Work hours.
 - 10) Hazards and risks.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Status of correction of deficient items.
 - 14) Field observations.
 - 15) RFIs.
 - 16) Status of proposal requests.
 - 17) Pending changes.
 - 18) Status of Change Orders.
 - 19) Pending claims and disputes.
 - 20) Documentation of information for payment requests.
 - 21) Field Memos (FM-O # for requested by owner to contractor for proposals)
- 4. Minutes: Contractor will record and distribute to Architect and Owner the meeting minutes.
- 5. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
 - a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

1.8 REQUESTS FOR INTERPRETATION

- A.** Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.
 - 1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
 - 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B.** Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:
 - 1. Project name.
 - 2. Date.

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3. Name of Contractor.
 4. Name of Architect and Construction Manager.
 5. RFI number, numbered sequentially.
 6. Specification Section number and title and related paragraphs, as appropriate.
 7. Drawing number and detail references, as appropriate.
 8. Field dimensions and conditions, as appropriate.
 9. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 10. Contractor's signature.
 11. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.
 - a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.
- C. Hard-Copy RFIs: See Owner-provided FM Form in Division 00.
1. Identify each page of attachments with the RFI number and sequential page number.
- D. Software-Generated RFIs: Software-generated form with precisely the same content as indicated above.
1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- E. Architect's and Construction Manager's Action: Architect and Construction Manager will review each RFI, determine action required, and return it. Allow seven (7) working days for Architect's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.
1. The following RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for coordination information already indicated in the Contract Documents.
 - d. Requests for adjustments in the Contract Time or the Contract Sum.
 - e. Requests for interpretation of Architect's actions on submittals.
 - f. Incomplete RFIs or RFIs with numerous errors.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
 3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 1 Section "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect and Construction Manager in writing within ten (7) days of receipt of the RFI response. The 7 day timeframe referenced above will be included within the timeframe allowed for Proposal Requested outlined in Specification Section 01250. If the Contractor requires additional time to determine costs for a particular proposal, notification must be given to the City of Houston within 14 days. Under no circumstances will

the time required to determine a cost be construed to be a delay by the Owner.

- F. On receipt of Architect's and Construction Manager's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect and Construction Manager within seven (7) days if Contractor disagrees with response.

PART 2 - ELECTRONIC DOCUMENT PROCESSING SERVICE

2.1 DEFINITIONS

A. Web Based Software (also known as "Electronic Document Processing Services"): An internet based programs, processes and information used to manage the construction of the project. Project management entails processes such as scheduling, calculating a critical path, building timelines, creating task lists, managing resources, controlling documents and providing audit trails. Each of these processes can be controlled through project management software solutions.

2.2 CONTENT

- A.** To expedite the electronic review process, the contractor shall process all documents through a web-based software service.
- B.** Sending documents via email, FTP or paper, unless otherwise noted, will not be accepted.
- C.** The web-based software shall allow an unlimited number of users to be added to the project.
- D.** The web-based software shall provide status logs, reports, searching and automated notifications.
- E.** The web-based software shall include at a minimum the following modules:
 - a)** Submittals
 - b)** Submittal Register
 - c)** RFIs (Request for Information)
 - d)** Field Reports
 - e)** Pay Applications
 - f)** Storage for Construction Documents and Specifications
 - g)** Revision Documents (ASI, CCD, PR, PCO, COR, CO, etc)
 - h)** Meeting Minutes
 - i)** Gantt charts and milestones
- F.** The web-based software shall provide integrated web-based markup tools. All users shall be able to markup a centralized file to eliminate redundancy of files.

- G.** The routing of the documents shall be automated, so the documents will automatically be sent to design team users based on trade or discipline.
- H.** The web-based software company shall provide a minimum of two training sessions per project by web conference.
- I.** The web-based software shall include a downloadable offline archive of all project data.
- J.** The web-based software shall provide tools for subcontractors to submit documents to contractor. Software must be capable of allowing contractor to review information before submitting to the design team and owner. It is at the contractor's discretion if the subcontractor submits documents through the web-based software.
- K.** Color samples and other submittals requiring physical review shall be logged into the system and delivered by mail or courier as stipulated in other sections.

PART 3 - PRODUCTS

Basis of Design: Newforma Project Cloud

A. www.newformaprojectcloud.com

B. Phone Number: 800-303-4650

C. Email: projectcloud@newforma.com

END OF SECTION 01310

SECTION 01320

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Contractor's Construction Schedule.
 - 2. Submittals Schedule.
- B. Related Sections include the following:
 - 1. Division 1 Section "Payment Procedures" for submitting the Schedule of Values.
 - 2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
 - 3. Division 1 Section "Submittal Procedures" for submitting schedules and reports.
 - 4. Division 1 Section "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Predecessor Activity: An activity that precedes another activity in the network.
 - 2. Successor Activity: An activity that follows another activity in the network.
- B. Event: The starting or ending point of an activity.
- C. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

- D. Major Area: A story of construction, a separate building, or a similar significant construction element.
- E. Milestone: A key or critical point in time for reference or measurement.

1.4 SUBMITTALS

- A. Submittals Schedule: Submit one copy of schedule on electronic project management software for review by Owner. Arrange the following information in a tabular format:
 - 1. Scheduled date for first submittal.
 - 2. Specification Section number and title.
 - 3. Submittal category (action or informational).
 - 4. Name of subcontractor.
 - 5. Description of the Work covered.
 - 6. Scheduled date for Architect's and Construction Manager's final release or approval.
- B. Contractor's Construction Schedule: Submit three (3) opaque copies of initial schedule, large enough to show entire schedule for entire construction period.
 - 1. Submit an electronic copy of schedule, in PDF Format, and labeled to comply with requirements for submittals. Include type of schedule (Initial or Updated) and date on label.
 - 2. If there are any changes to the Schedule due to Change Orders or formally approved work, a revised Schedule shall be provided prior to the acceptance of the Change Order.

1.5 COORDINATION

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

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

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

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."
- B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.
 - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- C. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
 - 1. Activity Duration: Define activities so no activity is longer than twenty (20) days, unless specifically allowed by Architect.
 - 2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 - 3. Submittal Review Time: Include review and resubmittal times indicated in Division 1 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
 - 4. Startup and Testing Time: Include not less than 20 days for startup and testing.
 - 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's and Construction Manager's administrative procedures necessary for certification of Substantial Completion.
- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
 - 1. Phasing: Arrange list of activities on schedule by phase.
 - 2. Provide specific timetable for mechanical and electrical work associated with the renovation and replacement of existing systems. Specifically detail downtime associated with replacement of existing boilers and associated equipment.
 - 3. Indicate amount of time projected in which the facility will be operating off a temporary generator related to the work on the existing electrical system.
- E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.

- F. Cost Correlation: At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.
 - 1. Refer to Division 1 Section "Payment Procedures" for cost reporting and payment procedures.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within thirty (30) days of date established for the Notice to Proceed. Base schedule on the Preliminary Construction Schedule and whatever updating and feedback was received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require 3 months or longer to complete, indicate an estimated completion percentage in ten (10) percent increments within time bar.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

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

END OF SECTION 01320

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A.** This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B.** Related Sections include the following:
 - 1.** Division 1 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
 - 2.** Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
 - 3.** Division 1 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
 - 4.** Division 1 Section "Quality Requirements" for submitting test and inspection reports.
 - 5.** Division 1 Section "Closeout Procedures" for submitting warranties.
 - 6.** Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 7.** Division 1 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - 8.** Division 1 Section "Demonstration and Training" for submitting videotapes of demonstration of equipment and training of Owner's personnel.
 - 9.** Divisions 2 through 16 Sections for specific requirements for submittals in those Sections.

1.3 DEFINITIONS

- A.** Action Submittals: Written and graphic information that requires Architect's and Construction Manager's responsive action.
- B.** Informational Submittals: Written information that does not require Architect's and Construction Manager's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

- A.** General: Electronic copies of CAD base drawings utilized as the basis of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.
- B.** Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1.** Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2.** Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a.** Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C.** Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.
- D.** Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 - 1.** Initial Review: Allow ten (10) days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 - 2.** Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 - 3.** Resubmittal Review: Allow ten (10) days for review of each resubmittal.
 - 4.** Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow ten (10) days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
- E.** Identification: Place a permanent label or title block on each submittal for identification.
 - 1.** Indicate name of firm or entity that prepared each submittal on label or title block.
 - 2.** Provide a space approximately 6 by 8 inches(150 by 200 mm) on label or beside title block to record Contractor's review and approval markings and action taken by Architect and Construction Manager.
 - 3.** Include the following information on label for processing and recording action taken:
 - a.** Project name.
 - b.** Date.
 - c.** Name and address of Architect.
 - d.** Name and address of Contractor.
 - e.** Name and address of subcontractor.

- f.** Name and address of supplier.
 - g.** Name of manufacturer.
 - h.** Submittal number or other unique identifier, including revision identifier.
 - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 06100.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 06100.01.A).
 - i.** Number and title of appropriate Specification Section.
 - j.** Drawing number and detail references, as appropriate.
 - k.** Location(s) where product is to be installed, as appropriate.
 - l.** Other necessary identification.
- F.** Deviations: Highlight, encircle or otherwise specifically identify deviations from the Contract Documents on submittals.
- G.** Additional Copies: Unless additional copies are required for final submittal, and unless Architect or Construction Manager observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
 - 1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect and Construction Manager.
 - 2. Additional copies submitted for maintenance manuals will not be marked with action taken and will be returned.
- H.** Transmittal: Submit submittals electronically on web based project management software described in section 01310.
 - 1. Provide two copies of all finish samples mail one set directly to Owner and one set directly to Architect for selection.
- I.** Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
 - 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 - 3. Resubmit submittals until they are marked with approval notation from Architect's (and Construction Manager's) action stamp.
- J.** Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

- A.** General: Prepare and submit Action Submittals required by individual Specification Sections.

- B. Product Data:** Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Standard color charts.
 - e. Manufacturer's catalog cuts.
 - f. Wiring diagrams showing factory-installed wiring.
 - g. Printed performance curves.
 - h. Operational range diagrams.
 - i. Mill reports.
 - j. Standard product operation and maintenance manuals.
 - k. Compliance with specified referenced standards.
 - l. Testing by recognized testing agency.
 - m. Application of testing agency labels and seals.
 - n. Notation of coordination requirements.
 4. Submit Product Data before or concurrent with Samples.
- C. Shop Drawings:** Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data. Submittal of Architect's CAD Drawings is not permitted as a formal submittal.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Dimensions.
 - b. Identification of products.
 - c. Fabrication and installation drawings.
 - d. Roughing-in and setting diagrams.
 - e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
 - f. Shop work manufacturing instructions.
 - g. Templates and patterns.
 - h. Schedules.
 - i. Design calculations.
 - j. Compliance with specified standards.
 - k. Notation of coordination requirements.
 - l. Notation of dimensions established by field measurement.
 - m. Relationship to adjoining construction clearly indicated.
 - n. Seal and signature of professional engineer if specified.
 - o. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches(215 by 280 mm) but no larger than 30 by 42 inches.

- D. Samples:** Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of appropriate Specification Section.
 3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit two (2) full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect, through Construction Manager will return submittal with options selected.
 5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit two (2) sets of Samples. Architect and Construction Manager will retain two (1) Sample sets; remainder will be returned.
 - 1) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three (3) sets of paired units that show approximate limits of variations.
 - 2) Provide (6) six sets of samples of epoxy flooring for pool deck illustrating available range of color and texture.
- E. Product Schedule or List:** As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product.

2. Number and name of room or space.
 3. Location within room or space.
- F. Contractor's Construction Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation" for Construction Manager's action.
- G. Submittals Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."
- H. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."
- I. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."
- J. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
1. Name, address, and telephone number of entity performing subcontract or supplying products.
 2. Number and title of related Specification Section(s) covered by subcontract.
 3. Drawing number and detail references, as appropriate, covered by subcontract.
 4. Number of Copies: Submit two (2) copies of subcontractor list, unless otherwise indicated. Architect, through Construction Manager, will return two (1) copies.
 - a. Mark up and retain one returned copy as a Project Record Document.

2.2 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
1. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 2. Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."
- B. Coordination Drawings: Comply with requirements specified in Division 1 Section "Project Management and Coordination."
- C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- D. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of

Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

- E.** Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- F.** Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- G.** Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- H.** Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- I.** Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- J.** Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- K.** Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - 1. Name of evaluation organization.
 - 2. Date of evaluation.
 - 3. Time period when report is in effect.
 - 4. Product and manufacturers' names.
 - 5. Description of product.
 - 6. Test procedures and results.
 - 7. Limitations of use.
- L.** Schedule of Tests and Inspections: Comply with requirements specified in Division 1 Section "Quality Requirements."
- M.** Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- N.** Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

- O.** Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- P.** Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 1 Section "Operation and Maintenance Data."
- Q.** Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- R.** Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

 - 1. Preparation of substrates.
 - 2. Required substrate tolerances.
 - 3. Sequence of installation or erection.
 - 4. Required installation tolerances.
 - 5. Required adjustments.
 - 6. Recommendations for cleaning and protection.
- S.** Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

 - 1. Name, address, and telephone number of factory-authorized service representative making report.
 - 2. Statement on condition of substrates and their acceptability for installation of product.
 - 3. Statement that products at Project site comply with requirements.
 - 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - 6. Statement whether conditions, products, and installation will affect warranty.
 - 7. Other required items indicated in individual Specification Sections.
- T.** Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.
- U.** Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Architect, except as required in "Action Submittals" Article.

 - 1. Architect will not review submittals that include MSDSs and will return the entire submittal for resubmittal.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A.** Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect and Construction Manager.
- B.** Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S AND CONSTRUCTION MANAGER'S / ACTION

- A.** General: Architect and Construction Manager will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B.** Action Submittals: Architect and Construction Manager will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect and Construction Manager will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
- C.** Informational Submittals: Architect and Construction Manager will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect and Construction Manager will forward each submittal to appropriate party.
- D.** Partial submittals are not acceptable, will be considered non-responsive, and will be returned without review.
- E.** Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 01330

SECTION 01400

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A.** This Section includes administrative and procedural requirements for quality assurance, and quality control.
- B.** Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1.** Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2.** Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 3.** Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.
- C.** Related Sections include the following:
 - 1.** Division 1 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
 - 2.** Division 1 Section "Cutting and Patching" for repair and restoration of construction disturbed by testing and inspecting activities.
 - 3.** Divisions 2 through 16 Sections for specific test and inspection requirements.
 - 4.** Division 01351 Delegated Design Submittal
 - 5.** Division 02300, Earthwork, Grading, and Drainage for compaction testing
 - 6.** Division 03300, Cast-in-place Concrete
 - 7.** Sheet S0.1

1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect or Construction Manager.
- C. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
- D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
- E. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.
- I. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five (5) previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

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

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

1.5 SUBMITTALS

- A.** Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B.** Schedule of Tests and Inspections: Prepare in tabular form and include the following:
1. Specification Section number and title.
 2. Description of test and inspection.
 3. Identification of applicable standards.
 4. Identification of test and inspection methods.
 5. Number of tests and inspections required.
 6. Time schedule or time span for tests and inspections.
 7. Entity responsible for performing tests and inspections.
 8. Requirements for obtaining samples.
 9. Unique characteristics of each quality-control service.
- C.** Reports: Prepare and submit certified written reports that include the following:
1. Date of issue.
 2. Project title and number.
 3. Name, address, and telephone number of testing agency.
 4. Dates and locations of samples and tests or inspections.
 5. Names of individuals making tests and inspections.
 6. Description of the Work and test and inspection method.
 7. Identification of product and Specification Section.
 8. Complete test or inspection data.
 9. Test and inspection results and an interpretation of test results.
 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and re-inspecting.
- D.** Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.6 QUALITY ASSURANCE

- A.** General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B.** Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- C.** Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D.** Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- E.** Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.
- F.** Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - 1.** Requirement for specialists shall not supersede building codes and regulations governing the Work.
- G.** Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
 - 1.** NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 - 2.** NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H.** Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

1.7 QUALITY CONTROL

- A. Owner Responsibilities:** Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
 - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 - 2. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.
- B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility.** Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 - 1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 - 2. Notify testing agencies at least twenty four (24) hours in advance of time when Work that requires testing or inspecting will be performed.
 - 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 - 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 - 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services:** Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 1 Section "Submittal Procedures."
- D. Retesting/Reinspecting:** Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- E. Testing Agency Responsibilities:** Cooperate with Architect, Construction Manager, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 - 1. Notify Architect, Construction Manager, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.

5. Does not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- F.** Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- G.** Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- H.** Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within thirty (30) days of date established for the Notice to Proceed.
1. Distribution: Distribute schedule to Owner, Architect, Construction Manager, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.8 SPECIAL TESTS AND INSPECTIONS

- A.** Special Tests and Inspections: Conducted by a qualified testing agency or special inspector as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:
1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
 2. Notifying Architect, Construction Manager, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect, through Construction Manager, with copy to Contractor and to authorities having jurisdiction.
 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.

6. Retesting and re-inspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Prepare a record of tests and inspections. Include the following:
 1. Date test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. Date test or inspection results were transmitted to Architect.
 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's and Construction Manager's reference during normal working hours.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
 2. Comply with the Contract Document requirements for Division 1 Section "Cutting and Patching."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01400

SECTION 01420

REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 DEFINITIONS

- A.** General: Basic Contract definitions are included in the Conditions of the Contract.
- B.** "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C.** "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."
- D.** "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E.** "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F.** "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G.** "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H.** "Provide": Furnish and install, complete and ready for the intended use.
- I.** "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

- A.** Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B.** Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.

1.4 ABBREVIATIONS AND ACRONYMS

- A.** Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

AA	Aluminum Association, Inc. (The) www.aluminum.org	(202) 862-5100
AAADM	American Association of Automatic Door Manufacturers www.aaadm.com	(216) 241-7333
AABC	Associated Air Balance Council www.aabchq.com	(202) 737-0202
AAMA	American Architectural Manufacturers Association www.aamanet.org	(847) 303-5664
AASHTO	American Association of State Highway and Transportation Officials www.transportation.org	(202) 624-5800
AATCC	American Association of Textile Chemists and Colorists (The) www.aatcc.org	(919) 549-8141
ABMA	American Bearing Manufacturers Association www.abma-dc.org	(202) 367-1155
ACI	ACI International (American Concrete Institute) www.aci-int.org	(248) 848-3700
ACPA	American Concrete Pipe Association www.concrete-pipe.org	(972) 506-7216
AEIC	Association of Edison Illuminating Companies, Inc. (The)	(205) 257-2530

	www.aeic.org	
AF&PA	American Forest & Paper Association www.afandpa.org	(800) 878-8878 (202) 463-2700
AGA	American Gas Association www.aga.org	(202) 824-7000
AGC	Associated General Contractors of America (The) www.agc.org	(703) 548-3118
AHA	American Hardboard Association (Now part of CPA)	
AHAM	Association of Home Appliance Manufacturers www.aham.org	(202) 872-5955
AI	Asphalt Institute www.asphaltinstitute.org	(859) 288-4960
AIA	American Institute of Architects (The) www.aia.org	(800) 242-3837 (202) 626-7300
AISC	American Institute of Steel Construction www.aisc.org	(800) 644-2400 (312) 670-2400
AISI	American Iron and Steel Institute www.steel.org	(202) 452-7100
AITC	American Institute of Timber Construction www.aitc-glulam.org	(303) 792-9559
ALCA	Associated Landscape Contractors of America www.alca.org	(800) 395-2522 (703) 736-9666
ALSC	American Lumber Standard Committee, Incorporated www.alsc.org	(301) 972-1700
AMCA	Air Movement and Control Association International, Inc. www.amca.org	(847) 394-0150
ANSI	American National Standards Institute www.ansi.org	(202) 293-8020
AOSA	Association of Official Seed Analysts www.aosaseed.com	(505) 522-1437
APA	APA - The Engineered Wood Association	(253) 565-6600

	www.apawood.org	
APA	Architectural Precast Association www.archprecast.org	(239) 454-6989
API	American Petroleum Institute www.api.org	(202) 682-8000
ARI	Air-Conditioning & Refrigeration Institute www.ari.org	(703) 524-8800
ARMA	Asphalt Roofing Manufacturers Association www.asphaltroofing.org	(202) 207-0917
ASCE	American Society of Civil Engineers www.asce.org	(800) 548-2723 (703) 295-6300
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers www.ashrae.org	(800) 527-4723 (404) 636-8400
ASME	ASME International (The American Society of Mechanical Engineers International) www.asme.org	(800) 843-2763 (212) 591-7722
ASSE	American Society of Sanitary Engineering www.asse-plumbing.org	(440) 835-3040
ASTM	ASTM International (American Society for Testing and Materials International) www.astm.org	(610) 832-9585
AWCI	AWCI International (Association of the Wall and Ceiling Industries International) www.awci.org	(703) 534-8300
AWCMA	American Window Covering Manufacturers Association (Now WCSC)	
AWI	Architectural Woodwork Institute www.awinet.org	(800) 449-8811 (703) 733-0600
AWPA	American Wood-Preservers' Association www.awpa.com	(334) 874-9800
AWS	American Welding Society www.aws.org	(800) 443-9353 (305) 443-9353

AWWA	American Water Works Association www.awwa.org	(800) 926-7337 (303) 794-7711
BHMA	Builders Hardware Manufacturers Association www.buildershardware.com	(212) 297-2122
BIA	Brick Industry Association (The) www.bia.org	(703) 620-0010
BICSI	BICSI www.bicsi.org	(813) 979-1991
BIFMA	BIFMA International (Business and Institutional Furniture Manufacturer's Association International) www.bifma.com	(616) 285-3963
BISSC	Baking Industry Sanitation Standards Committee www.bissc.org	(773) 761-4100
	Cast Stone Institute www.caststone.org	(770) 972-3011
CCC	Carpet Cushion Council www.carpetcushion.org	(203) 637-1312
CDA	Copper Development Association Inc. www.copper.org	(800) 232-3282 (212) 251-7200
CEA	Canadian Electricity Association www.canelect.ca/connections_online/home.htm	(613) 230-9263
CFFA	Chemical Fabrics & Film Association, Inc. www.chemicalfabricsandfilm.com	(216) 241-7333
CGA	Compressed Gas Association www.cganet.com	(703) 788-2700
CGSB	Canadian General Standards Board w3.pwgsc.gc.ca/cgsb	(800) 665-2472 (819) 956-0425
CIMA	Cellulose Insulation Manufacturers Association www.cellulose.org	(888) 881-2462 (937) 222-2462
CISCA	Ceilings & Interior Systems Construction Association www.cisca.org	(630) 584-1919
CISPI	Cast Iron Soil Pipe Institute	(423) 892-0137

	www.cispi.org	
CLFMI	Chain Link Fence Manufacturers Institute www.chainlinkinfo.org	(301) 596-2583
CPA	Composite Panel Association www.pbmdf.com	(301) 670-0604
CPPA	Corrugated Polyethylene Pipe Association www.cppa-info.org	(800) 510-2772 (202) 462-9607
CRI	Carpet & Rug Institute (The) www.carpet-rug.com	(800) 882-8846 (706) 278-3176
CRSI	Concrete Reinforcing Steel Institute www.crsi.org	(847) 517-1200
CSA	CSA International (Formerly: IAS - International Approval Services) www.csa-international.org	(800) 463-6727 (416) 747-4000
CSI	Construction Specifications Institute (The) www.csinet.org	(800) 689-2900 (703) 684-0300
CSSB	Cedar Shake & Shingle Bureau www.cedarbureau.org	(604) 820-7700
CTI	Cooling Technology Institute (Formerly: Cooling Tower Institute) www.cti.org	(281) 583-4087
DHI	Door and Hardware Institute www.dhi.org	(703) 222-2010
EIA	Electronic Industries Alliance www.eia.org	(703) 907-7500
EIMA	EIFS Industry Members Association www.eima.com	(800) 294-3462 (770) 968-7945
EJCDC	Engineers Joint Contract Documents Committee www.asce.org	(800) 548-2723 (703) 295-6300
EJMA	Expansion Joint Manufacturers Association, Inc. www.ejma.org	(914) 332-0040
ESD	ESD Association www.esda.org	(315) 339-6937

FCI	Fluid Controls Institute www.fluidcontrolsinstitute.org	(216) 241-7333
FIBA	Federation Internationale de Basketball Amateur (The International Basketball Federation) www.fiba.com	41 22 545 00 00
FIVB	Federation Internationale de Volleyball (The International Volleyball Federation) www.fivb.ch	41 21 345 35 35
FM	Factory Mutual System (Now FMG)	
FMG	FM Global (Formerly: FM - Factory Mutual System) www.fmgglobal.com	(401) 275-3000
FRSA	Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc. www.floridarroof.com	(407) 671-3772
FSA	Fluid Sealing Association www.fluidsealing.com	(610) 971-4850
FSC	Forest Stewardship Council www.fsc.org	52 951 5146905
GA	Gypsum Association www.gypsum.org	(202) 289-5440
GANA	Glass Association of North America www.glasswebsite.com	(785) 271-0208
GRI	(Now GSI)	
GS	Green Seal www.greenseal.org	(202) 872-6400
GSI	Geosynthetic Institute www.geosynthetic-institute.org	(610) 522-8440
HI	Hydraulic Institute www.pumps.org	(888) 786-7744 (973) 267-9700
HI	Hydronics Institute www.gamanet.org	(908) 464-8200

HMMA	Hollow Metal Manufacturers Association (Part of NAAMM)	
HPVA	Hardwood Plywood & Veneer Association www.hpva.org	(703) 435-2900
HPW	H. P. White Laboratory, Inc. www.hpwhite.com	(410) 838-6550
IAS	International Approval Services (Now CSA International)	
IBF	International Badminton Federation www.intbadfed.org	441-24 223- 4904
ICEA	Insulated Cable Engineers Association, Inc. www.icea.net	(770) 830-0369
ICRI	International Concrete Repair Institute, Inc. www.icri.org	(847) 827-0830
IEC	International Electrotechnical Commission www.iec.ch	41 22 919 02 11
IEEE	Institute of Electrical and Electronics Engineers, Inc. (The) www.ieee.org	(212) 419-7900
IESNA	Illuminating Engineering Society of North America www.iesna.org	(212) 248-5000
IGCC	Insulating Glass Certification Council www.igcc.org	(315) 646-2234
IGMA	Insulating Glass Manufacturers Alliance (The) www.igmaonline.org	(613) 233-1510
ILI	Indiana Limestone Institute of America, Inc. www.iliai.com	(812) 275-4426
ISO	International Organization for Standardization www.iso.ch	41 22 749 01 11
ISSFA	International Solid Surface Fabricators Association www.issfa.net	(702) 567-8150
ITS	Intertek	(800) 345-3851

	www.intertek.com	(607) 753-6711
ITU	International Telecommunication Union www.itu.int/home	41 22 730 51 11
KCMA	Kitchen Cabinet Manufacturers Association www.kcma.org	(703) 264-1690
LMA	Laminating Materials Association (Now part of CPA)	
LPI	Lightning Protection Institute www.lightning.org	(800) 488-6864 (847) 577-7200
MBMA	Metal Building Manufacturers Association www.mbma.com	(216) 241-7333
MFMA	Maple Flooring Manufacturers Association www.maplefloor.org	(847) 480-9138
MFMA	Metal Framing Manufacturers Association www.metalframingmfg.org	(312) 644-6610
MH	Material Handling (Now MHIA)	
MHIA	Material Handling Industry of America www.mhia.org	(800) 345-1815 (704) 676-1190
MIA	Marble Institute of America www.marble-institute.com	(440) 250-9222
MPI	Master Painters Institute www.paintinfo.com	(888) 674-8937
MSS	Manufacturers Standardization Society of The Valve and Fittings Industry Inc. www.mss-hq.com	(703) 281-6613
NAAMM	National Association of Architectural Metal Manufacturers www.naamm.org	(312) 332-0405
NACE	NACE International (National Association of Corrosion Engineers International) www.nace.org	(281) 228-6200
NADCA	National Air Duct Cleaners Association www.nadca.com	(202) 737-2926

NAGWS	National Association for Girls and Women in Sport www.aahperd.org/nagws/	(800) 213-7193 ext. 453
NAIMA	North American Insulation Manufacturers Association (The) www.naima.org	(703) 684-0084
NBGQA	National Building Granite Quarries Association, Inc. www.nbgqa.com	(800) 557-2848
NCAA	National Collegiate Athletic Association (The) www.ncaa.org	(317) 917-6222
NCMA	National Concrete Masonry Association www.ncma.org	(703) 713-1900
NCPI	National Clay Pipe Institute www.ncpi.org	(262) 248-9094
NCTA	National Cable & Telecommunications Association www.ncta.com	(202) 775-3550
NEBB	National Environmental Balancing Bureau www.nebb.org	(301) 977-3698
NECA	National Electrical Contractors Association www.necanet.org	(301) 657-3110
NelMA	Northeastern Lumber Manufacturers' Association www.nelma.org	(207) 829-6901
NEMA	National Electrical Manufacturers Association www.nema.org	(703) 841-3200
NETA	InterNational Electrical Testing Association www.netaworld.org	(303) 697-8441
NFHS	National Federation of State High School Associations www.nfhs.org	(317) 972-6900
NFPA	NFPA (National Fire Protection Association) www.nfpa.org	(800) 344-3555 (617) 770-3000
NFRC	National Fenestration Rating Council www.nfrc.org	(301) 589-1776

NGA	National Glass Association www.glass.org	(703) 442-4890
NHLA	National Hardwood Lumber Association www.natlhardwood.org	(800) 933-0318 (901) 377-1818
NLGA	National Lumber Grades Authority www.nlga.org	(604) 524-2393
NOFMA	National Oak Flooring Manufacturers Association www.nofma.org	(901) 526-5016
NRCA	National Roofing Contractors Association www.nrca.net	(800) 323-9545 (847) 299-9070
NRMCA	National Ready Mixed Concrete Association www.nrmca.org	(888) 846-7622 (301) 587-1400
NSF	NSF International (National Sanitation Foundation International) www.nsf.org	(800) 673-6275 (734) 769-8010
NSSGA	National Stone, Sand & Gravel Association www.nssga.org	(800) 342-1415 (703) 525-8788
NTMA	National Terrazzo & Mosaic Association, Inc. www.ntma.com	(800) 323-9736 (540) 751-0930
NTRMA	National Tile Roofing Manufacturers Association (Now TRI)	
NWWDA	National Wood Window and Door Association (Now WDMA)	
OPL	Omega Point Laboratories, Inc. www.opl.com	(800) 966-5253 (210) 635-8100
PCI	Precast/Prestressed Concrete Institute www.pci.org	(312) 786-0300
PDCA	Painting & Decorating Contractors of America www.pdca.com	(800) 332-7322 (314) 514-7322
PDI	Plumbing & Drainage Institute www.pdionline.org	(800) 589-8956 (978) 557-0720
PGI	PVC Geomembrane Institute http://pgi-tp.ce.uiuc.edu	(217) 333-3929

PTI	Post-Tensioning Institute www.post-tensioning.org	(602) 870-7540
RCSC	Research Council on Structural Connections www.boltcouncil.org	(800) 644-2400 (312) 670-2400
RFCI	Resilient Floor Covering Institute www.rfci.com	(301) 340-8580
RIS	Redwood Inspection Service www.calredwood.org	(888) 225-7339 (415) 382-0662
RTI	(Formerly: NTRMA - National Tile Roofing Manufacturers Association) (Now TRI)	
SAE	SAE International www.sae.org	(724) 776-4841
SDI	Steel Deck Institute www.sdi.org	(847) 462-1930
SDI	Steel Door Institute www.steeldoor.org	(440) 899-0010
SEFA	Scientific Equipment and Furniture Association www.sefalabs.com	(516) 294-5424
SEI	Structural Engineering Institute www.seinstitute.com	(800) 548-2723 (703) 295-6195
SGCC	Safety Glazing Certification Council www.sgcc.org	(315) 646-2234
SIA	Security Industry Association www.siaonline.org	(703) 683-2075
SIGMA	Sealed Insulating Glass Manufacturers Association (Now IGMA)	
SJI	Steel Joist Institute www.steeljoist.org	(843) 626-1995
SMA	Screen Manufacturers Association www.smacentral.org	(561) 533-0991
SMACNA	Sheet Metal and Air Conditioning Contractors'	(703) 803-2980

	National Association www.smacna.org	
SMPTE	Society of Motion Picture and Television Engineers www.smpete.org	(914) 761-1100
SPFA	Spray Polyurethane Foam Alliance (Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division) www.sprayfoam.org	(800) 523-6154
SPIB	Southern Pine Inspection Bureau (The) www.spib.org	(850) 434-2611
SPI/ SPFD	Society of the Plastics Industry, Inc. (The) Spray Polyurethane Foam Division (Now SPFA)	
SPRI	SPRI (Single Ply Roofing Institute) www.spri.org	(781) 647-7026
SSINA	Specialty Steel Industry of North America www.ssina.com	(800) 982-0355 (202) 342-8630
SSPC	SSPC: The Society for Protective Coatings www.sspc.org	(877) 281-7772 (412) 281-2331
STI	Steel Tank Institute www.steeltank.com	(847) 438-8265
SWI	Steel Window Institute www.steelwindows.com	(216) 241-7333
SWRI	Sealant, Waterproofing, & Restoration Institute www.swrionline.org	(816) 472-7974
TCA	Tile Council of America, Inc. www.tileusa.com	(864) 646-8453
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance www.tiaonline.org	(703) 907-7700
TMS	The Masonry Society www.masonrysociety.org	(303) 939-9700

TPI	Truss Plate Institute, Inc. www.tpinst.org	(608) 833-5900
TPI	Turfgrass Producers International www.turfgrasssod.org	(800) 405-8873 (847) 705-9898
TRI	Tile Roofing Institute (Formerly: RTI - Roof Tile Institute) www.tilerroofing.org	(312) 670-4177
UL	Underwriters Laboratories Inc. www.ul.com	(800) 285-4476 (847) 272-8800
UNI	Uni-Bell PVC Pipe Association www.uni-bell.org	(972) 243-3902
USAV	USA Volleyball www.usavolleyball.org	(888) 786-5539 (719) 228-6800
USGBC	U.S. Green Building Council www.usgbc.org	(202) 828-7422
USITT	United States Institute for Theatre Technology, Inc. www.usitt.org	(800) 938-7488 (315) 463-6463
WASTEC	Waste Equipment Technology Association www.wastec.org	(800) 424-2869 (202) 244-4700
WCLIB	West Coast Lumber Inspection Bureau www.wclib.org	(800) 283-1486 (503) 639-0651
WCMA	Window Covering Manufacturers Association (Now WCSC)	
WCSC	Window Covering Safety Council (Formerly: WCMA - Window Covering Manufacturers Association) www.windowcoverings.org	(800) 506-4636 (212) 661-4261
WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and Door Association) www.wdma.com	(800) 223-2301 (847) 299-5200
WI	Woodwork Institute (Formerly: WIC - Woodwork Institute of California) www.wicnet.org	(916) 372-9943

WIC	Woodwork Institute of California (Now WI)	
WMMPA	Wood Moulding & Millwork Producers Association www.wmmpa.com	(800) 550-7889 (530) 661-9591
WSRCA	Western States Roofing Contractors Association www.wsrca.com	(800) 725-0333 (650) 548-0112
WWPA	Western Wood Products Association www.wwpa.org	(503) 224-3930

- B.** Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

BOCA	BOCA International, Inc. (See ICC)	
CABO	Council of American Building Officials (See ICC)	
IAPMO	International Association of Plumbing and Mechanical Officials www.iapmo.org	(909) 472-4100
ICBO	International Conference of Building Officials (See ICC)	
ICBO ES	ICBO Evaluation Service, Inc. (See ICC-ES)	
ICC	International Code Council (Formerly: CABO - Council of American Building Officials) www.iccsafe.org	(703) 931-4533
ICC-ES	ICC Evaluation Service, Inc. www.icc-es.org	(800) 423-6587 (562) 699-0543
NES	National Evaluation Service (See ICC-ES)	

SBCCI Southern Building Code Congress International, Inc.
(See ICC)

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CE Army Corps of Engineers
www.usace.army.mil

CPSC Consumer Product Safety Commission (800) 638-2772
www.cpsc.gov (301) 504-6816

DOC Department of Commerce (202) 482-2000
www.commerce.gov

DOD Department of Defense (215) 697-6257
www.dodssp.daps.mil

DOE Department of Energy (202) 586-9220
www.eren.doe.gov

EPA Environmental Protection Agency (202) 272-0167
www.epa.gov

FAA Federal Aviation Administration (202) 366-4000
www.faa.gov

FCC Federal Communications Commission (888) 225-5322
www.fcc.gov

FDA Food and Drug Administration (888) 463-6332
www.fda.gov

GSA General Services Administration (800) 488-3111
www.gsa.gov (202) 501-1888

HUD Department of Housing and Urban Development (202) 708-1112
www.hud.gov

LBL Lawrence Berkeley National Laboratory (510) 486-4000
www.lbl.gov

NCHR National Cooperative Highway Research Program

P	(See TRB)	
NIST	National Institute of Standards and Technology www.nist.gov	(301) 975-6478
OSHA	Occupational Safety & Health Administration www.osha.gov	(800) 321-6742 (202) 693-1999
PBS	Public Building Service (See GSA)	
PHS	Office of Public Health and Science http://phs.os.dhhs.gov	(202) 690-7694
RUS	Rural Utilities Service (See USDA)	(202) 720-9540
SD	State Department www.state.gov	(202) 647-4000
TRB	Transportation Research Board www.nas.edu/trb	(202) 334-2934
USDA	Department of Agriculture www.usda.gov	(202) 720-2791
USPS	Postal Service www.usps.com	(202) 268-2000

- D.** State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CBH	State of California, Department of Consumer Affairs	(800) 952-5210
F	Bureau of Home Furnishings and Thermal Insulation www.dca.ca.gov/bhfti	(916) 574-2041
CPU	California Public Utilities Commission www.cpuc.ca.gov	(415) 703-2782
C		
TFS	Texas Forest Service	(936) 639-

8180

Forest Products Laboratory
<http://txforests-service.tamu.edu>

END OF SECTION 01420

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A.** This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

1.3 DEFINITIONS

- A.** Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.4 USE CHARGES

- A.** General: Cost or use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Architect, Owner's on-site project representative, testing agencies, and authorities having jurisdiction.
- B.** Water Service: City of Unalaska will pay water service use charges for water used by all entities for construction operations for on-site water sources.
- C.** Electric Power Service: City of Unalaska will pay electric power service use charges for electricity used by all entities for construction operations.

1.5 SUBMITTALS

- A.** Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel. Plan must be coordinated and agreed to by the City of Unalaska and must not unduly impede existing on-site activities.

1.6 QUALITY ASSURANCE

- A.** Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B.** Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.7 PROJECT CONDITIONS

- A.** Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 TEMPORARY FACILITIES

- A.** Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B.** Common-Use Field Office: Contractor option. A single one room temporary construction field office can be provided on the mezzanine level of the Aquatics center.
- C.** Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
 - 1.** Store combustible materials apart from building.
 - 2.** Semi Trailers are an acceptable alternative to constructed storage and fabrication sheds.

2.2 EQUIPMENT

- A.** Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B.** HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - 1.** Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at end of construction.
 - 2.** Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

3. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
 1. Locate facilities to limit site disturbance as specified in Division 01 Section "Summary."
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install permanent service connection to existing service.
 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
 1. No work required under this contract.
- C. Water Service: Extend water service and distribution piping in sizes and pressures as described in drawing.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- E. Heating: Provide temporary heating required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
- F. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
 1. Install electric power service underground, unless otherwise indicated.
 2. Connect temporary and permanent service to Owner's existing power source, as directed by Owner and described in the Contract Documents.

- G.** Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
 - 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
- H.** Telephone Service: Not Required
 - 1. Provide superintendent with cellular telephone for use during this project. Provide Owner and Architect with phone number of Superintendent.
- I.** Electronic Communication Service: Provide Project Superintendent with temporary electronic communication service, including electronic mail at job site during the course of this project.

3.3 SUPPORT FACILITIES INSTALLATION

- A.** General: Comply with the following:
 - 1. Provide non-combustible construction for offices, storage facility in area described on Attachment A at the end of this section. Comply with NFPA 241.
 - 2. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B.** Traffic Controls: Comply with requirements of authorities having jurisdiction.
 - 1. Protect existing site improvements to remain including curbs, pavement, and utilities.
 - 2. Maintain access for fire-fighting equipment and access to fire hydrants.
- C.** Parking: Temporary parking for construction personnel is to be on site where illustrated on Attachment A at the end of this section.
- D.** Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A.** Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
 - 1. Comply with work restrictions specified in Division 1 Section "Summary."
- B.** Storm water Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of storm water from heavy rains.

- C. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- D. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather tight enclosure for building exterior.
 - 1. Where heating is needed and permanent enclosure is not complete, insulate temporary enclosures.
- E. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
 - 1. Prohibit smoking in construction areas.
 - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 - 1. Maintain operation of temporary enclosures, heating, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 - 2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 1 Section "Closeout Procedures."

END OF SECTION 01500



ATTACHMENT A

SECTION 01600

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A.** This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.
- B.** Related Sections include the following:
 - 1.** Division 1 Section "Alternates" for products selected under an alternate.
 - 2.** Division 1 Section "Closeout Procedures" for submitting warranties for Contract closeout.
 - 3.** Divisions 2 through 16 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

- A.** Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1.** Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, which is current as of date of the Contract Documents.
 - 2.** New Products: Items that have not previously been incorporated into another project or facility Products salvaged or recycled from other projects are not considered new products.
 - 3.** Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

- B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
- C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

1.4 SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use form provided by Owner.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified material or product cannot be provided.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated. **Highlight the changes between the specified product and the proposed substitution.**
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
 - g. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
 - h. Cost information, including a proposal of change, if any, in the Contract Sum.
 - i. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.

- j. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
- 3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within **10** working days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or **10** working days of receipt of additional information or documentation, whichever is later.
 - a. Form of Acceptance: Change Order.
- B. Comparable Product Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
 - a. Form of Approval: As specified in Division 1 Section "Submittal Procedures."
 - b. Use product specified if Architect cannot make a decision on use of a comparable product request within time allocated.
- C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

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

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

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

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weather tight enclosure above ground, with ventilation adequate to prevent condensation.
4. Store cementitious products and materials on elevated platforms.
5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.

1.7 PRODUCT WARRANTIES

- A.** Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.
- B.** Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
 3. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.
- C.** Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A.** General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Architect will make selection.
 5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
 6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
- B.** Product Selection Procedures:
1. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in Part 2 "Product Substitutions" Article for consideration of an unnamed product or system.
 2. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product by the other named manufacturers.

2.2 PRODUCT SUBSTITUTIONS

- A.** Timing: Architect will consider requests for substitution if received within 60 days after the Notice to Proceed Requests received after that time may be considered or rejected at discretion of Architect.
- B.** Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 2. Requested substitution does not require extensive revisions to the Contract Documents.

3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
4. Substitution request is fully documented and properly submitted.
5. Requested substitution will not adversely affect Contractor's Construction Schedule.
6. Requested substitution is compatible with other portions of the Work.
7. Requested substitution has been coordinated with other portions of the Work.
8. Requested substitution provides specified warranty.

2.3 COMPARABLE PRODUCTS

- A.** Conditions: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
1. Evidence that the proposed product does not require extensive revisions to the Contract Documents that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
 5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01600

SECTION 01631

SUBSTITUTIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes administrative and procedural requirements for handling requests for substitutions made after award of the Contract.
- B. Related Section: The following Section contain requirements that relate to this Section
 - 1. Division 1 Section "Submittals" specifies requirements for submitting the Contractor's Construction Schedule and the Submittal Schedule.

1.03 DEFINITIONS

- A. Definitions in this Article do not change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed by the Contractor after award of the Contract are considered to be requests for substitutions. The following are not considered to be requests for substitutions:
 - 1. Substitutions requested during the bidding period. There will be no consideration of substitution requests until after contract award.
 - 2. Revisions to the Contract Documents requested by the Owner.
 - 3. Specified options of products and construction methods included in the Contract Documents.
 - 4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.04 SUBMITTALS

- A. Substitution Request Submittal: The Owner will consider requests for substitution if received within 7 days after commencement of the Work. Requests received more than 7 days after commencement of the Work may be considered or rejected at the total discretion of the Owner.
 - 1. Submit request for substitution for consideration. Submit requests in the form and according to procedures required for change-order proposals.

2. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers.
3. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
 - a. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate contractors that will be necessary to accommodate the proposed substitution.
 - b. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements, such as performance, weight, size, durability, and visual effect.
 - c. Product Data, including Drawings and descriptions of products and fabrication and installation procedures.
 - d. Samples, where applicable or requested.
 - e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
 - f. Cost information, including a proposal of the net change, if any in the Contract Sum.
 - g. The Contractor's certification that the proposed substitution conforms to requirements in the Contract Documents in every respect and is appropriate for the applications indicated.
 - h. The Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.
4. Owner's Action: If necessary, the Owner will request additional information or documentation for evaluation within one week of receipt of a request for substitution. The Owner will notify the Contractor of acceptance or rejection of the substitution within 7 days of receipt of the request or receipt of additional information or documentation, whichever is later. Acceptance will be in the form of a change order.
 - a. Use the product specified if the Owner cannot make a decision on the use of a proposed substitute within the time allocated.

PART 2 - PRODUCTS

2.01 SUBSTITUTIONS

- A. Conditions: The Owner will receive and consider the Contractor's request for substitution when items one through three and at least one of the remaining items are satisfied, as determined by the Owner. If the following conditions are not satisfied, the Owner will return the requests without action except to record noncompliance with these requirements.
 1. Extensive revisions to the Contract Documents are not required.
 2. Proposed changes are in keeping with the general intent of the Contract Documents.
 3. The request is timely, fully documented, and properly submitted.

4. The specified product or method of construction cannot be provided within the Contract Time. The Owner will not consider the request if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
 5. The request is directly related to an "or-equal" clause or similar language in the Contract Documents.
 6. The requested substitution offers the Owner a substantial advantage, in cost, time, energy conservation, or other considerations, after deducting additional responsibilities the Owner must assume. The Owner's additional responsibilities may include compensation for redesign and evaluation services, increased cost of other construction by the Owner, and similar considerations.
 7. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
 8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials and where the Contractor certifies that the substitution will overcome the incompatibility.
 9. The specified product or method of construction cannot be coordinated with other materials and where the Contractor certifies that the proposed substitution can be coordinated.
 10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provides the required warranty.
- B. The Contractor's submittal and the Owner acceptance of Shop Drawings, Product Data, or Samples for construction activities not complying with the Contract Documents do not constitute an acceptable or valid request for substitution, nor do they constitute approval.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01631

SECTION 01700

EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A.** Existing Conditions: The existence and location of existing piping, wiring, utilities, and other construction indicated as existing are based on existing drawings, non-evasive observation and not guaranteed. Before beginning work, investigate and verify the

existence and location of mechanical and electrical systems and other construction affecting the Work.

- B.** Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A.** Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B.** Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C.** Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D.** Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. "Request for Interpretation."

3.3 CONSTRUCTION LAYOUT

- A.** Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect and Construction Manager promptly.
- B.** General:
 - 1. Establish benchmarks and control points to set lines and levels as needed to locate each element of Project.

2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 3. Inform installers of lines and levels to which they must comply.
 4. Check the location, level and plumb, of every major element as the Work progresses.
 5. Notify Architect and Construction Manager when deviations from required lines and levels exceed allowable tolerances.
 6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work.
- D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect and Construction Manager.

3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.

3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
1. Make vertical work plumb and make horizontal work level.
 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
 4. Maintain minimum headroom clearance of **7 feet** in spaces without a suspended ceiling.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily. Enforce requirements strictly. Dispose of materials lawfully.
 - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 - 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
 - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.

2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

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

3.9 CORRECTION OF THE WORK

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

END OF SECTION 01700

SECTION 01732

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A.** This Section includes the following:
 - 1. Demolition and removal of selected portions of building or structure.
 - 2. Salvage of existing items to be reused or recycled.
- B.** Related Sections include the following:
 - 1. Division 1 Section "Summary" for use of premises, and Owner-occupancy requirements.
 - 2. Division 1 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.
 - 3. Division 1 Section "Construction Waste Management" for disposal of demolished materials.
 - 4. Division 1 Section "Cutting and Patching" for cutting and patching procedures.

1.3 DEFINITIONS

- A.** Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B.** Remove and Salvage: Detach items from existing construction and deliver them to Owner
- C.** Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D.** Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A.** Items of interest or value to Owner that may be encountered during selective demolition remain Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.

1.5 QUALITY ASSURANCE

- 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 A10.6 and NFPA 241.

1.6 PROJECT 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.
 - 1.** Comply with requirements specified in Division 1 Section "Summary."
- 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: Hazardous materials are not known to be present in buildings and structures to be selectively demolished. If during the course of demolition hazard materials are found, report the presence of hazardous materials to the Owner immediately.
 - 1.** Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
 - 2.** Owner will provide material safety data sheets for suspected hazardous materials that are known to be present in buildings and structures to be selectively demolished because of building operations or processes performed there.
- 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 (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A.** Verify that utilities have been disconnected and capped.
- B.** Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C.** Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- 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.
 - 1.** Comply with requirements specified in Division 1 Section "Photographic Documentation."
- F.** Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A.** Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
 - 1.** Comply with requirements for existing services/systems interruptions specified in Division 1 Section "Summary."
- B.** Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1.** If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 2.** Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

- a. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.
- C. Piping and Ductwork Removed: Drawings do not show all existing piping which is to be removed. Unless indicated otherwise, where existing equipment has been removed, or its use replaced by new equipment, remove connecting piping back to the branch in the main so that there will be no dead ends or unused pipe lines in mechanical spaces at completion.
- D. Wiring and Conduit Removed: Drawings do not show all existing conduit and wire which is to be removed. Unless indicated otherwise, where existing equipment has been removed, or its use replaced by new equipment, remove connecting conduit and wire back to the source of supply or nearest point in the circuit where equipment to remain is connected from so that there will be no unused conduit or wire in project area at completion.

3.3 PREPARATION

- A. 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 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.** Reuse of Building Elements: Project has been designed for reuse of building elements as indicated in the Contract Documents. Do not demolish building elements beyond what is indicated on Drawings without Architect's approval.
- C.** Removed and Salvaged Items:
1. Clean salvaged items.
 2. Store items in a secure area until delivery to Owner.
 3. Transport items to Owner's storage area designated by Owner.
 4. Protect items from damage during transport and storage.
- D.** Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
 2. Protect items from damage during transport and storage.
 3. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
 4. Replace glazing or remove translucent film as indicated.

3.5 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.
 4. Comply with requirements specified in Division 1 Section "Construction Waste Management."
- B.** Burning: Do not burn demolished materials.
- C.** Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.6 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 01732

SECTION 01770

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A.** This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Warranties.
 - 3. Final cleaning.
- B.** Related Sections include the following:
 - 1. Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
 - 2. Division 1 Section "Execution Requirements" for progress cleaning of Project site.
 - 3. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 4. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 5. Divisions 2 through 16 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 SUBSTANTIAL COMPLETION

- A.** Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 - 2. Advise Owner of pending insurance changeover requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
 6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
 7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 8. Complete startup testing of systems.
 9. Submit test/adjust/balance records.
 10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 11. Advise Owner of changeover in heat and other utilities.
 12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
 13. Complete final cleaning requirements, including touchup painting.
 14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- B. Inspection:** Submit a written request for inspection for Substantial Completion **7 days in advance**. On receipt of request, Architect or Owner will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect or Owner, that must be completed or corrected before certificate will be issued.
1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

- A. Preliminary Procedures:** Before requesting final inspection for determining date of Final Completion, complete the following:
1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
 2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training videotapes.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
 1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest room number to highest room number.
 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect
 - d. Name of Contractor.
 - e. Page number.

1.6 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated. **All warranties are to start on date of Substantial Completion. Owner will provide signature on Warranties at this time.**
- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.

- e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances at and around areas of work. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - j. Remove labels that are not permanent.
 - k. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 - l. Wipe surfaces of mechanical and electrical equipment, and food service equipment. Remove excess lubrication, paint, and other foreign substances.
 - m. Replace parts subject to unusual operating conditions.
 - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - o. Clean ducts, blowers, and coils if units were operated without filters during construction.
 - p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
 - q. Leave Project clean and ready for occupancy.
- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01770

SECTION 01781

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record Product Data.
- B. Related Sections include the following:
 - 1. Division 1 Section "Closeout Procedures" for general closeout procedures.
 - 2. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 3. Divisions 2 through 16 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.3 SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit copies of Record Drawings as follows:
 - a. Submittal: Submit two (2) sets of marked-up Record Prints for review of Architect and Engineering team.
- B. Record Product Data: Submit three (3) copies of each Product Data submittal.
 - 1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.
1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an understandable drawing technique.
 - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Depths of foundations below first floor.
 - c. Locations and depths of underground utilities.
 - d. Revisions to routing of piping and conduits.
 - e. Actual equipment locations.
 - f. Duct size and routing.
 - g. Locations of concealed internal utilities.
 - h. Changes made by Change Order or Construction Change Directive.
 - i. Changes made following Architect's written orders.
 - j. Field records for variable and concealed conditions.
 3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Electronic Drawings: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Architect and Construction Manager.
1. Incorporate changes and additional information previously marked on Record Prints. Delete, redraw, and add details and notations where applicable.
 2. Refer instances of uncertainty to Architect through Construction Manager for resolution.

- C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
 - 1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 - 2. Record electronic Drawings: Organize information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each CAD file.
 - 3. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect and Construction Manager.
 - e. Name of Contractor.

2.2 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 - 3. Note related Change Orders and Record Drawings where applicable.

2.3 MISCELLANEOUS RECORD SUBMITTALS

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

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction.

Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's and Construction Manager's reference during normal working hours.

END OF SECTION 01781

SECTION 01782

OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A.** This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1.** Operation manuals for systems, subsystems, and equipment.
 - 2.** Maintenance manuals for the care and maintenance of products, materials, finishes, systems and equipment.
- B.** Related Sections include the following:
 - 1.** Division 1 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
 - 2.** Division 1 Section "Closeout Procedures" for submitting operation and maintenance manuals.
 - 3.** Division 1 Section "Project Record Documents" for preparing Record Drawings for operation and maintenance manuals.
 - 4.** Divisions 2 through 16 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS

- A.** System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B.** Subsystem: A portion of a system with characteristics similar to a system.

1.4 SUBMITTALS

- A.** Initial Submittal: Submit three (3) draft copies of each manual at least fifteen (15) days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Architect will return one copy of draft and mark whether general scope and content of manual are acceptable.

- B.** Final Submittal: Submit Three (3) copies of each manual in final form at least fifteen (15) days before final inspection. Architect will return copy with comments within fifteen (15) days after final inspection.
 - 1.** Correct or modify each manual to comply with Architect's/Engineers comments. Submit Three (3) copies of each corrected manual within fifteen (15) days of receipt of Architect's comments.

1.5 COORDINATION

- A.** Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 MANUALS, GENERAL

- A.** Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - 1.** Title page.
 - 2.** Table of contents.
 - 3.** Manual contents.
- B.** Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
 - 1.** Subject matter included in manual.
 - 2.** Name and address of Project.
 - 3.** Name and address of Owner.
 - 4.** Date of submittal.
 - 5.** Name, address, and telephone number of Contractor.
 - 6.** Name and address of Architect.
- C.** Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
 - 1.** If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D.** Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch(215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch(215-by-280-mm) white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
 1. Operating standards.
 2. Operating procedures.
 3. Operating logs.
 4. Wiring diagrams.
 5. Control diagrams.
 6. Sequence of Operations
 - a. Include drawing coordinating system components
 7. Precautions against improper use.
 8. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
 1. Product name and model number.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.

4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
 2. Equipment or system break-in procedures.
 3. Routine and normal operating instructions.
 4. Regulation and control procedures.
 5. Instructions on stopping.
 6. Normal shutdown instructions.
 7. Seasonal and weekend operating instructions.
 8. Required sequences for electric or electronic systems.
 9. Special operating instructions and procedures.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.3 PRODUCT MAINTENANCE MANUAL

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Product Information: Include the following, as applicable:
1. Product name and model number.
 2. Manufacturer's name.
 3. Color, pattern, and texture.
 4. Material and chemical composition.
 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.
 2. Types of cleaning agents to be used and methods of cleaning.
 3. List of cleaning agents and methods of cleaning detrimental to product.
 4. Schedule for routine cleaning and maintenance.

5. Repair instructions.

- E. Repair Materials and Sources:** Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds:** Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.**

2.4 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

- A. Content:** For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information:** List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Manufacturers' Maintenance Documentation:** Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
 - 1. Standard printed maintenance instructions and bulletins.**
 - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.**
 - 3. Identification and nomenclature of parts and components.**
 - 4. List of items recommended to be stocked as spare parts.**
- D. Maintenance Procedures:** Include the following information and items that detail essential maintenance procedures:
 - 1. Test and inspection instructions.**
 - 2. Troubleshooting guide.**
 - 3. Precautions against improper maintenance.**
 - 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.**
 - 5. Aligning, adjusting, and checking instructions.**
 - 6. Demonstration and training videotape, if available.**
- E. Maintenance and Service Schedules:** Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
 - 1. Scheduled Maintenance and Service:** Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.

2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- B. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- C. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- D. Drawings: If necessary, prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

1. Do not use original Project Record Documents as part of operation and maintenance manuals.
 2. Comply with requirements of newly prepared Record Drawings in Division 1 Section "Project Record Documents."
- E. Comply with Division 1 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01782

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A.** Section includes cast-in-place concrete, concrete materials, mixture design, placement procedures, and finishes.
- B.** Related Sections:
 - 1.** None

1.2 ACTION SUBMITTALS

- A.** Product Data: For each type of product indicated.
- B.** Design Mixtures: For each concrete mixture.

1.3 INFORMATIONAL SUBMITTALS

- A.** Material test reports.
- B.** Floor surface flatness and levelness measurements.

1.4 QUALITY ASSURANCE

- A.** 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."
- B.** Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
 - 1.** ACI 301, "Specifications for Structural Concrete," Sections 1 through 5.
 - 2.** ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- C.** Pre-installation Conference: Conduct conference at Project site.

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

- A.** Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 - 1. Portland Cement: ASTM C 150, Type I
- B.** Normal-Weight Aggregates: ASTM C 33, graded.
 - 1. Maximum Coarse-Aggregate Size: 1/2 inch nominal.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C.** Water: ASTM C 94/C 94M and potable.

2.2 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.

2.3 FIBER REINFORCEMENT

- A.** Synthetic Micro-Fiber: Monofilament or fibrillated polypropylene micro-fibers engineered and designed for use in concrete, complying with ASTM C 1116/C 1116M, Type III, 1 to 2-1/4 inches long.

2.4 VAPOR RETARDERS

- A.** Sheet Vapor Retarder: ASTM E 1745, Class A. Include manufacturer's recommended adhesive or pressure-sensitive tape.
- B.** Sheet Vapor Retarder: Polyethylene sheet, ASTM D 4397, not less than 10 mils thick. Tie into existing vapor retarder, overlap 6" seal joints with sealant.

2.5 CURING MATERIALS

- A.** Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B.** Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. 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 and Sealing Compound: ASTM C 1315, Type 1, Class A.
 - 1.** VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.6 CONCRETE MIXTURES

- 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.
- B.** Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1.** Use 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.
 - 3.** Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
- C.** Proportion normal-weight concrete mixture as follows:
 - 1.** Minimum Compressive Strength: As indicated on drawings.
 - 2.** Maximum Water-Cementitious Materials Ratio: 0.45.
 - 3.** Slump Limit: 4 inches, 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
 - 4.** Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch nominal maximum aggregate size.
 - 5.** Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.
 - 6.** Synthetic Micro-Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than 1.0 lb/cu. yd.

2.7 FABRICATING REINFORCEMENT

- A.** Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.8 CONCRETE MIXING

- A.** Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.
 - 1.** When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 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.

3.2 VAPOR RETARDERS

- A.** Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.
 - 1.** Lap joints 6 inches and seal with manufacturer's recommended tape.

3.3 CONCRETE PLACEMENT

- A.** Before placing concrete, verify that embedded items are complete and that required inspections have been performed.
- B.** 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.** Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
- C.** Cold-Weather Placement: Comply with ACI 306.1.
- D.** Protect pool deck and pool when replacing new deck drain

3.4 FINISHING FORMED SURFACES

- A.** 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, to receive a rubbed finish, to be covered with a coating or covering material applied directly to concrete.
- B.** Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:
 - 1.** Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
 - 2.** Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
 - 3.** Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.
- 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.

3.5 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 in one direction.
 - 1.** Apply scratch finish to surfaces to receive concrete floor toppings or to receive mortar setting beds for bonded cementitious floor finishes.
- 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 restraighening 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 restraighen 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
2. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/4 inch

3.6 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.** 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.
 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, 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.
 3. 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.

3.7 CONCRETE SURFACE REPAIRS

- A.** Defective Concrete: Repair and patch defective areas when approved by Owner. Remove and replace concrete that cannot be repaired and patched to Owner's approval.

END OF SECTION 03300

SECTION 05500

METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A.** This Section includes the following:
 - 1.** Stainless Steel brackets and supports for railing and guardrail modifications.
 - 2.** Steel framing and supports for applications where framing and supports are not specified in other Sections.
 - 3.** Miscellaneous steel trim .
- B.** Related Sections include the following:
 - 1.** Division 3 Section "Cast-in-Place Concrete" for installing anchor bolts, steel pipe sleeves, wedge-type inserts and other items indicated to be cast into concrete.
 - 2.** Division 5 Section "Pipe and Tube Railings."
 - 3.** Division 6 Section "Rough Carpentry"

1.3 PERFORMANCE REQUIREMENTS

- A.** Thermal Movements: Provide exterior metal fabrications that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1.** Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

1.4 QUALITY ASSURANCE

- A.** Welding: Qualify procedures and personnel according to the following:
 - 1.** AWS D1.1, "Structural Welding Code--Steel."

2. AWS D1.2 "Structural Welding Code – Aluminum"
3. AWS D1.3, "Structural Welding Code--Sheet Steel."

1.5 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of stairs, existing guardrails, stringers, walls and other construction contiguous with metal fabrications by field measurements before fabrication and indicate measurements on Shop Drawings.
 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.
 2. Provide allowance for trimming and fitting at site.

1.6 COORDINATION

- A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

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.

2.2 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

2.3 STAINLESS STEEL METALS

- A. Stainless Steel Plates, Shapes, and Bars: ASTM A240 316/316L.

- B. Stainless Steel Tubing: ASTM A240 316/316L

2.4 NON-FERROUS METALS

2.5 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

2.6 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form exposed work true to line and level with accurate angles and surfaces and straight edges.
- E. Weld corners and seams continuously to comply with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts, unless otherwise indicated. Locate joints where least conspicuous.
- G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

- H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
 - 1. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded stainless steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

2.7 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide stainless steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.
 - 1. Furnish inserts if units are installed after concrete is placed.
- C. Fabricate supports for operable partitions from continuous steel beams of sizes indicated with attached bearing plates, anchors, and braces as indicated. Drill bottom flanges of beams to receive partition track hanger rods; locate holes where indicated on operable partition Shop Drawings.
- D. Galvanize miscellaneous framing and supports where indicated.

2.8 MISCELLANEOUS STEEL TRIM

- A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.
- B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.
 - 1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.
- C. Sandblast, prime and paint steel guard rails as indicated on drawings.
- D. Prime interior miscellaneous steel trim, where indicated with zinc-rich primer.

2.9 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish metal fabrications after assembly.

2.10 STAINLESS STEEL FINISHES

- A. Match existing satin finish of existing stainless steel guardrail.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Field Welding: Comply with the following requirements:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
 - 5. Exposed guardrails and handrails are finished products. Minimize the requirement for field welding and grinding to the greatest extent possible.
 - 6. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction as illustrated in the construction documents.
- C. Provide temporary bracing or anchors in formwork as required to support the stair modifications during construction.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

- B.** Anchor supports for operable partitions securely to and rigidly brace from building structure.

3.3 ADJUSTING AND CLEANING

- A.** Finishing: Immediately after erection, clean field welds, bolted connections, and abraded areas. Sand and buff stainless steel to obtain a uniform finish, free of defects from welding, grinding, or staining.

END OF SECTION 05500

SECTION 05521

PIPE AND TUBE RAILINGS AND SUPPORTS

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. Pipe and tube railings and associated supports
- B. Related Sections:
 - 1. Section 05500 "Metal Fabrications" for stainless steel fabrications

1.3 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design railings, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. General: In engineering railings to withstand structural loads indicated, determine allowable design working stresses of railing materials based on the following:
 - 1. Steel: 72 percent of minimum yield strength.
- C. Structural Performance: Railings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Handrails, Vertical Supports, and other Stainless Steel Fabrications:
 - a. Uniform load of 50 lbf/ ft. applied in any direction.
 - b. Concentrated load of 200 lbf applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Railing brackets and supports

- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Design requirement: Contractor to provide a single rail handrail with rail extending beyond end of both top and bottom tread nosings on both sides of the stair as indicated on contract drawings.
- D. Samples for Initial Selection: For products involving selection of color, texture.

1.5 INFORMATIONAL SUBMITTALS

- A. Welding certificates.

1.6 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of railing from single source from single manufacturer.
- B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- C. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.6, "Structural Welding Code - Stainless Steel."

1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

1.8 COORDINATION AND SCHEDULING

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- C. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

2.2 STEEL AND IRON

- A. Pipe: ASTM A 269 Grade A,
 - 1. Materials
 - All stainless steel tube to be 316 welded stainless steel, ornamental tubing - 1.5 inches O.D finished with a #6 polish.
 - a. All fittings to be 304 or 316 stainless steel.
- 2. Finishes
 - a. All machined stainless steel fittings will receive a # 8 polish.
 - b. All stainless steel pipe and tubing to receive a #6 polish.
 - c. Match Finish of existing stainless finish

2.3 FASTENERS

- A. General: Provide the following:
 - a. All fittings to be 304 or 316 stainless steel.
- B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.
- C. Fasteners for Interconnecting Railing Components:
 - 1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.
 - 2. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless exposed fasteners are unavoidable or are the standard fastening method for railings indicated.
 - 3. Provide square or hex socket flat-head machine screws for exposed fasteners unless otherwise indicated.
- D. Post-Installed Anchors: Torque-controlled expansion anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
 - 1. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633, Class Fe/Zn 5, unless otherwise indicated.
 - 2. All steel to be fully primed with zinc primer.

2.4 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Etching Cleaner for Galvanized Metal: Complying with MPI#25.
- C. Sand Blast metal surface prior to prime and painting - ensure surface remains free of dirt, oils and grit.

2.5 FABRICATION

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage but not less than that required to support structural loads.
- B. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Connections: Fabricate railings with shop welded connections to the greatest extent possible except utilize internal sleeve connections at assemblies to large to transport or install.
- H. First paragraph below is generally applicable to exposed welding of steel and stainless steel.
- I. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove flux immediately.
 - 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.

- 5. Sandblast welded area
- J. Form changes in direction as follows:
 - 1. By radius bends of radius indicated.
- K. Bend members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- L. Close exposed ends of railing members with prefabricated end fittings.
- M. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.
- N. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
 - 1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers, or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.
- O. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

2.6 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements have been clearly marked for Installer. Locate reinforcements and mark locations if not already done.

3.2 INSTALLATION, GENERAL

- A. Fit exposed connections together to form tight, hairline joints.
- B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
 - 1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
 - 2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
 - 3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.
- C. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- D. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.3 RAILING CONNECTIONS

- A. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.
- B. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches (50 mm) beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches (150 mm) of post.

3.4 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION 05521

SECTION 05522

RAILING CABLE SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Stainless steel cable and fittings for railing infill.
- B. Related Sections:
 - 1. Section 05521 – Pipe and Tube Railing and Supports
 - 1. Section 05500 – Metal Fabrications

1.02 SUBMITTALS

- A. Reference Section 01330–Submittal Procedures; submit following items:
 - 1. Product Data.
 - 2. Shop Drawings: Indicate materials, sizes, fabrication, anchorage and installation details, and lengths for cable systems on shop drawings prepared by fabricator of cable supporting structure.
 - 3. Samples: Minimum 12 inch length of cable and each fitting and accessory proposed for the Project. Submit items in specified finish.
 - 4. Quality Assurance/Control Submittals:
 - a. Qualifications: Proof of manufacturer's qualifications.
 - b. Manufacturer's Installation Instructions.
- B. Closeout Submittals: Reference Section 01780–Closeout Submittals; submit following items:
 - 1. Maintenance Instructions:
 - a. Manufacturer's recommendation for periodic checking and adjustment of cables to maintain uniform cable tension.
 - b. Manufacturer's recommendation for periodic cleaning to remove accumulated dirt, debris, and stains.

1.03 QUALITY

ASSURANCE A.

Qualifications:

- 1. Manufacturer Qualifications: Minimum five years' experience in producing cable assemblies of the type specified.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Reference Section 01600–Product Requirements.
- B. Follow manufacturer’s instructions.

1.05 WARRANTY

- A. Special Warranty: Stainless steel cables and connectors – 10 year limited warranty against defects in materials and workmanship.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Feeney, Inc., 2603 Union St., Oakland, CA 94607
- B. Nexan Building Products, 1213 26th Street SW, Cullman, AL 35055
- C. Approved Equal
- D. Substitutions: Reference Section 01631– Substitutions

2.02 MATERIALS

- A. Cables: Type 316 stainless steel as specified below, polished finish, commercial, dry grade.
- B. Fittings:
 - 1. Swage Style: Type 316 stainless steel, vibratory/tumbled finish.
 - 2. Quick-Connect Style: Type 316 stainless steel body, mill finish.

2.03 COMPONENTS

- A. System similar and equal to CableRail by Feeney, Standard Cable Assemblies: 1/4 inch diameter by length as required, 1x19 construction, Type 316 stainless steel cable with a stainless steel threaded terminal factory attached to one end. Provide 2 stainless steel flat washers, 1 stainless steel washer-nut, 2 stainless steel end caps, and 1 stainless steel Quick-Connect fitting with each assembly.
 - 1. Accessories: Stainless steel protector sleeves, rubber grommets, bushings, beveled washers and additional accessories as recommended by manufacturer for installation conditions.

CABLE SELECTION GUIDELINES:

- 1. Cable: 1/4 inch (6.4 mm) diameter, 1x19 construction, Type 316, stainless steel.
 - a. Coating: None
- 2. Fittings:
 - a. Swage Style: Type 316 stainless steel terminals, turnbuckles, adjusters, and fixed ends and other hardware as recommended by

manufacturer for installation conditions.

- b. Quick-Connect® Style: Type 316 stainless steel Quick-Connect® terminals, turnbuckles, adjusters, and fixed ends and other hardware as recommended by manufacturer for installation conditions.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine work to which cables will be anchored or will penetrate. Coordinate with responsible entity to perform corrective work as necessary.
 - 1. Verify post size and cable spacing are in accordance with manufacturer's recommendations.
- B. Take field measurements and compare installation conditions to shop drawings. Notify manufacturer if field measurements vary from shop drawings.

3.02 INSTALLATION

- A. Follow manufacturer's installation instructions.
- B. Isolate dissimilar metals with grommets or bushings.

3.03 CLEANING

- A. Reference Section 01770–Closeout.

END OF SECTION 05522

SECTION 06100

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

- A.** Section Includes:
1. Wood blocking, cants, and nailers.
 2. Wood furring and grounds.
 3. Plywood backing panels.

1.2 ACTION SUBMITTALS

- A.** Product Data: For each type of process and factory-fabricated product.
1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements
 2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.

1.3 INFORMATIONAL SUBMITTALS

- A.** Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

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.
- B.** Maximum Moisture Content of Lumber: 19 percent 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 DIMENSION LUMBER FRAMING

- A.** Framing: Species and grade as indicated. 2-inch nominal thickness for single-member use.

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.
 - 3.** Cants.
 - 4.** Furring.
- B.** For items of dimension lumber size, provide Construction or No. 2 grade lumber of any species.
- C.** For concealed boards, provide lumber with 19 percent maximum moisture content and any of the following species and grades:
 - 1.** Northern species; No. 2 Common grade; NLGA.
 - 2.** Western woods; Construction or No. 2 Common grade; WCLIB or WWPA.
- D.** Utilize Pressure treated lumber for wood in contact with Concrete or Masonry.

2.4 PLYWOOD BACKING PANELS

- A.** Equipment Backing Panels: DOC PS 1, Exterior, C-C Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.
 - 1.** Plywood shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.5 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.** Power-Driven Fasteners: NES NER-272.
- C.** Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.

2.6 METAL FRAMING ANCHORS

- A.** Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- B.** Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - 1.** Cleveland Steel Specialty Co.
 - 2.** KC Metals Products, Inc.
 - 3.** Phoenix Metal Products, Inc.
 - 4.** Simpson Strong-Tie Co., Inc.
 - 5.** USP Structural Connectors.
- C.** Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation.
 - 1.** Use for interior locations unless otherwise indicated.

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 furring, nailers, blocking, grounds, 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.** Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

- D.** Do not splice structural members between supports unless otherwise indicated.
- E.** Comply with AWPAC M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- F.** Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- G.** 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.

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.
- 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 06100

SECTION 06402

INTERIOR ARCHITECTURAL WOODWORK

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.
- B.** Section 06651 Solid Surface Fabrications
- C.** Section 13030 Suana

1.2 SUMMARY

- A.** This Section includes the following:
 - 1.** Plastic-laminate faced cabinets.
 - 2.** Solid Surface faced countertops
 - 3.** Plastic-Laminate Faced HDF w/ PVC edge banding at closet and utility shelving.
 - 4.** Melamine faced finishing of interior woodwork.
 - 5.** Wood trim at Acoustical Panels
 - 6.** Wood Trim at Sauna and Sauna interface
 - 7.** Peg Board at Pool Office
- B.** Related Sections include the following:
 - 1.** Division 6 Section "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation.
 - 2.** Division 6 Section "Finish Carpentry" for interior carpentry exposed to view that is not specified in this Section.

1.3 DEFINITIONS

- A.** Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction before woodwork installation.

1.4 SUBMITTALS

- A.** Product Data: For high-pressure decorative laminate, cabinet hardware and accessories, and finishing materials and processes.
- B.** Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
 - 1.** Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
 - 2.** Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, and other items installed in architectural woodwork.
- C.** Samples for Initial Selection:
 - 1.** Plastic laminates.

2. PVC edge material.
3. Wood for cabinetry
4. Wood for trim
- D. Samples for Verification:
 1. Exposed cabinet hardware and accessories, one unit for each type and finish.
 2. For each species and cut of lumber and panel products with non-factory-applied finish, with 1/2 of exposed surface finished, 50 sq. in. for lumber
- E. Product Certificates: For each type of product, signed by product manufacturer.
- F. Qualification Data: For fabricator.
- G. Product Certificates: For each type of product including the following:
 1. Composite wood and agrifiber products.
 2. Thermoset decorative panels.
 3. High-pressure decorative laminate.
 4. Adhesives.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a 10 year record of successful in-service performance.
- B. Installer Qualifications: Fabricator of products or approved by fabricator.
- C. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.
 1. *AWI Membership is not a requirement of the specification. Compliance with AWI's Architectural Woodwork Quality Standards is included as a reference standard for the qualitative requirements of the work.*
 2. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with such selections and requirements in addition to the quality standard.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.
- B. Stack lumber, plywood, and other panels flat with spacers between each bundle to provide air circulation. Protect materials from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.
- C. Deliver interior finish carpentry materials only when environmental conditions meet requirements specified for installation areas. If interior finish carpentry materials must

be stored in other than installation areas, store only where environmental conditions meet requirements specified for installation areas.

1.7 PROJECT CONDITIONS

- A.** Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B.** Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1.** Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.

1.8 COORDINATION

- A.** Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 WOODWORK FABRICATORS

- A.** Available Fabricators: Subject to compliance with requirements, fabricators offering interior architectural woodwork that may be incorporated into the Work include, but are not limited to, the following:
 - 1.** Available Manufacturers

2.2 MATERIALS

- A.** General: Provide materials that comply with requirements of AWI's quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.
- B.** Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of architectural plastic-laminate cabinets indicated for construction, finishes, installation, and other requirements.
 - 1.** The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.
- C.** Grade: Custom.
- D.** Type of Construction: Frameless.

- E.** Cabinet, Door, and Drawer Front Interface Style: Flush overlay.
- F.** High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by woodwork quality standard.
 - 1.** Manufacturers: Subject to compliance with requirements,
- G.** Laminate Cladding for Exposed Surfaces:
 - 1.** Horizontal Surfaces: Grade HGS.
 - 2.** Postformed Surfaces: Grade HGP.
 - 3.** Vertical Surfaces: Grade HGS.
 - 4.** Edges: PVC edge banding,
 - a.** Edge of Doors 0.12 inch (3 mm) thick, (Custom color matching laminate in color, pattern, and finish
 - b.** Edge of countertop 0.12 inch (3 mm) thick, (Custom color matching laminate in color, pattern, and finish
 - 5.** Pattern Direction: As indicated.
- H.** Materials for Semi-exposed Surfaces:
 - 1.** Surfaces Other Than Drawer Bodies: High-pressure decorative laminate, NEMA LD 3, Grade VGS.
 - a.** Edges of Plastic-Laminate Shelves: PVC edge banding, 0.12 inch (3 mm) thick, matching laminate in color, pattern, and finish.
 - b.** For semi-exposed backs of panels with exposed plastic-laminate surfaces, provide surface of high-pressure decorative laminate, NEMA LD 3, Grade VGS.
 - 2.** Drawer Sides and Backs: Thermoset decorative panels with PVC or polyester edge banding.
 - 3.** Drawer Bottoms: Thermoset decorative panels matching drawers sides and backs.
- I.** High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard.
 - 1.** Available Manufacturers: Subject to compliance with requirements, manufacturers offering high-pressure decorative laminates that may be incorporated into the Work include, but are not limited to, the following:
 - a.** Formica Corporation.
 - b.** Nevamar Company, LLC; Decorative Products Div.
 - c.** Panolam Industries International Incorporated (Pionite) .
 - d.** Wilsonart International; Div. of Premark International, Inc.
 - e.** Substitutions allowed in accordance with Division 1 product substitution requirements.

2.3 WOOD MATERIALS

- A.** Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.

1. Wood Moisture Content: 15 percent.

- B.** Locally Sourced Wood Products:

1. Provide locally sourced kiln dried Birch for all decorative wood handrails, guardrails, and vertical wood guardrail stiles.
2. For exposed items indicated to receive transparent finish, do not use chemical formulations that contain colorants or that bleed through or otherwise adversely affect finishes.
3. Do not use material that is warped or does not comply with requirements for untreated material.

2.4 TRIM AT ACOUSTICAL PANELS

- A.** Softwood Lumber Trim for Transparent Finish (Stain or Clear Finish):

1. Species and Grade: Poplar, *equal to WWPA grade C, Select.*
2. Maximum Moisture Content: 15 percent .
3. Finger Jointing: Not Allowed
4. Face Surface: smooth

2.5 PEG BOARD PANEL

- A.** Hardwood Plywood for Painted Finish

1. FSC/ISO 14001 Certified
2. 1/4" evenly spaced holes
3. Thickness: 3/16"
4. Size 4'x8' Panels
5. Match color of wall
6. Mount on 1x4 wood frame

2.6 MISCELLANEOUS MATERIALS

- A.** Fasteners for Interior Finish Carpentry: Nails, screws, and other anchoring devices of type, size, material, and finish required for application indicated to provide secure attachment, concealed where possible.
- B.** Glue: Aliphatic-resin, polyurethane, or resorcinol wood glue recommended by manufacturer for general carpentry use.

1. Wood glue shall have a VOC content of 30 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- C. Multipurpose Construction Adhesive: Formulation complying with ASTM D 3498 that is recommended for indicated use by adhesive manufacturer.
 1. Adhesive shall have a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- D. Peg Board for wall installation at Pool Office.
 1. Product similar and equal to 3/16" x 4'x8' particleboard/pegboard material
 2. Mount peg board on 2x2 wood frame and secure to wall.
 - a. See Interior elevations

2.7 FABRICATION

- A. Back out or kerf backs of the following members except those with ends exposed in finished work:
 1. Interior standing and running trim except shoe and crown molds.
- B. Ease edges of lumber less than 1 inch (25 mm) in nominal thickness to 1/16-inch (1.5-mm) radius and edges of lumber 1 inch (25 mm) or more in nominal thickness to 1/8-inch (3-mm) radius.
 1. Thermoset Decorative Panels: Medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for test methods 3.3, 3.4, 3.6, 3.8, and 3.10.

2.8 CABINET HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Division 8 Section "Door Hardware"
- B. Butt Hinges: 2-3/4-inch(70-mm), 5-knuckle steel hinges made from 0.095-inch-(2.4-mm-) thick metal, and as follows:
 1. Semiconcealed Hinges for Overlay Doors: BHMA A156.9, B01521.
- C. Back-Mounted Pulls: BHMA A156.9, B02011.
- D. Wire Pulls: Back mounted, solid metal 4 inches(100 mm) long, 5/16 inch(8 mm) in diameter.
- E. Adjustable Shelf Rests (for drilled holes): steel with brushed chrome finish.
- F. Drawer Slides: BHMA A156.9, B05091.
 1. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Side mounted; full-extension type; zinc-plated steel ball-bearing slides. Subject to requirements, pre-approved Manufacturers and models include:
 - a. Accuride #4037
 - b. Knappe & Vogt #8500
 2. Box Drawer Slides: Grade 1HD-100; for drawers not more than 6 inches(150 mm) high and 18 inches(450 mm) wide. Provide 100 pound capacity at drawers

18" wide or less. Provide 150 pound capacity drawer guides at drawers over 18" wide.

3. File Drawer Slides: Grade 1HD-200; for drawers more than 6 inches(150 mm) high or 24 inches(600 mm) wide.
4. Keyboard Slides: Grade 1HD-100; for computer keyboard shelves.
- G. Door Locks: BHMA A156.11, E07121, if required. Equivalent to Knap & Vogt #987.
- H. Drawer Locks: BHMA A156.11, E07041.
- I. Grommets for Cable Passage through Countertops: 2-inch(51-mm) min. OD, molded-plastic grommets and matching plastic caps with slot for wire passage. Color to be selected by Architect from Manufacturer's standard colors.
 1. Product: Subject to compliance with requirements, provide "SG series" or "LG series" by Doug Mockett & Company, Inc.
- J. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
 1. Satin Chromium Plated: BHMA 626 for brass or bronze base; BHMA 652 for steel base.
- K. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.
- L. Knee Brace: Everbilt 18"x16" Heavy Duty bracket #14835
- M. Interior multi level turntable accessory (lazy susan) for use in one corner cabinet similar to Hafele HA-542.10.721
- N. Door and Drawer Silencers: BHMA A156.16, L03011.

2.9 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: As specified in Division 6 Section "Rough carpentry"; Fire retardant treated Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

2.10 FABRICATION, GENERAL

- A. Interior Woodwork Grade: Unless otherwise indicated, provide Select-grade interior woodwork complying with referenced quality standard.
- B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.
- C. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
- D. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

1. Seal edges of openings in countertops with a coat of varnish.

2.11 PLASTIC-LAMINATE CABINETS

- A. Grade: Custom.
- B. AWI Type of Cabinet Construction: Flush overlay.
- C. Structural Cabinet Body:
 1. Cabinet Backs: 1/2-inch-(12.7-mm-) thick, inset from rear of body and fully bound (dadoed) four sides. Provide 3/4-inch- (19-mm-) thick stiffeners fastened to back/body. Back perimeter shall be toe-nailed with 16 gauge mechanical fasteners for tight interior fitting and direct connection of back panel to body.
 2. Interior Structure: All cabinets over 36 inches wide shall be furnished with a mechanically fastened, yet removable, vertical divider to reduce horizontal member/shelf deflection.
 3. Interior Depth: Wall cabinets shall have a clear inside nominal depth of 12 inches unless detailed otherwise.
 4. Shelf Loading: Shelves shall meet the loading/deflection standards of the National Particleboard Association.
 5. Structural Base Cabinet Support: Cabinet sub-base shall be of a separate and continuous ladder-type platform design leveled and floor mounted prior to cabinet body placement. Material shall be Fire retardant treated exterior grade plywood or standard base material as recommended for application by manufacturer. No cabinet sides-to-floor will be allowed.
- D. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
 1. Horizontal Surfaces Other Than Tops: Grade HGS.
 2. Vertical Surfaces: Grade HGS.
 3. Edges: PVC edge banding, 0.12 inch(3 mm) thick, matching laminate in color, pattern, and finish.
- E. Colors, Patterns, and Finishes: Refer to Sheet A6.6 Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 1. See Plans, Interior Elevations and Finish Schedule and drawings for locations as indicated on drawings

2.12 CLOSET AND UTILITY SHELVEING

- A. Shelf Material: 3/4-inch(19-mm) plastic laminate faced medium-density fiberboard with PVC edge.
- B. Laminate. 7.3
- C. Cleats: 3/4-inch(19-mm) panel product.
- D. Standards and Supports: KV 87 Series Heavy Duty Standards and supports. Mount at 24" o.c. minimum spacing. Provide blocking in wall behind supports and standards.

2.13 SHOP FINISHING

- A. Quality Standard: Comply with AWI Section 1500, unless otherwise indicated.

- B. Finish for Natural Finish Wood: Catalyzed Lacquer
- C. General: Finish architectural woodwork at fabrication shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.
- D. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.
- B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

- A. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.
- B. Assemble woodwork and complete fabrication at Project site to comply with requirements for fabrication in Part 2, to extent that it was not completed in the shop.
- C. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches(3 mm in 2400 mm).
- D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation.
- F. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
 - 1. Install cabinets with no more than 1/8 inch in 96-inch(3 mm in 2400-mm) sag, bow, or other variation from a straight line.
 - 2. Fasten wall cabinets securely through back, near top and bottom, at ends and not more than 16 inches(400 mm) o.c..
- G. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
 - 1. Install countertops with no more than 1/8 inch in 96-inch(3 mm in 2400-mm) sag, bow, or other variation from a straight line.
 - 2. Secure backsplashes to tops with manufacturer's standard backsplash attachment system. Secure backsplashes to walls with adhesive.
 - 3. Calk space between backsplash and wall with sealant specified in Division 7 Section "Joint Sealants."
- H. Refer to Division 9 Sections for final finishing of installed architectural woodwork not indicated to be shop finished.

3.3 ADJUSTING AND CLEANING

- A.** Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B.** Clean, lubricate, and adjust hardware.
- C.** Clean woodwork on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 06402

SECTION 06651

SOLID SURFACE FABRICATIONS

PART 1 — GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following horizontal and trim solid surface product types:

- 1. Countertops with sinks
- 3. Reception areas
- 4. Vanity tops

- B. Related Sections include the following:

- 1. Division 5 Section "Metal Fabrications" for Blocking.
- 2. Division 6 Section "Rough Carpentry" for Blocking.
- 3. Division 10 Section "Toilet Partitions."
- 4. Division 15 Section "Plumbing Fixtures."
- 5. Division 16 Section "Wiring Devices."

1.3 DEFINITION

- A. Solid surface is defined as nonporous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment.

1.4 SUBMITTALS

- A. Product data:
 - 1. For each type of product indicated.
- B. Shop drawings:
 - 1. Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices and other components.
 - a. Show full-size details, edge details, thermoforming requirements, attachments, etc.
 - b. Show locations and sizes of furring, blocking, including concealed blocking and reinforcement specified in other Sections.
 - c. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, waste receptacle and other items installed in solid surface.

C. Samples:

1. For each type of product indicated.
 - a. Submit minimum 6-inch by 6-inch sample in specified gloss.
 - b. Cut sample and seam together for representation of inconspicuous seam.
 - c. Indicate full range of color and pattern variation.
2. Approved samples will be retained as a standard for work.

D. Product data:

1. Indicate product description, fabrication information and compliance with specified performance requirements.

E. Fabricator/installer qualifications:

1. Provide copy of certification number.

F. Manufacturer certificates:

1. Signed by manufacturers certifying that they comply with requirements.

I. NSF/ANSI standards:

1. Refer to www.nsf.org for the latest compliance to NSF/ANSI Standard 51 for food zone — all food types.

J. Maintenance data:

1. Submit manufacturer's care and maintenance data, including repair and cleaning instructions.
 - a. Maintenance kit for finishes shall be submitted.
2. Include in project closeout documents.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Shop that employs skilled workers who custom fabricate products similar to those required for this project and whose products have a record of successful in-service performance.

B. Fabricator/installer qualifications:

1. Work of this section shall be by a certified fabricator/installer, certified in writing by the manufacturer.

C. Applicable standards:

1. Standards of the following, as referenced herein:
 - a. American National Standards Institute (ANSI)
 - b. American Society for Testing and Materials (ASTM)
 - c. National Electrical Manufacturers Association (NEMA)
 - d. NSF International
2. Fire test response characteristics:
 - a. Provide with the following Class A (Class I) surface burning characteristics as determined by testing identical products per UL 723 (ASTM E84) or another testing and inspecting agency acceptable to authorities having jurisdiction:
 - 1) Flame Spread Index: 25 or less.
 - 2) Smoke Developed Index: 450 or less.

D. Coordination drawings:

1. Shall be prepared indicating:
 - a. Plumbing work.
 - b. Electrical work.

- c. Miscellaneous steel for the general work.
 - d. Indicate location of all walls (rated and non-rated), blocking locations and recessed wall items, etc.
- 2. Content:
 - a. Project-specific information, drawn accurately to scale.
 - b. Do not base coordination drawings on reproductions of the contract documents or standard printed data.
 - c. Indicate dimensions shown on the contract drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements.
 - d. Provide alternate sketches to designer for resolution of such conflicts.
 - 1) Minor dimension changes and difficult installations will not be considered changes to the contract.
- E. Drawings shall:
 - 1. Be produced in 1/2-inch scale for all fabricated items.
- F. Drawings must be complete and submitted to the architect within 60 days after award of contract for record only.
 - 1. No review or approval will be forthcoming.
 - 2. Coordination drawings are required for the benefit of contractor's fabricators/installers as an aid to coordination of their work so as to eliminate or reduce conflicts that may arise during the installation of their work.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver no components to project site until areas are ready for installation.
- B. Store components indoors prior to installation.
- C. Handle materials to prevent damage to finished surfaces.
 - 1. Provide protective coverings to prevent physical damage or staining following installation for duration of project.

1.7 WARRANTY

- A. Provide manufacturer's warranty against defects in materials.
 - 1. Warranty shall provide material and labor to repair or replace defective materials.
 - 2. Damage caused by physical or chemical abuse or damage from excessive heat will not be warranted.

1.8 MAINTENANCE

- A. Provide maintenance requirements as specified by the manufacturer.

PART 2 — PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers:
 - 1. Subject to compliance with requirements, provide products by one of the following:
 - a. Corian® surfaces from the DuPont company.

b. Approved Equal.

2.2 MATERIALS

A. Solid polymer components

1. Cast, nonporous, filled polymer, not coated, laminated or of composite construction with through body colors meeting ANSI Z124.3 or ANSI Z124.6, having minimum physical and performance properties specified.
2. Superficial damage to a depth of 0.010 inch (.25 mm) shall be repairable by sanding and/or polishing.

B. Thickness:

1. 1/2 inch

C. Edge treatment:

1. Rolled edges
4. As indicated

D. Backsplash:

1. Applied.

E. Sidesplash:

1. Applied.

F. Performance characteristics:

Property	Typical Result	Test
Tensile Strength	6,000 psi	ASTM D 638
Tensile Modulus	1.5×10^{-6} psi	ASTM D 638
Tensile Elongation	0.4% min.	ASTM D 638
Flexural Strength	10,000 psi	ASTM D 790
Flexural Modulus	1.2×10^{-6} psi	ASTM D 790
Hardness	>85	Rockwell "M" Scale

Flammability
255 & UL 723
Flame Spread Index <25
Smoke Developed Index <25
Passes ASTM E 84,(Class I and Class A), NFPA

2.3 ACCESSORIES

A. Joint adhesive:

1. Manufacturer's standard one- or two-part adhesive kit to create inconspicuous, nonporous joints.

B. Sealant:

1. Manufacturer's standard mildew-resistant, FDA-compliant, NSF 51-compliant (food zone — any type), UL-listed silicone sealant in colors matching components.

2.4 FACTORY FABRICATION

A. Shop assembly

1. Fabricate components to greatest extent practical to sizes and shapes indicated, in accordance with approved shop drawings and manufacturer's printed instructions and technical bulletins.
2. Form joints between components using manufacturer's standard joint adhesive without conspicuous joints.
 - a. Reinforce with strip of solid polymer material, 2" wide.
3. Provide factory cutouts for plumbing fittings and bath accessories as indicated on the drawings.
4. Rout and finish component edges with clean, sharp returns.
 - a. Rout cutouts, radii and contours to template.
 - b. Smooth edges.
 - c. Repair or reject defective and inaccurate work.

2.5 FINISHES

A. Select from the manufacturer's standard color chart.

1. Provide surfaces with a uniform finish.
 - a. Matte; gloss range of 5–20.

PART 3 — EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with fabricator present for compliance with requirements for installation tolerances and other conditions affecting performance of work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install components plumb, level and rigid, scribed to adjacent finishes, in accordance with approved shop drawings and product data.
 1. Provide product in the largest pieces available.
 2. Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work.
 - a. Exposed joints/seams shall not be allowed.
 3. Reinforce field joints with solid surface strips extending a minimum of 1 inch on either side of the seam with the strip being the same thickness as the top.
 4. Cut and finish component edges with clean, sharp returns.
 5. Rout radii and contours to template.
 6. Anchor securely to base cabinets or other supports.
 7. Align adjacent countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop.
 8. Carefully dress joints smooth, remove surface scratches and clean entire surface.

9. Install countertops with no more than 1/8-inch (3 mm) sag, bow or other variation from a straight line.

B. Applied sidesplashes:

1. Install applied sidesplashes using manufacturer's standard color-matched silicone sealant.
2. Adhere applied sidesplashes to countertops using manufacturer's standard color-matched silicone sealant.

3.3 REPAIR

- A. Repair or replace damaged work which cannot be repaired to architect's satisfaction.

3.4 CLEANING AND PROTECTION

- A. Keep components clean during installation.
B. Remove adhesives, sealants and other stains.

3.5 SCHEDULE

A. Reception/ Staff Work Room Countertop:

1. Surfaces of material adhesively joined with inconspicuous seams.

		Color
a. Vertical Thickness	1/2"	SS-1 Blue Spice
b. Horizontal Thickness	1/2"	SS-1 Blue Spice
c. Edge Details	Rolled	
d. Finish	Matte	
e. Backsplash		SS-1 Blue Spice
f. Sidesplash		SS-1 Blue Spice

B. Toilet Rooms Countertop:

1. Surfaces of material adhesively joined with inconspicuous seams.

		Color
a. Vertical Thickness	1/2"	SS-2 Silver Birch
b. Horizontal Thickness	1/2"	SS-2 Silver Birch
c. Edge Details	Rolled	
d. Finish	Matte	
e. Backsplash		SS-2 Silver Birch
f. Sidesplash		SS-2 Silver Birch

END OF SECTION 06651

SECTION 07210

BUILDING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A.** This Section includes the following:
 - 1.** Acoustic Insulation at interior partitions.
 - 2.** Vapor retarders.
- B.** Related Sections include the following:
 - 1.** Division 6: Section "Rough Carpentry" for Plywood specification
 - 2.** Division 9 Section "Gypsum Board Assemblies" for installation in metal-framed assemblies of insulation.
 - 3.** Division 9 Section "Gypsum Board Assemblies" for Fiberglass faced gypsum
 - 4.** Division 9 Section " Ceramic Tile":
 - 5.** Division 15 Section "Mechanical Insulation."
 - 6.** .

1.3 SUBMITTALS

- A.** Product Data: For each type of product indicated.
- B.** Layout showing orientation of laminated composite polystyrene wall panels to metal stud framing, windows, thicknesses, fastener spacings, and patterns for mechanically fastening panels.
 - 1.** Delegated design submittal to include structural calculations for wall panels accounting for wind loading pressure values in structural drawings

1.4 QUALITY ASSURANCE

- A.** Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.

- B.** Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
 - 1.** Surface-Burning Characteristics: ASTM E 84.
 - 2.** Fire-Resistance Ratings: ASTM E 119.
 - 3.** Combustion Characteristics: ASTM E 136.

1.5 DELIVERY, STORAGE, AND HANDLING

- A.** Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
- B.** Protect plastic insulation as follows:
 - 1.** Do not expose to sunlight, except to extent necessary for period of installation and concealment.
 - 2.** Protect against ignition at all times. Do not deliver plastic insulating materials to Project site before installation time.
 - 3.** Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.
 - 4.** Cover plastic and foam plastics with non-combustible surface typically.

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 GLASS-FIBER BLANKET INSULATION

- A.** Basis of Design: Knauf Insulation, EcoBatt
- B.** Other Acceptable Manufacturers:
 - 1.** CertainTeed Corporation.

-
2. Guardian Building Products, Inc.
 3. Johns Manville.
 4. Owens Corning.
- C.** Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.
1. Free of Formaldehyde: Insulation manufactured with 100 percent acrylic binders and no formaldehyde.
 2. Recycled Content: Provide thermal insulation with recycled content so post-consumer recycled content plus one-half of pre-consumer recycled content is not less than 60 percent.
 3. Rapidly Renewable Content: Provide thermal insulation with not less than 4 percent.
 4. Provide wall insulation full-thickness of stud cavity unless indicated otherwise.
 - 5.

2.3 ACOUSTIC GLASS-FIBER BLANKET INSULATION

- A.** Basis of Design: Knauf Insulation, EcoBatt
- B.** Other Acceptable Manufacturers:
1. CertainTeed Corporation.
 2. Guardian Building Products, Inc.
 3. Johns Manville.
 4. Owens Corning.
- C.** Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.
1. Free of Formaldehyde: Insulation manufactured with 100 percent acrylic binders and no formaldehyde.
 - a.

2.4 VAPOR RETARDERS

- A.** Polyethylene Vapor Retarders:
1. Covered applications at Walls and Roof: ASTM D 4397, 6 mils thick, with maximum permeance rating of 0.13 perm.
 2. Exposed applications at walls and soffits: 6 mil, laminated, fire retardant. ASTM E 1745, Class A Flame spread, ASTM E 84, meets or exceeds NFPA 701, White.

2.5 METALIC RADIANT VAPOR RETARDER (@ Sauna 103C)

-
- A.** Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - B.** Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - 1.** FI-FOIL, Radiant shield, PO Box 800, Auburndale, Florida 33823
 - a.** ASTM C 1313 / C 1313M – Standard Specification for Sheet Radiant Barriers for Building Construction Applications.
 - b.** ASTM C 1744 – Standard Practice for Installation and Use of Radiant Barrier Systems (RBS) in Commercial/Industrial Building Construction.
 - c.** Description:
 - 1)** Multi-laminate, perforated, sheet radiant barrier.
 - 2)** Two outer layers of aluminum foil laminated to layer of woven polyethylene.
 - 3)** Thickness of Each Layer: Minimum 0.00025 inch.
 - 4)** Install per manufacturer's recommendation

2.6 AUXILIARY INSULATING MATERIALS

- A.** Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by insulation manufacturers for sealing joints and penetrations in metallic vapor-retarder facings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A.** Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and for other conditions affecting performance.
 - 1.** Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A.** Clean substrates of substances harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders or of interfering with insulation attachment.

3.3 INSTALLATION, GENERAL

- A.** Comply with insulation manufacturer's written instructions applicable to products and application indicated.
- B.** Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.
- C.** Extend insulation in thickness indicated to envelop entire area to be insulated. Blow In Insulation tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

3.4 INSTALLATION OF GENERAL BUILDING INSULATION

- A.** Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.
- B.** Set vapor-retarder-faced units with vapor retarder to warm side (Interior face of Sauna) and in locations indicated within construction, unless other directed otherwise.
 - 1.** Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure airtight installation.
- C.** Install blown in batt insulation in cavities formed by framing members according to the following requirements:
 - 1.** Completely fill cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
 - 2.** When installing acoustic glass fiber blanket insulation, place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
 - 3.** Maintain 3-inch(76-mm) clearance of insulation around recessed lighting fixtures.
 - 4.** Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
 - 5.** For metal-framed wall cavities where cavity heights exceed 96 inches(2438 mm), support unfaced blankets mechanically and support faced blankets by taping stapling flanges to flanges of metal studs.

3.5 INSTALLATION OF VAPOR RETARDERS

- A.** General: Extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with adhesives, sealants, or other anchorage system as indicated. Extend vapor retarder to cover miscellaneous voids in insulated substrates, including those filled with loose-fiber insulation.

-
1. Extend vapor retarder into window, door, vent and any other penetrations in exterior envelope and lap under air infiltration barrier. Seal vapor retarder against framing.
 2. Seal Vapor retarder against steel decking. When sealing perpendicular to steel decking fill voids in decking flutes with closed cell spray applied urethane insulation to complete the membrane.
 3. Lap vapor retarder a minimum of 6" with continuous sealant at lap joint.
- B.** Before installing vapor retarder, apply urethane sealant to flanges of metal framing including runner tracks, metal studs, and framing around door and window openings. Seal overlapping joints in vapor retarders with vapor-retarder tape or sealant according to vapor-retarder manufacturer's written instructions. Seal butt joints with vapor-retarder tape. Locate all joints over framing members or other solid substrates.
- C.** Firmly attach vapor retarders to metal framing and solid substrates with vapor-retarder fasteners as recommended by vapor-retarder manufacturer.
- D.** Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with vapor-retarder tape to create an airtight seal between penetrating objects and vapor retarder. For penetrations that are concealed, provide manufactured gaskets or fill penetration with approved fire stopping.
- E.** Repair tears or punctures in vapor retarders immediately before concealment by other work. Cover with vapor-retarder tape or another layer of vapor retarder. Contractor to call for inspection / review of vapor retarder and insulation a minimum of 24 hours prior to installation of gwb.

3.6 PROTECTION

- A.** Protect installed insulation and vapor retarders from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 07210

SECTION 07920

JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A.** This Section includes joint sealants for the following applications:
 - 1. Interior joints in the following vertical surfaces and horizontal non traffic surfaces:
 - a.** Control and expansion joints on exposed interior surfaces of exterior walls.
 - b.** Perimeter joints of exterior openings where indicated.
 - c.** Vertical joints on exposed surfaces of walls and partitions.
 - d.** Perimeter joints between interior wall surfaces and frames of interior doors windows.
 - e.** Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - f.** Other joints as indicated.
 - 2. Interior joints in the following horizontal traffic surfaces:
 - a.** Isolation joints in cast-in-place concrete slabs.
 - b.** Other joints as indicated.
- B.** Related Sections include the following:
 - 1. Division 8 Section "Glazing" for glazing sealants.
 - 2. Division 9 Section "Gypsum Board Assemblies" for sealing perimeter joints of gypsum board partitions to reduce sound transmission.
 - 3. Division 9 Section Epoxy Floor Surfacing

1.3 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.

1.4 QUALITY ASSURANCE

- A.** Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.
- B.** Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

1.5 PROJECT CONDITIONS

- A.** Do not proceed with installation of joint sealants under the following conditions:
 - 1.** When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
 - 2.** When joint substrates are wet.
 - 3.** Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4.** Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

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.

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.** Single-Component Non sag Polysulfide Sealant :
 - 1.** Products:
 - a.** Pacific Polymers, Inc.; Elastoseal 230 Type I (Gun Grade).
 - b.** Polymeric Systems Inc.; PSI-7000.
 - 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.
 - a. Use O Joint Substrates: galvanized steel, wood.

C. Multicomponent Nonsag Neutral-Curing Silicone Sealant:

1. Products:
 - a. Dow Corning Corporation; 756 H.P.
2. Type and Grade: M (multicomponent) and P (pourable).
3. Class: 50.
4. Use Related to Exposure: NT (nontraffic).
5. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.
 - a. Use O Joint Substrates: galvanized steel.

D. Single-Component Mildew-Resistant Neutral-Curing Silicone Sealant:

1. Products:
 - a. Pecora Corporation; 898.
 - b. Tremco; Tremsil 600 White.
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.
 - a. Use O Joint Substrates: galvanized steel.

E. Multi-component Non sag Urethane Sealant:

1. Products:
 - a. Sika Corporation, Inc.; Sikaflex - 2c NS TG.
 - b. Sonneborn, Division of ChemRex Inc.; NP 2.
 - c. Tremco; Vulkem 227.
 - d. Tremco; Vulkem 322 DS.
2. Type and Grade: M (multicomponent) and NS (nonsag).
3. Class: 25.
4. Uses Related to Exposure: T (traffic) and NT (nontraffic).
5. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O Joint Substrates: (galvanized steel, wood).
 - a. Joints in swimming pool deck at ceramic tile expansion joints.
 - 1) Products:
 - a) Basis of Design: Tremco Dymeric 240FC
 - b. Joints at stainless steel gutter and pool deck
 - 1) Products:
 - a) Basis of Design: Tremco Dymeric 240FC

2.4 LATEX JOINT SEALANTS

- A.** Latex : Comply with ASTM C 834, Type P, Grade NF.
- B.** Products:
 - 1. Pecora Corporation; AC-20+.
 - 2. Sonneborn, Division of ChemRex Inc.; Sonolac.
 - 3. Tremco; Tremflex 834.

2.5 ACOUSTICAL JOINT SEALANTS

- A.** Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following:
 - 1. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 - 2. Products:
 - a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
 - b. United States Gypsum Co.; SHEETROCK Acoustical Sealant.
- B.** Colors of Exposed Acoustical Joint Sealants: As selected by Architect from manufacturer's full range of colors.
- C.** Acoustical Sealant for Concealed Joints: Manufacturer's standard, nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce airborne sound transmission.
 - 1. Products:
 - 1)Pecora Corporation; BA-98.
 - 2)Tremco; Tremco Acoustical Sealant.
 - 3)Serious Energy Inc.; Quiet Seal 350.

2.6 PREFORMED TAPE SEALANTS

- A.** Back-Bedding Mastic Tape Sealant: Preformed, butyl-based elastomeric tape sealant with a solids content of 100 percent; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape manufacturers for application indicated; packaged on rolls with a release paper backing; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
 - 1. AAMA 804.3 tape, where indicated.
 - 2. AAMA 806.3 tape, for applications in which tape is subject to continuous pressure.
 - 3. AAMA 807.3 tape, for applications in which tape is not subject to continuous pressure.

- B.** Expanded Cellular Tape Sealant: Closed-cell, PVC foam tape sealant; factory coated with adhesive on both surfaces; packaged on rolls with release liner protecting adhesive; and complying with AAMA 800 for the following types:
 - 1. Type 1, for applications in which tape acts as the primary sealant.
 - 2. Type 2, for applications in which tape is used in combination with a full bead of liquid sealant.

2.7 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.

2.8 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: Non staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A.** Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B.** Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A.** Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and

- compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean 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. Porous joint substrates include the following:
 - a. Concrete.
 - b. Masonry.
 3. Remove laitance and form-release agents from concrete.
 4. 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. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
- 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.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General:** Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard:** Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. 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.
- D. 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.

E.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 profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
4. Provide flush joint profile where indicated per Figure 8B in ASTM C 1193.
5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 8C in ASTM C 1193.

a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

F.Installation of Preformed Tapes: Install according to manufacturer's written instructions.

3.4 CLEANING

- A.** 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.

3.5 PROTECTION

- A.** Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 07920

SECTION 08220

FIBERGLASS REINFORCED PLASTIC (FRP) DOORS AND FIBERGLASS RESIN DOOR FRAMES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section Includes The Following:
1. Fiberglass Reinforced Plastic (FRP) Doors
 2. Fiberglass Resin Transfer Molded Door Frames

1.2 RELATED SECTIONS

- A. Related Sections Include The Following:
1. Division 8 – Finish Hardware
 2. Division 8 – Glazing

1.3 QUALITY ASSURANCE

- A. Reference Standards

1. Door Properties
 - a) Standard test method for steady state thermal transmission properties by means of the heat flow meter apparatus.
 - b) Successfully completed 1,000,000 cycles test in accordance with:
AAMA 920-03 – Specification for Operating Cycle Performance of Side-Hinged Exterior Door Systems.
ANSI A250.4-2001 – Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frame Anchors and Hardware Reinforcings.
NWWDA TM-7 Test Method to Determine the Physical Endurance of Wood Doors and Associated Hardware Under Accelerated Operating Conditions.
2. Laminate Properties

Door face plate:

- a) Min. Thickness: 0.125 inch thick fiberglass reinforced plastic molded into one continuous sheet
- b) Min. Weight: Not be less than 0.97 lbs per square foot at a ratio of 30/70 glass resin.
- c) ASTM D 2843 Smoke Density
- d) ASTM D 1929 SELF IGNITION TEMPERATURE PROPERTIES
- e) ASTM C 177 Thermal Properties of Materials
- f) ASTM D 1622 Density and Specific Gravity
- g) ASTM E 84 Surface Burning Characteristics of Materials
- h) WDMA TM-10 and TM-5 Firestop ASTM E 152 U.L 10(b)
- i) ASTM E90-04- Sound Transmission Loss
- j) ASTM E413-04- Classification for Rating Sound Insulation
- k) ASTM E1332-90- Standard Classification for Determination of Outdoor-Indoor Transmission Class

- I) ASTM E2235-04- Standard Test for Determination of Decay Rates for Use in Sound Insulation Methods

B. Qualifications

1. Manufacturer Qualifications:
 - a. Minimum of 15 years documented experience
2. Installer Qualifications: An experienced installer who has completed fiberglass door and frame installations similar in material, design, and extent to those indicated and whose work has resulted in construction with a record of successful in-service performance.
3. Source limitations: Obtain fiberglass reinforced plastic doors and resin transfer molded fiberglass frames through one source fabricated from a single manufacturer, including fire rated fiberglass frames. This ensures complete uniformity of physical properties and consistency in the resin chemistry tailored for this application.
4. Source limitations: Hardware and accessories for all FRP doors as specified in Section 08710 shall be provided and installed by the fiberglass door and frame manufacturer.
5. Source Limitations: Glass for windows in doors shall be furnished and installed by door and frame manufacturer in accordance with related section, Division 8, Glazing.

1.4 SUBMITTALS

A. Product Technical Data Including:

1. Acknowledgment that products submitted meet requirements of standards referenced.
2. Manufacturer shall provide certificate of compliance with current local and federal regulations as it applies to the manufacturing process.
3. Manufacturer's installation instructions.
4. Schedule of doors and frames indicating the specific reference numbers used on contract documents, noting door type, frame type, size, handing and applicable hardware.
5. Details of core and edge construction. including factory construction specifications.
6. Certification of manufacturer's qualifications.

B. Submittal Drawings for Customer Approval Shall be Submitted Prior to Manufacture and will Include the following information and formatting:

1. Door Schedule indicating the specific reference numbers as used on contract drawings, with columns noting door type, frame type, size, handing, accessories and hardware.
2. A drawing depicting front and rear door elevations showing hardware, reinforcement and all other pertinent information.
3. Drawing showing dimensional location of each hardware item and size of each door.
4. Individual part drawing and specifications for each hardware item and FRP part or product.
5. Construction and mounting detail for each frame type.

C. Samples:

1. Provide one complete manufactured door sample which represents all aspects of the typical manufacturing process, including molded in gelcoat color and face plate construction. One edge should expose the interior of the door depicting the stile and rail, hardware reinforcement and core material.

D. Operation and Maintenance Manual

1. Include recommended methods and frequency for maintaining optimum condition of fiberglass doors and frames under anticipated traffic and use condition.
2. Include one set of final as built drawings with the same requirements as mentioned in Section B above.

3. Include certificate of warranty for door and frame listing specific door registration numbers.
4. Include hardware data sheets and hardware manufacturer's warranties.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Each door and frame shall be delivered individually crated for protection from damage in cardboard containers, clearly marked with project information, door location, specific reference number as shown on drawings, and shipping information. Each crate shall contain all fasteners necessary for installation as well as complete installation instructions.

1. Doors shall be stored in the original container on edge, out of inclement weather for protection against the elements.
2. Handle doors pursuant to the manufacturer's recommendations as posted on outside of crate.

1.6 WARRANTY

- A. All fiberglass doors and frames have a lifetime guarantee against failure due to corrosion. Additionally, fiberglass doors and fiberglass frames are guaranteed for ten years against failure due to materials and workmanship, including warp, separation or delamination, and expansion of the core.
- B. On site assistance available.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

- A. Basis of Design: Chem-Pruf Door Co., (Matching existing Doors and frames) Ltd., P.O. Box 4560 Brownsville, Texas 78523 Phone: 1-800-444-6924-7943, Fax: 956-544-7943, Website: www.chem-pruf.com
- B. Substitutions will not be considered

2.2 FRP DOORS

A. Doors

- a. **Material:** fiberglass reinforced plastic (FRP)
 - i. Class 1 premium resin with no fillers that is specifically tailored to resist chemicals and contaminants typically found in environment for which these specifications are written.
- b. Thickness: 1 ¾ inch thick
- c. Construction: Flush seamless
- d. All fiberglass components including face plates, stiles and rails and frames must be fabricated by the same manufacturer.

B. Door Plates

- a. Thickness 0.125 inch minimum
- b. Single piece construction
- c. Gelcoat Finish: 25 mil thickness - Smooth finish
- d. **Door plate weight: Not be less than 0.97 lbs per square foot at a ratio of 30/70 glass to resin.**
- e. **Impact resistance: Plate to withstand Large Missile Impact per FBC TAS 201.**

C. Stiles and Rails

- a. Single continuous molded stile and rail construction
- b. Miterless U Shape Configuration

D. Core

- a. Polypropylene plastic honeycomb core
- b. 180 PSI compression range

E. Internal Reinforcement

- a. #2 SPF of sufficient amount to adequately support required hardware and function of same.

F. Windows

- a. Integral openings shall be provided for at time of manufacture and shall be completely sealed so that the interior of the door is not exposed to the environment.
- b. Glazing stops: Fiberglass
- c. Color: Match color of door

2.3 FRP FRAMES

A. Frames

- a. Material: Fiberglass
- b. Manufacture Process: Resin transfer method
- c. Configuration: Solid one piece construction (no voids permissible)
- d. Metal frames or pultruded fiberglass frames will not be accepted.

B. Finish

- a. Match Finish of Door
- b. Uniform color throughout

C. Internal Reinforcement

- a. Provide continuous reinforcement within frame as required to mount specified hardware.
- b. Reinforcing material:
 - i. Fiberglass
 1. Fastener support: 1000# per fastener

2.4 HARDWARE

- A. See Section 08710
- B. All related hardware as specified must be furnished and installed by the door frame manufacturer

PART 3 – EXECUTION

3.1 INSTALLATION CONDITIONS

- A. Verification of Conditions
 1. Verify openings are correctly prepared to receive doors and frames.
 2. Verify openings are correct size and depth in accordance with submittal drawings.
- B. Installer's Examination
 1. Door installer shall examine conditions under which construction activities of this section are to be performed and submit a written report to general contractor if conditions are unacceptable.
 2. General Contractor shall submit two copies of the installer's report to the architect within 24 hours of receipt.
 3. Installer shall not proceed with installation until all unacceptable conditions have been corrected.

3.2 INSTALLATION

- A. Doors shall be delivered at job site individually crated. Each crate to be clearly marked with the specific opening information for quick and easy identification.

- B. All single doors to be shipped completely assembled in the frame with hardware installed. Double doors to be prehung at the factory to ensure a proper fit and that hardware functions properly, then disassembled for shipping purposes.
- C. Install door opening assemblies in accordance with shop drawings and manufacturer's printed installation instructions, using installation methods and materials specified in installation instructions.
- D. Field alteration of doors or frames to accommodate field conditions is strictly prohibited.
- E. Site tolerances: Maintain plumb and level tolerance specified in manufacturer's printed installation instructions.
- F. Fire labeled doors, frames and any associated hardware must be installed by qualified professional installers in strict accordance with manufacturer's instructions and the latest revision of NFPA 80.

3.3 ADJUSTING

- A. Adjust doors in accordance with the door manufacturer's maintenance instructions to swing open and shut without binding and to remain in place at any angle without being moved by gravitational influence.
- B. Adjust door hardware to operate correctly in accordance with hardware manufacturer's maintenance instruction.

3.4 CLEANING

- A. Clean surfaces of door opening assemblies and exposed door hardware in accordance with respective manufacturer's maintenance instructions.

3.5 PROTECTION OF INSTALLED PRODUCTS

- A. Protect door opening assemblies and door hardware from damage by subsequent construction activities until final inspection.

End of Section
Section 08200

SECTION 08411

ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General Conditions and other Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A.** This Section includes the following:
 - 1.** Exterior aluminum-framed Entrances and Storefronts.
 - a.** Perforated Metal is retained mechanically with gaskets on four sides.
- B.** Related sections include the following:
 - 1.** Section 01351 "Delegated Design", Deferred Submittal
 - 2.** Section 07920, "Joint Sealants" for joint sealants installed as part of aluminum entrance and storefront systems.

1.3 PERFORMANCE REQUIREMENTS

- A.** General: Provide heavy-duty aluminum-framed systems, including anchorage, capable of withstanding, without failure, the effects of the following:
 - 1.** Structural loads.
 - 2.** Thermal movements.
 - 3.** Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
 - 4.** Dimensional tolerances of building frame and other adjacent construction.
 - 5.** Failure includes the following:
 - a.** Deflection exceeding specified limits.
 - b.** Thermal stresses transferred to building structure.
 - c.** Framing members transferring stresses, including those caused by thermal and structural movements, to glazing.
 - d.** Noise or vibration created by wind and thermal and structural movements.
 - e.** Loosening or weakening of fasteners, attachments, and other components.
 - f.** Sealant failure.

g. Failure of operating units to function properly.

- B. Delegated Design:** Design glazed aluminum entrances and storefronts, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- C. Structural Loads:**
 - 1. Wind Loads:** 130 MPH, Exposure B, $I_w=1.15$.
- D. Structural-Test Performance:** Provide aluminum-framed systems tested according to ASTM E 330 as follows:
 - 1.** When tested at positive and negative wind-load design pressures, systems do not evidence deflection exceeding specified limits.
 - 2.** When tested at 150 percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span.
 - 3.** Test Durations: As required by design wind velocity but not less than 10 seconds.

1.4 SUBMITTALS

- A. Product Data:** Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of product indicated.
- B. Shop Drawings:** For aluminum-framed systems. Include plans, elevations, sections, details, and attachments to other work.
- C. Samples for Verification:** For each type of exposed finish required, in manufacturer's standard sizes.
- D. Fabrication Sample:** Of each vertical-to-horizontal intersection of systems, made from 12-inch lengths of full-size components and showing details of the following:
 - 1.** Joinery.
 - 2.** Anchorage.
 - 3.** Expansion provisions.
 - 4.** Glazing.
 - 5.** Flashing and drainage.
- E. Qualification Data:** For Installer.
- F. Product Test Reports:** Based on evaluation of comprehensive tests performed by a qualified testing agency, for aluminum-framed systems.
- G. Maintenance Data:** For aluminum-framed systems to include in maintenance manuals.

- H.** Warranties: Special warranties specified in this Section.

1.5 PROJECT CONDITIONS

- A.** Field Measurements: Verify actual locations of structural supports for aluminum-framed systems by field measurements before fabrication and indicate measurements on Shop Drawings.
- 1.** Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating aluminum-framed systems without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.6 WARRANTY

- A.** Special Assembly Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that deteriorate as defined in this Section within specified warranty period.
- 1.** Failures include, but are not limited to, the following:
- a.** Deterioration of metals and metal finishes, and other materials beyond normal weathering.
 - b.** Adhesive or cohesive sealant failures.
- 2.** Warranty Period: Three years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A.** Exterior Assembly. Basis-of-Design Product: The design for aluminum-framed systems is based on Kawneer Corporation Series 500-501 Thermal Storefront Framing. Subject to compliance with requirements, provide the named product or a comparable product by one of the following:
- 1.** Kawneer, North America; an Alcoa Company.
 - 2.** Pacific Aluminum Corp.
 - 3.** Oldcastle Building Envelope
 - 4.** Wausau Window and Wall Systems

2.2 MATERIALS

- A.** Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
- 1.** Sheet and Plate: ASTM B 209.
 - 2.** Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.

3. Extruded Structural Pipe and Tubes: ASTM B 429.
 4. Structural Profiles: ASTM B 308/B 308M.
- B.** Steel Reinforcement: With manufacturer's standard corrosion-resistant primer complying with SSPC-PS Guide No. 12.00 applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.
1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
 2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
 3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.
- C.** Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not be less than 55 percent.

2.3 EXTERIOR FRAMING SYSTEMS

- A.** Framing Members: Manufacturer's standard 350 IR at entrances, IR 500 extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads. Minimum wall thickness of 0.080 inches. At locations of anchorage, provide 0.125 wall thickness.
1. Glazing System: Retain Perforated metal mechanically with gaskets on four sides.
 2. Glazing Plane: Center
- B.** Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- C.** Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
 2. Reinforce members as required to receive fastener threads.
- D.** Anchors: Three-way adjustable anchors that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.
- E.** Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123/A 123M or ASTM A 153/A 153M requirements.
- F.** Concealed Flashing: Manufacturer's standard corrosion-resistant, non-staining, non-bleeding flashing compatible with adjacent materials.

- G.** Framing Gaskets: As recommended by manufacturer for joint type.
- H.** Framing Sealants: Sealant and joint fillers for joints within glazed aluminum curtain wall system as specified in Division 07, Section "Joint Sealants."

2.4 GLAZING SYSTEMS – (PERFORATED ALUMINUM PANELS)

- A.** Glazing Gaskets: Manufacturer's standard compression types, replaceable, molded or extruded, that maintain uniform pressure and watertight seal.
- B.** Spacers and Setting Blocks: Manufacturer's standard elastomeric types.
- C.** Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.
- D.** Perforated metal panels: Basis of Design: Morin Perforated Panel
 - 1.** Hole Spacing: 3/8"
 - 2.** Aluminum Thickness: .063
 - 3.** Finish: 1.0 mil Kynar 500 (Match color of Bronze anodized metal)
 - 4.** Paint – both sides
 - 5.** Flat Panel

2.5 DOOR SYSTEMS

- 1.** Basis of Design: Kawneer 350 medium stile, 1-3/4" deep door
- 2.** Dula moment welded corner construction
- 3.** Single acting
- 4.** Butt Hinges
- 5.** Surface Mounted Closer
- 6.** Exit device
- 7.** Bronze anodized finish to match storefront

2.6 ACCESSORY MATERIALS

- A.** Panel support frame assembly: Provide 1/2" black HDPE frame at back side of perforated metal panel as illustrated in drawings

2.7 FABRICATION

- A.** Form aluminum shapes before finishing.
- B.** Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- C.** Framing Members, General: Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
 2. Accurately fitted joints with ends coped or mitered.
 3. Means to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.
 4. Physical and thermal isolation of glazing from framing members.
 5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 6. Provisions for field replacement of glazing from exterior.
 7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- D. Mechanically Glazed Framing Members: Fabricate for flush glazing (without projecting stops).
- E. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.
- F. Storefront Framing: Fabricate components for assembly using shear-block system.
- G. Hardware Installation: Factory install hardware to the greatest extent possible. Cut, drill, and tap for factory-installed hardware before applying finishes.
- H. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.8 ALUMINUM FINISHES

- A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- C. Class I, Bronze Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, Bronze coating 0.018 mm or thicker) complying with AAMA 611.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General:

1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure non-movement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
6. Seal joints watertight, unless otherwise indicated.

B. Metal Protection:

1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape or installing nonconductive spacers as recommended by manufacturer for this purpose.
2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.

D. Install components plumb and true in alignment with established lines and grades, without warp or rack.

E. Install perimeter joint sealants as specified in Division 07, Section "Joint Sealants" and to produce weathertight installation.

1. Sealing materials specified shall be used in strict accordance with the manufacturer's printed instructions, and shall be applied only by mechanics specially trained or experienced in their use. All surfaces must be clean and free of foreign matter before applying sealing materials. Sealing compounds shall be tooled to fill the joint and provide a smooth finished surface.

F. Erection Tolerances: Install aluminum-framed systems to comply with the following maximum tolerances:

1. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet; 1/4 inch over total length.
2. Alignment:
 - a. Where surfaces abut in line, limit offset from true alignment to 1/16 inch.
 - b. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch.
3. Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch.

3.3 FIELD QUALITY CONTROL

- A.** Testing Agency: Owner may engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B.** Repair or remove work where test results and inspections indicate that it does not comply with specified requirements.
- C.** Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

END OF SECTION 08411

SECTION 08710

DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY:

- A. Section Includes: Finish Hardware for door openings, except as otherwise specified herein.
 - 1. Door hardware for Fibreglass doors.
 - 2. Door hardware for other doors indicated.
 - 3. Keyed cylinders as indicated.
- B. Related Sections:
 - 1. Division 6: Rough Carpentry.
 - 2. Division 8: Fibreglass Doors.
 - 3. Division 16 Electrical
 - 4. Division 16: Electronic Security
- C. References: Comply with applicable requirements of the following standards. Where these standards conflict with other specific requirements, the most restrictive shall govern.
 - 1. Builders Hardware Manufacturing Association (BHMA)
 - 2. NFPA 101 Life Safety Code
 - 3. NFPA 80 -Fire Doors and Windows
 - 4. ANSI-A156.- Various Performance Standards for Finish Hardware
 - 5. UL10C – Positive Pressure Fire Test of Door Assemblies
 - 6. ANSI-A117.1 – Accessible and Usable Buildings and Facilities
 - 7. DHI /ANSI A115.IG – Installation Guide for Doors and Hardware
 - 8. ICC – International Building Code
- D. Intent of Hardware Groups
 - 1. Should items of hardware not definitely specified be required for completion of the Work, furnish such items of type and quality comparable to adjacent hardware and appropriate for service required.
 - 2. Where items of hardware aren't definitely or correctly specified, are required for completion of the Work, a written statement of such omission, error, or other discrepancy to be submitted to Architect, prior to date specified for receipt of bids for clarification by addendum; or, furnish such items in the type and quality established by this specification, and appropriate to the service intended.
- E. Allowances
 - 1. Refer to Division 1 for allowance amount and procedures.

F. Alternates

1. Refer to Division 1 for Alternates and procedures.

1.2 SUBSTITUTIONS:

- A. Comply with Division 1.

1.3 SUBMITTALS:

- A. Comply with Division 1.

- B. Special Submittal Requirements: Combine submittals of this Section with Sections listed below to ensure the "design intent" of the system/assembly is understood and can be reviewed together.

- C. Product Data: Manufacturer's specifications and technical data including the following:

1. Detailed specification of construction and fabrication.
2. Manufacturer's installation instructions.
3. Wiring diagrams for each electric product specified. Coordinate voltage with electrical before submitting.
4. Submit 6 copies of catalog cuts with hardware schedule.
5. Provide 9001-Quality Management and 14001-Environmental Management for products listed in Materials Section 2.2

- D. Shop Drawings - Hardware Schedule: Submit 6 complete reproducible copy of detailed hardware schedule in a vertical format.

1. List groups and suffixes in proper sequence.
2. Completely describe door and list architectural door number.
3. Manufacturer, product name, and catalog number.
4. Function, type, and style.
5. Size and finish of each item.
6. Mounting heights.
7. Explanation of abbreviations and symbols used within schedule.
8. Detailed wiring diagrams, specially developed for each opening, indicating all electric hardware, security equipment and access control equipment, and door and frame rough-ins required for specific opening.

- E. Templates: Submit templates and "reviewed Hardware Schedule" to door and frame supplier and others as applicable to enable proper and accurate sizing and locations of cutouts and reinforcing.

1. Templates, wiring diagrams and "reviewed Hardware Schedule" of electrical terms to electrical for coordination and verification of voltages and locations.

- F. Samples: (If requested by the Architect)

1. 1 sample of Lever and Rose/Escutcheon design, (pair).
2. 3 samples of metal finishes

- G. Contract Closeout Submittals: Comply with Division 1 including specific requirements indicated.
 - 1. Operating and maintenance manuals: Submit 3 sets containing the following.
 - a. Complete information in care, maintenance, and adjustment, and data on repair and replacement parts, and information on preservation of finishes.
 - b. Catalog pages for each product.
 - c. Name, address, and phone number of local representative for each manufacturer.
 - d. Parts list for each product.
 - 2. Copy of final hardware schedule, edited to reflect, "As installed".
 - 3. Copy of final keying schedule
 - 4. As installed "Wiring Diagrams" for each piece of hardware connected to power, both low voltage and 110 volts.
 - 5. One set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

1.4 QUALITY ASSURANCE

- A. Comply with Division 1.
 - 1. Statement of qualification for distributor and installers.
 - 2. Statement of compliance with regulatory requirements and single source responsibility.
 - 3. Distributor's Qualifications: Firm with 3 years experience in the distribution of commercial hardware.
 - a. Distributor to employ full time Architectural Hardware Consultants (AHC) for the purpose of scheduling and coordinating hardware and establishing keying schedule.
 - b. Hardware Schedule shall be prepared and signed by an AHC.
 - 4. Installer's Qualifications: Firm with 3 years experienced in installation of similar hardware to that required for this Project, including specific requirements indicated.
 - 5. Regulatory Label Requirements: Provide testing agency label or stamp on hardware for labeled openings.
 - a. Provide UL listed hardware for labeled and 20 minute openings in conformance with requirements for class of opening scheduled.
 - b. Underwriters Laboratories requirements have precedence over this specification where conflict exists.
 - 6. Single Source Responsibility: Except where specified in hardware schedule, furnish products of only one manufacturer for each type of hardware.
- B. Review Project for extent of finish hardware required to complete the Work. Where there is a conflict between these Specifications and the existing hardware, notify the

Architect in writing and furnish hardware in compliance with the Specification unless otherwise directed in writing by the Architect.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Packing and Shipping: Comply with Division 1.
 - 1. Deliver products in original unopened packaging with legible manufacturer's identification.
 - 2. Package hardware to prevent damage during transit and storage.
 - 3. Mark hardware to correspond with "reviewed hardware schedule".
 - 4. Deliver hardware to door and frame manufacturer upon request.
- B. Storage and Protection: Comply with manufacturer's recommendations.

1.6 PROJECT CONDITIONS:

- A. Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for the proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents.
- B. Review Shop Drawings for doors and entrances to confirm that adequate provisions will be made for the proper installation of hardware.

1.7 WARRANTY:

- A. Refer to Conditions of the Contract
- B. Manufacturer's Warranty:
 - 1. Closers: Ten years
 - 2. Exit Devices: Five Years
 - 3. Locksets & Cylinders: Lifetime
 - 4. All other Hardware: Two years.
 - 5. Wireless Locks: Three years

1.8 OWNER'S INSTRUCTION:

- A. Instruct Owner's personnel in operation and maintenance of hardware units.

1.9 MAINTENANCE:

- A. Extra Service Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 1 Closeout Submittals Section.
 - 1. Special Tools: Provide special wrenches and tools applicable to each different or special hardware component.
 - 2. Maintenance Tools: Provide maintenance tools and accessories supplied by hardware component manufacturer.

3. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra service materials.
- B. Maintenance Service: Submit for Owner's consideration maintenance service agreement for electronic products installed.

PART 2 - PRODUCTS

2.1 MATERIALS:

- A. Hinges: Shall be Five Knuckle Ball bearing hinges
 1. Template screw hole locations
 2. Bearings are to be fully hardened.
 3. Bearing shell is to be consistent shape with barrel.
 4. Minimum of 2 permanently lubricated non-detachable bearings on standard weight hinge and 4 permanently lubricated bearing on heavy weight hinges.
 5. Equip with easily seated, non-rising pins.
 6. Non Removable Pin screws shall be slotted stainless steel screws.
 7. Hinges shall be full polished, front, back and barrel.
 8. Hinge pin is to be fully plated.
 9. Bearing assembly is to be installed after plating.
 10. Sufficient size to allow 180-degree swing of door
 11. Furnish five knuckles with flush ball bearings
 12. Provide hinge type as listed in schedule.
 13. Furnish 3 hinges per leaf to 7 foot 6 inch height. Add one for each additional 30 inches in height or fraction thereof.
 14. Tested and approved by BHMA for all applicable ANSI Standards for type, size, function and finish
 15. UL10C listed for Fire rated doors.
- B. Mortise Type Locks and Latches:
 1. Tested and approved by BHMA for ANSI A156.13, Series 1000, Operational Grade 1, Extra-Heavy Duty, Security Grade 2 and be UL10C.
 2. Furnish UL or recognized independent laboratory certified mechanical operational testing to 4 million cycles minimum.
 3. Provide 9001-Quality Management and 14001-Environmental Management.
 4. Fit ANSI A115.1 door preparation
 5. Functions and design as indicated in the hardware groups
 6. Solid, one-piece, 3/4-inch (19mm) throw, anti-friction latchbolt made of self-lubricating stainless steel
 7. Deadbolt functions shall have 1 inch (25mm) throw bolt made of hardened stainless steel
 8. Latchbolt and Deadbolt are to extend into the case a minimum of 3/8 inch (9.5mm) when fully extended
 9. Auxiliary deadlatch to be made of one piece stainless steel, permanently lubricated
 10. Provide sufficient curved strike lip to protect door trim

11. Lever handles must be of forged or cast brass, bronze or stainless steel construction and conform to ANSI A117.1. Levers that contain a hollow cavity are not acceptable
12. Lock shall have self-aligning, thru-bolted trim
13. Levers to operate a roller bearing spindle hub mechanism
14. Mortise cylinders of lock shall have a concealed internal setscrew for securing the cylinder to the lockset. The internal setscrew will be accessible only by removing the core, with the control key, from the cylinder body.
15. Spindle to be designed to prevent forced entry from attacking of lever
16. Provide locksets with 7-pin removable and interchangeable core cylinders
17. Each lever to have independent spring mechanism controlling it
18. Core face must be the same finish as the lockset.

C. Basis of Design: BEST Mortise Type Locks

1. Certified by BHMA for ANSI A156.13, Series 1000, Operational Grade 1, Extra-Heavy Duty, Security Grade 2
2. UL10C Listed.
3. Fit ANSI A115.1 door preparation
4. Functions and design as indicated in the hardware groups
5. Solid, one-piece, 3/4-inch (19mm) throw, anti-friction latchbolt made of self-lubricating stainless steel
6. Deadbolt functions shall have 1 inch (25mm) throw bolt made of hardened stainless steel
7. Latchbolt and Deadbolt are to extend into the case a minimum of 3/8 inch (9.5mm) when fully extended
8. Auxiliary deadlatch to be made of one piece stainless steel, permanently lubricated
9. Provide sufficient curved strike lip to protect door trim
10. Lever handles must be of forged or cast brass, bronze or stainless steel construction and conform to ANSI A117.1. Levers that contain a hollow cavity are not acceptable
11. Lock shall have self-aligning, thru-bolted trim
12. Levers to operate a roller bearing spindle hub mechanism
13. Mortise cylinders of lock shall have a concealed internal setscrew for securing the cylinder to the lockset. The internal setscrew will be accessible only by removing the core, with the control key, from the cylinder body.
14. Spindle to be designed to prevent forced entry from attacking of lever
15. Provide locksets with 7-pin removable and interchangeable core cylinders
16. Each lever to have independent spring mechanism controlling it
17. Core face must be the same finish as the lockset
18. Provide Request to Exit (RQE) switch and Door Position switch
19. Provide Latch Position switch and Key Override switch
20. **Provide minimum of (10) cards in format type as specified per lock**

D. Basis of Design: BEST EX Exit Device

1. Certified by BHMA for ANSI 156.3, Grade 1
2. Provide a deadlocking latchbolt

3. Non-fire rated exit devices shall have cylinder dogging.
4. Touchpad shall be "T" style
5. Exposed components shall be of architectural metals and finishes.
6. Lever design shall match lockset lever design
7. Provide strikes as required by application.
8. Fire exit devices to be listed for UL10C
9. UL listed for Accident Hazard
10. Provide Door Position Switch
11. Provide Request to Exit (RQE) switch and Door Position switch TRIM
12. UL Listed A Label for GYQS
13. Battery pack for primary power
14. Visible and audible user indicators
15. 2000 G's RMS shock resistance
16. Weatherproofed for exterior applications
17. Operating temperature of -22 to +140 degrees Fahrenheit

E. Reader / Lock

1. Fit modified ANSI A115.2 door preparation
2. Integrated smart locking device with its own database.
3. Capability to make all decisions at the door.
4. Reader / Lock to be installed within the existing door ANSI cut out. There shall be no need to rout out the door to drive additional power through any electric transfer hinge. All requirements will be met within the reader / lock itself.
5. Wireless Reader shall use an AA battery pack; no AC power shall be required at the door.
6. The reader / lock shall also be able to operate as a fully stand alone intelligent device making all the decisions in real time. In the unlikely event that the reader/lock is offline from the host, it shall continue to operate, storing and recording accesses until it is re-connected and back online to the host. The wireless reader/ lock shall be offered in one of four modes.
 - i. As a self-contained cylindrical, reader / lock.
 - ii. As a self-contained mortise, reader / lock.
 - iii. As a supplemental exit device trim to be added to an existing exit devices.
 - iv. As a wireless access controller interfaced to a hardwired reader and ancillary door devices such as an electric locking device, Request to Exit (RQE) switch, a Door Switch Monitor and a Door lock sense input.
7. For cylindrical lock applications the wireless reader shall provide support for an integral Request to Exit (RQE) and Door Switch Monitor (DS).
8. For mortise lock applications the wireless reader shall provide support for an integral Request to Exit (RQE), Door Switch Monitor (DS), Door Latch Position Switch (LS), and Key Over-ride Sensor (KOS).
9. For exit device application the wireless reader shall provide support for an integral Request to Exit (RQE) switch, Door Position switch (DS) and Latchbolt Position switch (LS).
10. The reader / lock shall support as a minimum the following "reader" technologies:
 - i. Up to a 6-digit user defined PIN number of between 3 and 6 characters in length

- ii. User defined Magnetic Stripe formats on either track 2 or track 3 of the Magnetic Stripe tracks
- iii. Support for 125 KHz. HID and Indala compatible Proximity cards with variable bit formats such that multiple user defined bit formats can be supported at the reader
- iv. Reader shall support a Dual Validation mode consisting of magnetic stripe and pin.
- v. As standard, the reader shall support exterior applications
- vi. Each reader / lock shall have battery power to meet 100,000 lock / transactions
- vii. Each reader lock shall come with a minimum of 2,000 ID capacity, and be able to store locally, if offline, up to 99,000 transactions

F. Reader / Lock database

- 1. The reader shall support 2,000 unique ID's in its standard configuration and be expandable to 65,000. Expansion shall not require a field upgrade at the reader but rather a software key shall be downloaded from the host that shall increase the database size and support up to 65,000 cardholders. The reader shall support up to 99,000 transactions in the event the lock can not communicate to the portal gateway.
- 2. Up to 144 user-defined time zones shall be supported with up to 6 time intervals per time code.
- 3. Up to 32 types of unique user defined holidays shall be supported. Each holiday shall be capable of supporting a different time code.
- 4. A unique set of Access privileges shall be available for each cardholder per reader / lock
- 5. The memory allocation on the reader / lock shall be dynamic such that the user may maximize the size of the available memory to meet their requirements for either ID's or transaction storage
- 6. Time zones shall be able to cross midnight such that a shift beginning at 10:00 PM and ending at 9:00 AM the next morning, will be considered as a single time zone
- 7. The reader/lock shall be able to support an auto-enroll mode where the user may select a reader to be used to enroll a large group of cardholders. This shall be achieved by either bulk loading card ID numbers between a specific range or by presenting a card to a reader that then reads the card data and enrolls the card into the database.

G. Reader / Lock Operation Modes

- 1. The reader will support Access control for a single door with one reader and free egress on the same door
- 2. The reader will monitor a door position status such that it is able to detect door open and door locked and secure. In no event will a separate contact be required to be mounted to the frame of the door and wired back to a separate contact monitoring device. All alarm monitoring at the door / portal will be monitored by the reader / lock itself and shall not require any additional controller support
- 3. The reader shall report any access transaction with the date and time of the event in Hours: Minutes and Seconds

4. The reader locks database shall support up to 7 unique shunt times for specific groups of individuals and meet ADA compatibility requirements for extended shunt times for any single or groups of physically impaired cardholders
5. The reader will support an RQE (Request to Exit) status that will be reported separately as a separate auditable transaction. In the event that an attempt to exit is made, but the door /portal remains closed (secure), then the transaction will not be recorded as a valid RQE and will time out after the shunt time has expired
6. The reader/ lock shall support and transmit a signal if the power to the reader / lock drops below 10%
7. The reader shall support different operation modes based on time zones. Thus a reader may be in a Card only mode in the daytime, but require Card plus PIN after hours. This shall be fully user programmable from the host
8. The reader / lock shall be able to operate in a fully stand alone mode or as a distributed fully intelligent reader/ lock holding the transactions until they are polled
9. The reader / lock shall communicate via spread spectrum radio transmission at 2.4 GHZ
10. The reader / lock shall use as a standard, AES 128 bit encryption between to the nearest non-dedicated Portal Gateway. Portal Gateways shall provide redundant communications capability so that a wireless reader can report to another Portal Gateway if primary reporting path is lost
11. The reader / lock shall report multiple incorrect PIN attempts (greater than 3) as an alarm attempt
12. The proximity reader / lock shall be able to detect the presence of a proximity card, such that the cardholder shall not be required to orient their card in a specific manner to wake up the reader
13. The readers read / response time to an access request shall not exceed 250 Milliseconds worse case
14. Each reader lock shall have it's own unique MAC address.

H. Wireless Access Controller

1. The reader will support Access control for a single door with one reader and free egress on the same door
2. A wireless access controller shall be capable of interfacing with a token reader utilizing a standard Wiegand protocol to unlock various electrified locking hardware such as electric strikes, exit device trim, electro-magnetic locks and other low voltage applications. It shall also serve as a retrofit kit to replace an existing wired infrastructure with a local wireless reader PCB that has the ability to slave to a wired reader and local peripherals at the door
3. Support an existing Request to Exit switch (RQE), Door Position switch and Latchbolt Position switch (LS).
4. Support a locally powered locking device rated up to 4 AMPS at 12/24V DC
5. Auxiliary relay output will be available to drive other door related outputs. This relay shall be rated at 2 AMPS 12/24 V DC
6. The wireless access controller will also have the same feature set of software capabilities as the standard wireless reader for up to 65,000 ID's, 144 Time Zones, variable shunt times for different staff groups, and ADA compliance

7. The wireless access controller will be able to support any Wiegand card format from 16 to 128 bits and shall be able to serve as a log on or enrollment reader where an individual or group of individuals may “badge” into the system and the system will identify their card data so the card can be auto-enrolled
 8. The wireless access controller shall provide wireless communications back to a Portal Gateway such that no separate controllers will be required for decision making. All door related decisions will be made at the wireless access controller local to the reader(s) it serves
 9. All terminations to the wireless access controller shall be through plug in wired block terminals – no special tools will be required to install the unit(s)
 10. The reader shall be able to operate in different modes such that it is able to serve as a smart I/O module supporting I/O functions either as ancillary services to it's primary role as an access control device or as it's sole role. In this mode the wireless access controller shall be able to provide the following:
 - i. As a wireless reader module with support for a dedicated Door Position switch (DS), Latchbolt Position switch (LS), Request to Exit (RQE), and key by pass override with two onboard relays, one rated at 4 Amps for 12/24V DC operation, the other at 2 Amps for 12/24V DC operation
 - ii. Wireless module with 4 supervised inputs, 4 non-supervised inputs, two onboard relays with one rated at 4 Amps for 12/24V DC operation, the other at 2 Amps for 12/24V DC operation
 - iii. As a wireless module with 4 supervised inputs, two onboard relays with one rated at 4 Amps for 12/24V DC operation, the other at 2 Amps 12/24V DC operation plus 4 additional logic driven outputs. In this mode no wireless readers would be supported.
 11. Wireless Access Controller shall come standard with half wave dipole antennas and a ceiling mount omni directional antenna with 20' of cable and all required connectors
- I. Portal Gateways: The portal gateways shall operate in a non-dedicated mode such that any reader / lock shall be able to report to and through any portal gateway. The portal gateways shall accept data from any of the addressed readers and transmit bi-directional encrypted data to the host for archiving and data management. Each portal gateway shall have the following capabilities.
1. Each portal gateway, in base configuration, shall support a minimum of 64 reader / locks in it's antenna range and via system options, be able to support up to 128 reader / locks in a maximum system configuration
 2. Each portal gateway shall have it's own unique MAC address such that, on boot up, the host will find and identify those portal gateways that belong to the system
 3. Every portal gateway shall encrypt the data using 128 BIT AES encryption and send and receive data via spread spectrum RF transmission to and from the host
 4. Nominal transmissions distances between the reader / locks and the portal gateway(s) shall be 250 feet line of sight. Extended range shall be available, if required, using standard commercially available high security RF transport sub-systems
 5. Each portal gateway shall, as an option, have the support of a stand-by power supply

6. Each portal gateway shall support two transmission paths to the host. The user may elect to use standard Ethernet cabling between the portal gateway and the host using a cross over cable. Standard Ethernet using local hubs and routers.
 7. Each portal will have its own static IP address
 8. The portal Gateway shall support secure socket communications between the host(s) / server and any associated Portal Gateway. This shall be user selectable
 9. The portal gateway shall come standard with half wave dipole antennas and a ceiling mount omni directional antenna with 20' of cable and all required connectors.
- J. Hosts / Web Services: The Host's software will run on industry standard, commercially available, computer platforms offered from multiple PC vendors. There shall be no constraints on the PC platform if it meets the minimum specifications listed. The host, Stanley Wi-Q software and B.A.S.I.S., shall use Microsoft Windows 2003 Server as the operating system with a SQL Database and run on a standard, off the shelf computer platform with the following minimum operating specifications
1. A Pentium 4 or equivalent with a 2.0 GHZ processor
 2. A minimum of 512MB RAM and 80GB hard disk shall be required for storage and data management
 3. A USB or Wireless hub with minimum of: 10/100BaseT
 4. The system shall have help screen support for all major functions
 5. The system shall support Multi byte character sets such that translations into non-standard ASCII characters above 128 are fully supported
 6. The system shall support web services such that non-administrative tasks shall be able to be serviced through a standard web browser
- K. Host Software:
1. Support, as standard, 64 readers expandable to unlimited number of readers
 2. Requires a software key generated at the time of installation
 3. Software shall have multiple levels of password protection, such that, Card ID files may restrict visible data to certain approved levels of users
 4. The system shall support 100,000 card holders and be expandable to a virtually unlimited number of cardholders, depending on hard disk storage
 5. The system web services will use industry standard tools and formats such as .NET, SOAP and XML
 6. Software shall support canned reports that are pre-formatted and set up to handle most report tasks. This shall include:
 - i. All alarms at a reader / lock
 - ii. All accesses at a reader lock by date, by time
 - iii. All cardholders in a reader / lock
 - iv. All cardholders at a wireless reader during a certain time frame
 7. The software (Basis of Design: Stanley Wi-Q) shall support a system diagnostic mode that shall be able to monitor in real time the systems wireless reader/locks and Portal Gateways: most report tasks.

- i. This diagnostics tool shall be within the standard Wi-Q application and not require the purchase of additional hardware or components.
- 8. The Diagnostic tool shall be able to address and monitor, as well as allow the user to select, at anytime, a diagnostic mode and capture statistical data on any one of these parameters:
 - i. Firmware in the wireless reader / lock
 - ii. Battery strength in the wireless reader / lock
 - iii. RF signal strength between the wireless reader / lock and it's closest associated Portal Gateway
 - iv. RF signal packet data strength
 - v. Beacon time
- 9. The Software shall support a standard interface to connect directly to BASIS software applications by Stanley. This interface will enable the end user to use BASIS for daily programming tasks.
- L. Cylindrical Deadbolt:
 - 1. Tested and approved by ANSI A156.5, Operational Grade 1,
 - 2. Fit modified ANSI A115.3 door preparation
 - 3. Provide 9001-Quality Management and 14001-Environmental Management.
 - 4. Locksets and cores to be of the same manufacturer to maintain complete lockset warranty
 - 5. 2-3/4 inch (70mm) backset, or 2 3/8 inch backset as needed
 - 6. 1 inch throw deadbolt
 - 7. Provide locksets with 7-pin core.
- M. Mortise Deadbolt:
 - 1. Tested and approved by ANSI A156.5, Operational Grade 1.
 - 2. Provide 9001-Quality Management and 14001-Environmental Management.
 - 3. Locksets and cores to be of the same manufacturer to maintain complete lockset warranty
 - 4. 2-3/4 inch (70mm) backset
 - 5. 1 inch throw deadbolt
 - 6. Provide locksets with 7-pin core.
- N. Exit Devices:
 - 1. Exit devices to meet or exceed BHMA for ANSI 156.3, Grade 1.
 - 2. Exit devices to be tested and certified by UL or by a recognized independent laboratory for mechanical operational testing to 9 million cycles minimum with inspection confirming Grade 1 Loaded Forces have been maintained.
 - 3. Exit devices chassis to be investment cast steel, zinc dichromate.
 - 4. Exit devices to have stainless steel deadlocking $\frac{3}{4}$ " through latch bolt.
 - 5. Exit devices to be equipped with sound dampening on touchbar.
 - 6. Non-fire rated exit devices to have cylinder dogging.
 - 7. Non-fire rated exit devices to have $\frac{1}{4}$ " minimum turn hex key dogging.

8. Touchpad to be "T" style constructed of architectural metal with matching metal end caps.
 9. Touchbar assembly on wide style exit devices to have a 1/4" clearance to allow for vision frames.
 10. All exposed exit device components to be of architectural metals and "true" architectural finishes.
 11. Provide strikes as required by application.
 12. Fire exit hardware to conform to UL10C and UBC 7-2. UL tested for Accident Hazard.
 13. Exit device to be heavy investment cast stainless steel with black powder coated finish.
 14. Exit devices to have field reversible handing.
 15. Provide heavy duty vandal resistant lever trim with heavy duty investment cast stainless steel components and extra strength shock absorbing overload springs. Lever shall not require resetting. Lever design to match locksets and latchsets.
 16. Provide 9001-Quality Management and 14001-Environmental Management.
 17. Vertical Latch Assemblies to have gravity operation, no springs.
 18. Approved Manufacturers
 - a. The following manufacturers will be approved contingent on meeting or exceeding the above performance criteria:
 - 1) Precision Manufactured by Stanley Security Solutions
- O. Door Closers shall:
1. Tested and approved by BHMA for ANSI 156.4, Grade 1
 2. UL10C certified
 3. Provide 9001-Quality Management and 14001-Environmental Management.
 4. Closer shall have extra-duty arms and knuckles
 5. Conform to ANSI 117.1
 6. Maximum 2 7/16 inch case projection with non-ferrous cover
 7. Separate adjusting valves for closing and latching speed, and backcheck
 8. Provide adapter plates, shim spacers and blade stop spacers as required by frame and door conditions
 9. Full rack and pinion type closer with 1 1/2" minimum bore
 10. Mount closers on non-public side of door, unless otherwise noted in specification
 11. Closers shall be non-handed, non-sized and multi-sized.
- P. Door Stops: Provide a dome floor or wall stop for every opening as listed in the hardware sets.
1. Wall stop and floor stop shall be wrought bronze, brass or stainless steel.
 2. Provide fastener suitable for wall construction.
 3. Coordinate reinforcement of walls where wall stop is specified.
 4. Provide dome stops where wall stops are not practical. Provide spacers or carpet riser for floor conditions encountered
- Q. Over Head Stops: Provide a Surface mounted or concealed overhead when a floor or wall stop cannot be used or when listed in the hardware set.
1. Concealed overhead stops shall be heavy duty bronze or stainless steel.
 2. Surface overhead stops shall be heavy duty bronze or stainless steel.

- R. Push Plates: Provide with four beveled edges ANSI J301, .050 thickness, size as indicated in hardware set. Furnish oval-head countersunk screws to match finish.
- S. Pulls with plates: Provide with four beveled edges ANSI J301, .050 thickness Plate s with ANSI J401 Pull as listed in hardware set. Provide proper fasteners for door construction.
- T. Kickplates: Provide with four beveled edges ANSI J102, 10 inches high by width less 2 inches on single doors and 1 inch on pairs of doors. Furnish oval-head countersunk screws to match finish.
- U. Mop plates: Provide with four beveled edges ANSI J103, 4 inches high by width less 1 inch on single doors and 1 inch on pairs of doors. Furnish oval-head countersunk screws to match finish.
- V. Seals: All seals shall be finished to match adjacent frame color. Seals shall be furnished as listed in schedule. Material shall be UL listed for labeled openings.
- W. Weatherstripping: Provide at head and jambs only those units where resilient or flexible seal strip is easily replaceable. Where bar-type weatherstrip is used with parallel arm mounted closers install weatherstrip first.
 - 1. Weatherstrip shall be resilient seal of (Neoprene, Polyurethane, Vinyl, Pile, Nylon Brush, Silicone)
 - 2. UL10C Positive Pressure rated seal set when required.
- X. Door Bottoms/Sweeps: Surface mounted or concealed door bottom where listed in the hardware sets.
 - 1. Door seal shall be resilient seal of (Neoprene, Polyurethane, Nylon Brush, Silicone)
 - 2. UL10C Positive Pressure rated seal set when required.
- Y. Thresholds: Thresholds shall be aluminum beveled type with maximum height of ½" for conformance with ADA requirements. Furnish as specified and per details. Provide fasteners and screws suitable for floor conditions.
- Z. Silencers: Furnish silencers on all interior frames, 3 for single doors, 2 for pairs. Omit where any type of seals occur.

1.10 FINISH:

- A. Designations used in Schedule of Finish Hardware - 3.05, and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18 including coordination with traditional U.S. finishes shown by certain manufacturers for their products
- B. Powder coat door closers to match other hardware, unless otherwise noted.

- C. Aluminum items shall be finished to match predominant adjacent material. Seals to coordinate with frame color.

1.11 KEYS AND KEYING:

- A. Provide keyed brass construction cores and keys during the construction period. Construction control and operating keys and core shall not be part of the Owner's permanent keying system or furnished in the same keyway (or key section) as the Owner's permanent keying system. Permanent cores and keys (prepared according to the accepted keying schedule) will be furnished to the Owner.
- B. Cylinders, removable and interchangeable core system: Best CORMAX™ Patented 7-pin.
- C. Permanent keys and cores: Stamped with the applicable key mark for identification. These visual key control marks or codes will not include the actual key cuts. Permanent keys will also be stamped "Do Not Duplicate."
- D. Transmit Grand Masterkeys, Masterkeys and other Security keys to Owner by Registered Mail, return receipt requested.
- E. Furnish keys in the following quantities:
 - 1. 1 each Grand Masterkeys
 - 2. 4 each Masterkeys
 - 3. 2 each Change keys each keyed core
 - 4. 10 each Construction masterkeys
 - 5. 1 each Control keys
- F. The Owner, or the Owner's agent, will install permanent cores and return the construction cores to the Hardware Supplier. Construction cores and keys remain the property of the Hardware Supplier.
- G. Keying Schedule: Arrange for a keying meeting, and programming meeting with Architect Owner and hardware supplier, and other involved parties to ensure locksets and locking hardware, are functionally correct and keying and programming complies with project requirements. Furnish 3 typed copies of keying and programming schedule to Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of conditions: Examine doors, frames, related items and conditions under which Work is to be performed and identify conditions detrimental to proper and or timely completion.
 - 1. Do not proceed until unsatisfactory conditions have been corrected.

3.2 HARDWARE LOCATIONS:

- A. Mount hardware units at heights indicated in the following publications except as specifically indicated or required to comply with the governing regulations.
 - 1. Recommended Locations for Builder's Hardware for Standard Steel Doors and Frames, by the Door and Hardware Institute (DHI).
 - 2. Recommended locations for Architectural Hardware for flush wood doors (DHI).
 - 3. WDMA Industry Standard I.S.-1A-04, Industry Standard for Architectural wood flush doors.

3.3 INSTALLATION:

- A. Install each hardware item per manufacturer's instructions and recommendations. Do not install surface mounted items until finishes have been completed on the substrate. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- B. Conform to local governing agency security ordinance.
- C. Install Conforming to ICC/ANSI A117.1 Accessible and Usable Building and Facilities.
 - 1. Adjust door closer sweep periods so that from the open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the landing side of the door.
- D. Installed hardware using the manufacturers fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use "Riv-Nuts" or similar products.

3.4 FIELD QUALITY CONTROL AND FINAL ADJUSTMENT

- A. Contractor/Installers, Field Services: After installation is complete, contractor shall inspect the completed door openings on site to verify installation of hardware is complete and properly adjusted, in accordance with both the Contract Documents and final shop drawings.
 - 1. Check and adjust closers to ensure proper operation.
 - 2. Check latchset, lockset, and exit devices are properly installed and adjusted to ensure proper operation.
 - a. Verify levers are free from binding.
 - b. Ensure latchbolts and dead bolts are engaged into strike and hardware is functioning.
 - 3. Report findings, in writing, to architect indicating that all hardware is installed and functioning properly. Include recommendations outlining corrective actions for improperly functioning hardware if required.

3.5 SCHEDULE OF FINISH HARDWARE:

Option List

<u>Code</u>	<u>Description</u>
Q	Wireless Access Management System
CD	CYLINDER DOGGING
RM	For Rim Device
PH2	for Precision 2000 series device
SRI	Special Rust Inhibitor

Finish List

<u>Code</u>	<u>Description</u>
605	Bright Brass, Clear Coated
626	Satin Chromium Plated
630	Satin Stainless Steel
689	Aluminum Painted
GREY	Grey
US32D	Stainless Steel, Dull

Manufacturer List

<u>Code</u>	<u>Name</u>
AB	ABH Manufacturing Inc.
BE	Best Access Systems
PR	Precision
RS	Reese Enterprises Inc.
SD	Stanley Door Closers
ST	Stanley
TR	Trimco

Hardware Groups

Group #1 (102)

3 Hinges	FBF191 4 1/2 X 4 1/2	US32D	ST
1 Exit Device	2103 x V4903 CD	630	PR
1 Rim Cylinder	12E-72 PATD	605	BE
1 Door Closer	CLD-4551 H-EDA	689	SD
1 Kick Plate	KO050 10" x 2" LDW CSK	630	TR
1 Wall Bumper	1270WX	630	TR
3 Door Silencers	1229A	GREY	TR

Group #2 (100)

6 Hinges	FBF199 5 X 4 1/2 NRP	US32D	ST
1 Removable Mullion	KR822	689	PR
1 Exit Device	2103 x V4903 CD	630	PR
1 Exit Device	2102 x V4902 CD	630	PR
1 Rim Cylinder	12E-72 PATD	605	BE
3 Mortise Cylinder	1E-74 PATD	626	BE
2 Door Closer	CLD-4550 EDA	689	SD
2 Floor Stop	1201-5	626	TR
1 Weatherstrip	775A @ Head	RS	
1 Weatherstrip	855A @ Jambs and Mullion	RS	
2 Door Sweep	773A Full Width	RS	
1 Threshold	S473A x MSES10	RS	

Group #3(105,106,112,114,115)

3 Hinges	FBF191 4 1/2 X 4 1/2	US32D	ST
1 Deadlock	48H-7R PATD	626	BE
1 Pull Plate	1017-3B	630	TR
1 Door Closer	CLD-4551 STD W/PA BRKT SRI	689	SD
1 Kick Plate	KO050 10" x 2" LDW CSK	630	TR
1 Push Plate	1001-3	630	TR
1 Wall Bumper	1270WX	630	TR
3 Door Silencers	1229A	GREY	TR

Group #4(108, 110A, 110B)

3 Hinges	FBF191 4 1/2 X 4 1/2	US32D	ST
1 Privacy Set	45H-0L14H VIN	626	BE
1 Kick Plate	KO050 10" x 2" LDW CSK	630	TR
1 Wall Bumper	1270WX	630	TR
3 Door Silencers	1229A	GREY	TR

Group #5 (200)

3 Hinges	FBF191 4 1/2 X 4 1/2	US32D	ST
1 Lockset	45H-7D14H PATD	630	BE
1 Wall Bumper	1270WX	630	TR
3 Door Silencers	1229A	GREY	TR

Group #6 (EX 001)

3 Hinges	FBF191 4 1/2 X 4 1/2	US32D	ST
1 Exit Device	2101	630	BE
1 Cylinder	12E72	630	BE
1 Closer	CLD-4551 STD W/PA BRKT SRI	689	SD

Group #3 ALT (100 – ALT 1)

6 Hinges	FBF199 5 X 4 1/2 NRP	US32D	ST
1 Removable Mullion	KR822	689	PR
1 Exit Device	2102 x V4902 CD	630	PR
1 Exit Device	2103 CD Q	630	PR
1 Electronic Exit Device Trim	EXQ-7EV14PH PATD PH2 RM	626	BE
1 Rim Cylinder	12E-72 PATD	605	BE
3 Mortise Cylinder	1E-74 PATD	626	BE
2 Door Closer	CLD-4550 EDA	689	SD
2 Floor Stop	1201-5	626	TR
1 Weatherstrip	775A @ Head	RS	
1 Weatherstrip	855A @ Jambs and Mullion	RS	
2 Door Sweep	773A Full Width	RS	
1 Threshold	S473A x MSES10	RS	

Group #7 ALT (Mechanical)

1 Electronic Lockset	45HQ-7DV14PH PATD	630	BE

NOTE: Balance of Hardware Existing

Group #8 ALT (Natatorium)

1 Exit Device	2103 CD Q	630	PR
1 Electronic Exit Device Trim	EXQ-7EV14PH PATD PH2 RM	626	BE
1 Mortise Cylinder	1E-74 PATD	626	BE

NOTE: Balance of Hardware Existing

MISC HARDWARE REQUIRED WITH ALT. 1

2 Power Supply	WQD-12927-001	BE	
2 Splitter	WQD-12928-001	BE	
2 Portal Gateway	WQX-PG-C-BP NEMA	BE	
1 Access Management Software	WQS-SWAT	BE	
2 Antenna Kit	WQD-ACMO	BE	
1 Labor & Material	To install Wireless system	BE	
Proximity Card Reader	RDR6081AKU	BE	
1 Cleaning Card Package	VPDCLN	BE	

SECTION 09111

LIGHT GAUGE STEEL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes non-load-bearing steel framing members for the following applications:
 - 1. Interior framing systems (e.g., supports for partition walls)
- B. Related Sections include the following:
 - 1. Division 5 Section "Cold-Formed Metal Framing" for exterior and interior load-bearing and exterior non-load-bearing wall studs; floor joists; roof rafters and ceiling joists; and roof trusses.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 NON-LOAD-BEARING STEEL FRAMING, GENERAL

- A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
 - 1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal, unless otherwise indicated.

2.2 STEEL FRAMING FOR FRAMED ASSEMBLIES

- A. Steel Studs and Runners: ASTM C 645.
 - 1. Minimum Base-Metal Thickness: 0.0312 inch(0.79 mm).
 - 2. Depth: As indicated on Drawings.
 - 3. Coordinate with structural drawings for additional requirements.
- B. Flat Strap and Backing Plate: Steel sheet for

- C. Blocking and bracing in length and width indicated.
 - 1. Minimum Base-Metal Thickness: 0.0312 inch(0.79 mm).
 - 2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches(38.1 by 38.1 mm), 0.068-inch-(1.73-mm-) thick, galvanized steel.

2.3 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
 - 1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754, except comply with framing sizes and spacing indicated.
 - 1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- C. Install bracing at terminations in assemblies.

3.3 INSTALLING FRAMED ASSEMBLIES

- A. Install studs so flanges within framing system point in same direction.
- B. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.

1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
 - a. Install two studs at each jamb, unless otherwise indicated.
 - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch(12.7-mm) clearance from jamb stud to allow for installation of control joint in finished assembly.
 - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
- C. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch(3 mm) from the plane formed by faces of adjacent framing.

END OF SECTION 09111

SECTION 09250

GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Interior gypsum board.
 - 2. Fiberglass faced gypsum board for walls.
- B. Related Sections include the following:
 - 1. Division 9 Section "Non-Load-Bearing Steel Framing" for non-structural framing and suspension systems that support gypsum board.
 - 2. Division 9 painting Sections for primers applied to gypsum board surfaces.

1.3 STORAGE AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

1.4 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
- B. Do not install interior products until installation areas are enclosed and conditioned.
- C. 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.

PART 2 - PRODUCTS

2.1 PANELS, GENERAL

- A. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.2 INTERIOR GYPSUM BOARD

- A. General: Complying with ASTM C 36/C 36M or ASTM C 1396/C 1396M, as applicable to type of gypsum board indicated and whichever is more stringent.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. American Gypsum Co.
 - b. BPB America Inc.
 - c. G-P Gypsum.
 - d. Lafarge North America Inc.
 - e. National Gypsum Company.
 - f. PABCO Gypsum.
 - g. USG Corporation.
 - h. Substitutions allowed in accordance with Division 1 product substitution requirements.
- B. Type X:
 - 1. Thickness: 5/8 inch (15.9 mm).
 - 2. Long Edges: Tapered.

2.3 FIBERGLASS FACED GYPSUM WALL PANELS

- A. Water-Resistant Gypsum Backing Board: ASTM C 630/C 630M or ASTM C 1396/C 1396M.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. American Gypsum Co.
 - b. BPB America Inc.
 - c. G-P Gypsum.
 - d. Lafarge North America Inc.
 - e. National Gypsum Company.
 - f. PABCO Gypsum.
 - g. Temple.
 - h. USG Corporation.

2. Core: As indicated on Drawings; 5/8 inch (15.9 mm), Type X as required by fire-resistance-rated assembly indicated on Drawings.
- B. Glass-Mat, Water-Resistant Backing Board:
1. Complying with ASTM C 1178/C 1178M.
 - a. Product: Subject to compliance with requirements, provide "DensShield Tile Guard" by G-P Gypsum (Basis of Design product). Substitutions allowed in accordance with Division 1 product substitution requirements.
 2. Core: As indicated on Drawings; or 5/8 inch (15.9 mm), Type X.
- C. Areas of Installation
1. Throughout the following rooms where GWB or backer board is indicated
 - a. Men's Shower 107
 - b. Men's Toilet 104
 - c. Men's Locker 105
 - d. Family Locker 110
 - e. Staff 108
 - f. Women's Toilet 116
 - g. Women's Shower 117
 - h. Natatorium 121

2.4 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.
 2. Shapes:
 - a. Cornerbead.
 - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
 - c. Expansion (control) joint.
- B. Exterior Trim: ASTM C 1047.
1. Material: Hot-dip galvanized steel sheet, or rolled zinc.
 2. Shapes:
 - a. Cornerbead.
 - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
 - c. Expansion (Control) Joint: One-piece, rolled zinc with V-shaped slot and removable strip covering slot opening.
- C. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- a. Fry Reglet Corp.
 - b. Gordon, Inc.
 - c. Pittcon Industries.
 - d. Substitutions allowed in accordance with Division 1 product substitution requirements.
2. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221 (ASTM B 221M), Alloy 6063-T5.
3. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified

2.5 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
 1. Interior Gypsum Wallboard: Paper.
 2. Interior Gypsum Soffit Board: Paper (except in wet areas)
 3. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
- C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
 1. Prefilling: At open joints, and damaged surface areas, use setting-type taping compound.
 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping or drying-type, all-purpose compound.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
 3. Fill Coat: For second coat, use setting-type, sandable topping or drying-type, all-purpose compound.
 4. Finish Coat: For third coat, use setting-type, sandable topping or drying-type, all-purpose compound.

2.6 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
- C. Water Proofing over Tile Backer Board: Utilize roll applied rubber polymer over tile backer board.
- D. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
 1. Use screws complying with ASTM C 954 for fastening panels to steel members from **0.033 to 0.112 inch** (**0.84 to 2.84 mm**) thick.

2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.
- E. Vapor Retarder: As specified in Division 7 Section "Building Insulation."

2.7 TEXTURE FINISHES

- A. Primer: As recommended by textured finish manufacturer.
- B. Unaggregated Finish: Water-based, job-mixed, unaggregated, drying-type texture finish for spray application.
 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. G-P Gypsum; Georgia-Pacific ToughRock Wall and Ceiling Texture.
 - b. USG Corporation; SHEETROCK Wall and Ceiling Spray Texture (Unaggregated).
 - c. Substitutions allowed in accordance with Division 1 product substitution requirements.
 2. Texture: Match existing

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames and framing, for compliance with requirements and other conditions affecting performance.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C 840.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than **1/16 inch (1.5 mm)** of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered

edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than **8 sq. ft. (0.7 sq. m)** in area.
 - 2. Fit gypsum panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow **1/4- to 3/8-inch- (6.4- to 9.5-mm-)** wide joints to install sealant.
- G. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

3.3 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
 - 1. Regular Type: Vertical surfaces, unless otherwise indicated.
 - 2. Type X: As indicated on drawings and where required for fire-resistance-rated assembly.
 - 3. Special Type X: As indicated on Drawings and where required for specific fire-resistance-rated assembly indicated.

3.4 APPLYING TILE BACKING PANELS

- A. Glass-Mat, Water-Resistant Backing Panel: Comply with manufacturer's written installation instructions and install at shower rooms, toilet rooms and other locations indicated to receive tile or in high humidity areas as indicated. Install with **1/4-inch (6.4-mm)** gap where panels abut other construction or penetrations.
- B. Apply rubber polymer waterproofing over tile backing panels at areas to receive ceramic tile. Bed waterproofing polymer in fiberglass matting over all joints. Apply polymer at .02" thickness.
 - 1. Redgard
 - 2. Laticrete Hydro Ban
 - 3. Approved Equal

3.5 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints at locations indicated on Drawings according to ASTM C 840 and in specific locations approved by Architect for visual effect.

- C. Interior Trim: Install in the following locations:
 - 1. Cornerbead: Use at outside corners, unless otherwise indicated.
 - 2. LC-Bead: Use at exposed panel edges, unless otherwise indicated.
 - 3. L-Bead: Use where indicated.
 - 4. U-Bead: Use where indicated.
 - 5. .

3.6 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints, and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below:
 - 1. Level 4: At panel surfaces that will be exposed to view, unless otherwise indicated.
 - a. Primer and its application to surfaces are specified in other Division 9 Sections.
 - b. Primer and its application to surfaces are specified in other Division 9 Sections.
- E. Glass-Mat, Water-Resistant Backing Panels: Located at shower rooms, toilet rooms and locker rooms where GWB is being installed.

3.7 PROTECTION

- A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- B. Remove and replace panels that are wet, moisture damaged, and 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.

END OF SECTION 09250

SECTION 09310

CERAMIC TILE

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. Ceramic tile.
 - 2. Thickset application.
 - 3. Metal trim.
- B.** Related Requirements:
 - 1. Section 01600 "Product Requirements" for substitution requirements.
 - 2. Section 07920 "Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
 - 3. Section 09250 "Gypsum Board" for cementitious backer units, glass-mat, water-resistant backer board.

1.3 DEFINITIONS

- A.** General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B.** ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."
- C.** Module Size: Actual tile size plus joint width indicated.
- D.** Face Size: Actual tile size, excluding spacer lugs.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Initial Selection: For tile, grout, and accessories involving color selection.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of product.
- B. Product Test Reports: For tile-setting and -grouting products.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.
 - 2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.7 QUALITY ASSURANCE

- A. Maintain one copy each of all Referenced standards and specifications on site. Include the TCA Handbook, ANSI A108 Series, ANSI A118 Series ANSI A136.1 and ANSI A137.1 and others as specified under paragraph References.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum 10 years experience.
- C. Single Source Responsibility:
 - 1. Obtain each type and color of tile from a single source.
 - 2. Obtain each type and color of mortar, adhesive and grout from the same source.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.

- D. Store liquid materials in unopened containers and protected from freezing.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not install adhesives in an unventilated environment.
- B. Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Tile: Obtain tile from single source or producer.
 - 1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.
 - 1. Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.
- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer:
 - 1. Metal edge strips.

2.2 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
 - 1. Provide tile complying with Standard grade requirements unless otherwise indicated.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.
- C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

- D.** Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.
1. Where tile is indicated for installation on exteriors or in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.
- E.** Substitutions: Tile products are described in the drawings relative to tile size, layout, pattern, and color. Basis of Design products have been used to describe the overall design intent. Substitute products will be considered. Substitute products are required to closely match color, size and pattern qualities described in the drawings.

2.3 TILE PRODUCTS

- A.** Ceramic Tile Schedule: (See drawings for location and configuration)
1. Basis-of-Design Product: Products as indicated below and on interior elevations and floor plans. Subject to compliance with requirements, provide product indicated on Drawings or comparable product.
2. Existing Conditions: Match existing tile size, color and gloss in areas of tile repair and replacement.
3. Dal Tile, Semi-Gloss, Glazed Ceramic Wall Tile, 4 " X 8", Colors:
- a. **CT-1** 4 1/4"x12 3/4" -Modern Dimensions, Arctic White 0190, Semi Gloss
 - b. **CT-2** 4 1/4"x4 1/4" – Glazed Wall Tile, Arctic White 0190, Semi Gloss
 - c. **CT-3** 4 1/4"x4 1/4" – Glazed Wall Tile, Suede Grey 0182, Semi Gloss
 - d. **CT-4B** 4 1/4"x4 1/4" – Glazed Wall Tile, Mustard Q012, Semi Gloss
 - e. **CT-4G** 4 1/4"x4 1/4" – Glazed Wall Tile, Key Lime Q098, Semi Gloss
 - f. **CT-5B** 4 1/4"x4 1/4" – Glazed Wall Tile, Moon Beam Q091, Semi Gloss
 - g. **CT-5G** 4 1/4"x4 1/4" – Glazed Wall Tile, Aqua Glow 0197, Semi Gloss

2.4 SETTING MATERIALS

- A.** Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.02.
1. Cleavage Membrane: Asphalt felt, ASTM D 226/D 226M, Type I (No. 15); or polyethylene sheeting, ASTM D 4397, 4.0 mils (0.1 mm) thick.
2. Latex Additive: Manufacturer's standard water emulsion, serving as replacement for part or all of gaging water, of type specifically recommended by latex-additive manufacturer for use with field-mixed portland cement and aggregate mortar bed.
- B.** Latex-Portland Cement Mortar (Thinset): ANSI A118.4.
1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
- a. Ardex Americas.
 - b. Boiardi Products Corporation; a QEP company.

- c. Bonsal American; an Oldcastle company.
 - d. Bostik, Inc.
 - e. C-Cure.
 - f. Custom Building Products.
 - g. Jamo Inc.
 - h. Laticrete International, Inc.
 - i. MAPEI Corporation.
 - j. Merkrete Systems; Parex USA, Inc.
 - k. Southern Grouts & Mortars, Inc.
 - l. Summitville Tiles, Inc.
 - m. TEC; H. B. Fuller Construction Products Inc.
 - 2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
 - 3. Provide prepackaged, dry-mortar mix combined with liquid-latex additive at Project site.
 - 4. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.
- C. Water-Cleanable, Tile-Setting Epoxy:** ANSI A118.3, with a VOC content of 65 g/L or less., that complies with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- 1. **Basis-of-Design Product:** Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Atlas Minerals & Chemicals, Inc.
 - b. Bonsal American; an Oldcastle company.
 - c. Bostik, Inc.
 - d. C-Cure.
 - e. Custom Building Products.
 - f. Jamo Inc.
 - g. Laticrete International, Inc.
 - h. MAPEI Corporation.
 - i. Merkrete Systems; Parex USA, Inc.
 - j. Southern Grouts & Mortars, Inc.
 - k. Summitville Tiles, Inc.
 - l. TEC; H. B. Fuller Construction Products Inc.
 - 2. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 and 212 deg F (60 and 100 deg C), respectively, and certified by manufacturer for intended use.

2.5 GROUT MATERIALS

- A. Water-Cleanable Epoxy Grout:** ANSI A118.3, with a VOC content of 65 g/L or less.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Laticrete International, Inc.
 - b. MAPEI Corporation.
 - c. Summitville Tiles, Inc.
2. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 and 212 deg F (60 and 100 deg C), respectively, and certified by manufacturer for intended use.

2.6 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Metal Edge Strips: Angle or L-shaped, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; stainless-steel, ASTM A 666, 300 Series exposed-edge material.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Schluter Systems L.P. – Jolly and Quadec Systems
- C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.
- D. Waterproof Membrane:
 1. Laticrete 9235 self curing liquid, 60 mil thickness.
 2. Laticrete Blue 92 Anti Fracture Membrane
 3. Install per manufacturer's written installation instructions behind tile within shower rooms and behind tile at new shower outside Sauna only
- E. Grout Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.
 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Bonsal American, an Oldcastle company; Grout Sealer.
 - b. Summitville Tiles, Inc.
 - c. TEC, H. B. Fuller Construction Products Inc.
 2. Grout sealers shall comply with requirements of FloorScore certification.
 3. Grout sealers shall comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile

Organic Chemical Emissions from Indoor Sources Using Small-Scale Environmental Chambers."

2.7 MIXING MORTARS AND GROUT

- A.** Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B.** Add materials, water, and additives in accurate proportions.
- C.** Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A.** Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 - 1.** Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
 - 2.** Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
 - 3.** Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B.** Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A.** Fill cracks, holes, and depressions in concrete substrates for tile floors installed with adhesives or thinset mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B.** Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 CERAMIC TILE INSTALLATION

- A.** Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
 - 1.** Comply with the following TCNA installation procedures:
 - a.** Tile Walls utilizing thinset products: TCA B420-11
- B.** Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C.** Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D.** Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E.** Where accent tile differs in thickness from field tile, vary setting-bed thickness so that tiles are flush.
- F.** Jointing Pattern: Lay tile in grid pattern or as otherwise indicated in construction documents. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
 - 1.** For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
 - 2.** Where adjoining tiles on walls or trim are specified or indicated to be same size, align joints.
 - 3.** Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on walls or trim, align joints unless otherwise indicated.
- G.** Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
 - 1.** Ceramic Mosaic Tile: 1/8 inch
- H.** Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
- I.** Metal Edge Strips: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile.
- J.** Grout Sealer: Apply grout sealer to cementitious grout joints in tile floors according to grout-sealer manufacturer's written instructions. As soon as grout sealer has

penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.4 TILE BACKING PANEL INSTALLATION

- A.** Install panels and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use latex-portland cement mortar for bonding material unless otherwise directed in manufacturer's written instructions.

3.5 ADJUSTING AND CLEANING

- A.** Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.
- B.** Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1.** Remove grout residue from tile as soon as possible.
 - 2.** Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

3.6 PROTECTION

- A.** Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
- B.** Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

END OF SECTION 09310

SECTION 09512

ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A.** This Section includes acoustical tiles for ceilings and the following:
 - 1.** Concealed suspension systems.
- B.** Related Sections include the following:
 - 1.** Division 9 Section "Acoustical Panel Ceilings" for ceilings consisting of mineral-base and glass-fiber-base acoustical panels and exposed suspension systems.

1.3 DEFINITIONS

- A.** AC: Articulation Class.
- B.** CAC: Ceiling Attenuation Class.
- C.** LR: Light-Reflectance coefficient.
- D.** NRC: Noise Reduction Coefficient.

1.4 SUBMITTALS

- 1.** "
- B.** Product Data: For each type of product indicated.
- C.** Samples for Initial Selection: For components with factory-applied color finishes.

1.5 QUALITY ASSURANCE

- A.** Acoustical Testing Agency Qualifications: An independent testing laboratory, or an NVLAP-accredited laboratory, with the experience and capability to conduct the testing indicated. NVLAP-accredited laboratories must document accreditation,

based on a "Certificate of Accreditation" and a "Scope of Accreditation" listing the test methods specified.

B. Source Limitations:

1. Acoustical Ceiling Tile: Obtain each type through one source from a single manufacturer.
2. Gypsum based Ceiling Tile: Obtain each type through one source from a single manufacturer.
3. Suspension System: Obtain each type through one source from a single manufacturer.

C. Source Limitations: Obtain each type of acoustical ceiling tile and supporting suspension system through one source from a single manufacturer.

D. Fire-Test-Response Characteristics: Provide acoustical tile ceilings that comply with the following requirements:

1. Surface-Burning Characteristics: Provide acoustical tiles with the following surface-burning characteristics complying with ASTM E 1264 for Class C materials as determined by testing identical products per ASTM E 84:
 - a. Smoke-Developed Index: 50 or less.

E. Seismic Standard: Provide acoustical tile ceilings designed and installed to withstand the effects of earthquake motions according to the following:

1. Standard for Ceiling Suspension Systems Requiring Seismic Restraint: Comply with ASTM E 580.
2. Cisca's Recommendations for Acoustical Ceilings: Comply with Cisca's "Recommendations for Direct-Hung Acoustical Tile and Lay-in Panel Ceilings--Seismic Zones 0-2."
3. Cisca's Guidelines for Systems Requiring Seismic Restraint: Comply with Cisca's "Guidelines for Seismic Restraint of Direct-Hung Suspended Ceiling Assemblies--Seismic Zones 3 & 4."
4. UBC Standard 25-2, "Metal Suspension Systems for Acoustical Tile and for Lay-in Panel Ceilings."
5. ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 9, "Earthquake Loads."

1.6 DELIVERY, STORAGE, AND HANDLING

- A.** Deliver acoustical tiles, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

- B.** Before installing acoustical tiles, permit them to reach room temperature and a stabilized moisture content.
- C.** Handle acoustical tiles carefully to avoid chipping edges or damaging units in any way.

1.7 PROJECT CONDITIONS

- A.** Environmental Limitations: Do not install acoustical tile ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
 - 1.** Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical tile ceiling installation.

1.8 COORDINATION

- A.** Coordinate layout and installation of acoustical tiles and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

PART 2 - PRODUCTS

2.1 ACOUSTICAL TILES, GENERAL

- A.** Acoustical Tile Standard: Provide manufacturer's standard tiles of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.
 - 1.** Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches(400 mm) away from test surface per ASTM E 795.
- B.** Acoustical Tile Colors and Patterns: Match appearance characteristics indicated for each product type.
 - 1.** Where appearance characteristics of acoustical tiles are indicated by referencing pattern designations in ASTM E 1264 and not manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full range that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.

2.2 ACOUSTICAL TILES FOR ACOUSTICAL TILE CEILING (TYPE C-1)

Basis of Design Product 1: To be installed in all areas USG Mars ClimaPlus or a comparable product by one of the following or approved.

1. BPB USA;
 2. USG Interiors, Inc.
- B.** Classification: Provide tiles complying with ASTM E 1264 for type, form, and pattern as follows:
1. Type III, mineral base with painted finish; Form 2; Pattern G
 - a. Color: White.
 - b. LR: Not less than 0.86 LR.
 - c. NRC: Not less than 0.70 NRC.
 - d. CAC: Not less than .38 CAC.
 - e. Edge/Joint Detail: Square.
 - f. Thickness: 3/4 inch
 - g. Modular Size: 24x48 inches and 24x24 inches
 - h. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of pre-consumer recycled content not be less than 25 percent.
 - i. Rapidly Renewable Content of Panel Insulation Products: Rapidly Renewable content not be less than 5 percent.

METAL SUSPENSION SYSTEMS, GENERAL

- A.** Seismic Standard: Provide acoustical tile ceilings designed and installed to withstand the effects of earthquake motions according to the following (Seismic Category D):
1. Standard for Ceiling Suspension Systems Requiring Seismic Restraint: Comply with ASTM E 580.
 2. CISCA's Recommendations for Acoustical Ceilings: Comply with CISCA's "Recommendations for Direct-Hung Acoustical Tile and Lay-in Panel Ceilings--Seismic Zones 0-2."
 3. CISCA's Guidelines for Systems Requiring Seismic Restraint: Comply with CISCA's "Guidelines for Seismic Restraint of Direct-Hung Suspended Ceiling Assemblies--Seismic Zones 3 & 4."
 4. UBC Standard 25-2, "Metal Suspension Systems for Acoustical Tile and for Lay-in Panel Ceilings."
 5. ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 9, "Earthquake Loads."
- B.** Metal Suspension System Standard: Provide manufacturer's standard metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.
- C.** Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not be less than 25 percent.
- D.** Finishes and Colors, General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and

designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.

- E.** Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
- F.** Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
 - 1.** Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
 - 2.** Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106-inch-(2.69-mm-) diameter wire.
- G.** Seismic Struts: Manufacturer's standard compression struts designed to accommodate lateral forces.
- H.** Seismic Clips: Manufacturer's standard seismic clips designed and spaced to secure acoustical tiles in-place.

2.3 METAL SUSPENSION SYSTEM FOR ACOUSTICAL TILE CEILING

- A.** Available Manufacturers: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 1.** Armstrong World Industries, Inc
 - 2.** USG Interiors, Inc
- B.** Direct-Hung, Double-Web Suspension System: Main and cross runners roll formed from and capped with cold-rolled steel sheet, prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, G30(Z90) coating designation.
 - 1.** Structural Classification: Heavy-duty system.
 - 2.** Access: Upward and end or side pivoted] with initial access openings of size indicated below and located throughout ceiling within each module formed by main and cross runners, with additional access available by progressively removing remaining acoustical tiles.

2.4 ACOUSTICAL SEALANT

- A.** Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 1.** Acoustical Sealant for Exposed and Concealed Joints:

- a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
 - b. USG Corporation; SHEETROCK Acoustical Sealant.
- B. Adhesive shall [have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).] [comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."]
- C. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing and substrates to which acoustical tile ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical tile ceilings.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical tiles to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width tiles at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION, SUSPENDED ACOUSTICAL TILE CEILINGS

- A. General: Install acoustical tile ceilings to comply with ASTM C 636 and seismic design requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. Suspend ceiling hangers from building's structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.

2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 5. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 6. Do not attach hangers to steel deck tabs.
 7. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 8. Space hangers not more than 48 inches(1200 mm) o.c. along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8 inches(200 mm) from ends of each member.
 9. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.
- D. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- E. Install acoustical tiles in coordination with suspension system and exposed moldings and trim. Place splines or suspension system flanges into kerfed edges so tile-to-tile joints are closed by double lap of material.
1. Fit adjoining tile to form flush, tight joints. Scribe and cut tile for accurate fit at borders and around penetrations through tile.
 2. Hold tile field in compression by inserting leaf-type, spring-steel spacers between tile and moldings, spaced 12 inches(305 mm) o.c.

3.4 CLEANING

- A.** Clean exposed surfaces of acoustical tile ceilings, including trim and edge moldings. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace tiles and other ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09512

SECTION 09653

RESILIENT WALL BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Wall base.
 - 2. Molding accessories.

1.3 SUBMITTALS

- A. Samples for Initial Selection: For each type of product indicated.

1.4 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 manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C).

1.5 PROJECT CONDITIONS

- A. Maintain temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive floor tile during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. After post installation period, maintain temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

- C. Install resilient products after other finishing operations, including painting, have been completed.

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.
 - 1. AFCO-USA, American Floor Products Company, Inc
 - 2. Armstrong World Industries, Inc
 - 3. Azrock Commercial Flooring, DOMCO
 - 4. Burke Mercer Flooring Products
 - 5. Johnsonite
 - 6. Roppe Corporation
 - 7. OR Approved Equal

2.2 COLORS AND PATTERNS

- A. Colors and Patterns: As selected by Architect from manufacturer's full range.
 - 1. **Roppe 123 Charcoal**

2.3 RESILIENT WALL BASE

- A. Wall Base:
 - 1. Style: Cove (with top-set toe).
 - 2. Type: Rubber, vulcanized thermoset
 - 3. Group: solid, homogeneous
 - 4. Minimum Thickness: 0.125 inch
 - 5. Height: 4 inches
 - 6. Lengths: Coils in manufacturer's standard length
 - 7. Outside Corners: Pre-molded.
 - 8. Inside Corners: Job formed
 - 9. Surface: Smooth.

2.4 RESILIENT MOLDING ACCESSORY

- A. Description: Carpet bar for tackless installations, Reducer strip for resilient floor covering, Joiner for tile and carpet.
 - 1. Burke Mercer Flooring Products
 - 2. Johnsonite

3. Marley Flexco (USA), Inc.
 4. Roppe Corporation
- B. Material: Rubber
- C. Profile and Dimensions: As indicated

2.5 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic cement based formulation provided or approved by resilient product manufacturers for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances, moisture content, and other conditions affecting performance.
1. 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.
 2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.
- B. Concrete Substrates for Stair Accessories: Prepare according to ASTM F 710.
1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 2. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
 3. Moisture Testing:

RESILIENT WALL BASE AND ACCESORIES

- a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft.(1.36 kg of water/92.9 sq. m) in 24 hours.
 - b. Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
- C. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
- D. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.
- E. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
 - 1. Do not install resilient products until they are the same temperature as the space where they are to be installed.
- F. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 RESILIENT WALL BASE INSTALLATION

- A. Apply wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- B. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.
- C. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- D. Do not stretch wall base during installation.
- E. Premolded Corners: Install premolded corners before installing straight pieces.
- F. Job-Formed Corners:
 - 1. Inside Corners: Use straight pieces of maximum lengths possible. Form by cutting an inverted V-shaped notch in toe of wall base at the point where corner is formed. Shave back of base where necessary to produce a snug fit to substrate.

3.4 RESILIENT ACCESSORY INSTALLATION

- A. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor coverings that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

- A. Perform the following operations immediately after completing resilient product installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
 - a. Do not wash surfaces until after time period recommended by manufacturer.
- B. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.

END OF SECTION 09653

SECTION 09681 TILE CARPETING

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. Modular, Walk Off carpet tile.
- B.** Related Requirements:
 - 1. Division 02 Section "Selective Structure Demolition" for removing existing floor coverings.
 - 2. Division 09 Section "Resilient Base and Accessories, Resilient Tile Flooring" for resilient wall base and accessories installed with carpet tile.

1.3 SUBMITTALS

- A.** Product Data: For each type of product.
 - 1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
 - 2. Include installation recommendations for each type of substrate.
- B.** Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.
 - 1. Carpet Tile: Full-size Sample.
 - 2. Exposed Edge, Transition, and Other Accessory Stripping: **12-inch-** (300-mm-) long Samples.
- C.** Product Schedule: For carpet tile. Use same designations indicated on Contract Documents.
- D.** Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:
 - 1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
 - 2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.4 QUALITY ASSURANCE

- A.** Installer Qualifications: An experienced installer who is certified by the Floor Covering Installation Board or can demonstrate compliance with its certification program requirements.
- B.** Fire-Test-Response Characteristics: Provide products with the critical radiant flux classification indicated in Part 2, as determined by testing identical products per ASTM E 648 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
- C.** Product Options: Products and manufacturers named in Part 2 establish requirements for product quality in terms of appearance, construction, and performance. Other manufacturers' products comparable in quality to named products and complying with requirements may be considered. Refer to Division 01 Section "Products and Substitutions."
- D.** Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Coordination." Review methods and procedures related to carpet tile installation including, but not limited to, the following:
 - 1. Review delivery, storage, and handling procedures.
 - 2. Review ambient conditions and ventilation procedures.

1.5 DELIVERY, STORAGE, AND HANDLING

- A.** Comply with CRI 104, Section 5, "Storage and Handling".

1.6 INDOOR AIR QUALITY

- A.** Emission Rate Standards: As a minimum, all material shall meet the emission rate standards set forth as follows (Emission rate calculations use 900 cubic feet (ft³) or 25.5 cubic meters (m³) for volume determination of product loading):
 - 1. Formaldehyde Emissions Rate Standard: The product emission rate measured in mg/m²/hr shall not exceed an indoor air concentration level of formaldehyde greater than 0.05 ppm at the anticipated loading (m²/m³ within the building) within 14 days of installation.
 - 2. Total Volatile Organic Compound (VOC) Emissions Rate Standard: The product emission rate measured in mg/m²/hr shall not exceed an indoor air concentration level greater than 0.05 ppm at the anticipated loading (m²/m³ within the building) within 14 days of installation.
 - 3. Phenyl Cyclohexane (4-PC) Emissions Rate Standard: The product emission rate measured in mg/m²/hr shall not exceed an indoor air concentration level greater than 1 ppm at the anticipated loading (m²/m³ within the building) within 14 days of installation.
 - 4. Regulated Pollutant Standard: Any pollutant regulated as a primary or secondary outdoor air pollutant must meet an emission rate standard that will not generate an air concentration greater than that promulgated by the National Ambient Air Quality Standard (US EPA Code of Federal Regulations Title 40, Part 50).

5. Otherwise Unmentioned Pollutant Standard: Any pollutant not specifically mentioned in these specifications shall not exceed an emission rate that will produce an air concentration level greater than 1/10 the Threshold Limit Value (TLV) of the industrial workplace standards, within 14 days of installation.
- B.** For all interior materials, furnishings and finishes the Contractor shall disclose in writing to the Owner prior to installation any detectable amounts of substance emitted into the indoor air which are listed on either:
1. The International Agency for Research on Cancer, List of Carcinogens; or
 2. The Carcinogen List of the National Toxicology Program; or
 3. The Reproductive Toxin List of catalog of Teratogenic Agents.
- C.** Emission rate testing pursuant to this specification shall be according to the dynamic environmental chamber technology as prescribed by the U.S. Environmental Protection Agency (EPA-600/8-89-074) and data shall be made available to the Owner for review and approval.
- D.** All floor removal and/or preparation shall be by hand or machine methods. Solvents and/or chemical removers will not be approved.
- E.** Material Safety Data Sheets (MSDS) on all products must be submitted to the Owner for approval prior to material installation.
- F.** All floor coverings, dry furnishing and materials shall be allowed to "air out" prior to installation in the building.
- G.** Products that do not meet the pollutant emission guidelines or air quality standards set forth in this specification are not approved.

1.7 PROJECT CONDITIONS

- A.** Comply with CRI 104 , Section 7.2, "Site Conditions; Temperature and Humidity" and Section 7.12, "Ventilation."
- B.** Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at occupancy levels during the remainder of the construction period.
- C.** Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.
- D.** Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

1.8 WARRANTY

- A.** A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B.** All of the product related warranties listed below must be submitted as published warranties and presented as sample copies prior to approval. The originals must be signed by an official of the corporation that manufactures the carpeting and submitted to the Owner after installation is complete.
1. Specification Warranty: The manufacturer warrants that the carpet conforms to specifications established for the product identified in the execution section, subject to normal manufacturing tolerances.
 2. Lifetime Wear Warranty: This carpet is warranted by the Manufacturer for indoor commercial use. The manufacturer warrants that the carpet will not wear more than 10% of its surface pile weight from abrasive wear for the life of the carpet from the date of installation. By abrasive wear is meant fiber loss from the carpet through normal abrasion, not crushing or flattening of the carpet pile in any area, nor fiber loss due to abnormal usage of the carpet.
 3. Delamination Warranty: The Manufacturer warrants that the carpet will not delaminate for the life of the carpet.
 4. Tuft Bind: The Manufacturer warrants that its high-performance WOVEN products will provide superior tuft bind capabilities in high-traffic environments for the life of the carpet. Any failure to perform with respect to tuft bind will be independently evaluated, and remedied if a product defect is responsible for substandard performance.
 5. Static Protection Warranty: The Manufacturer warrants that the carpet will not give static discharges in excess of 3.5KV when tested under the AATCC Test Method #134-1979 for the life of the carpet.
 6. Edge Ravel Warranty: The Manufacturer warrants that the carpet will not have continuous ends coming out at seams for the life of the carpet.
 7. Zippering Warranty: The Manufacturer warrants that the carpet will not zipper or develop continuous "pile yarn runners" in the body of the carpet for life of the carpet.
 8. Dimensional Stability Warranty. The Manufacturer warrants that the carpet will not lose its dimensional stability (i.e., growth or shrinkage with either stretch-in or glue-down installations) for the life of the carpet due to normal variations in atmosphere, temperature or humidity.
 9. Impervious to Liquids. The Manufacturer warrants that the carpet will not lose its usable properties for the life of the carpet due to damage from liquids from normal commercial activities, which include but are not limited to such occurrences as spills, cleaning methods, etc.
 10. Liquid Barrier. The Manufacturer warrants that the backing will act as a liquid barrier and keep liquids from penetrating through the backing system, as tested under the British Spill Test, and 10,000 IMPACT TEST for the life of the carpet.
 11. Warranty Period: 10 years from date of Substantial Completion.

1.9 EXTRA MATERIALS

- A.** A. Furnish extra materials described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 2 square yards. Must be of the same dye-lot and run sequence as the remainder of the carpet installed.

PART 2 - PRODUCTS

2.1 CARPET TILE

- A.** Basis of Design Products: Subject to compliance with requirements, supply the following – See Contract Documents for extent, location and patterning:
 - 1. Carpet Tile: Mannington Commercial, Modular Carpet Tile
 - a.** Style name – Take Back
 - b.** Style number – 4521
 - c.** Color name – Restore
 - d.** Size: 24"x24"
 - e.** Fiber – Type 6,6 Post Production Nylon and Scraper Fiber
 - f.** Secondary Backing – Infinity RE Modular
 - g.** Installation: Quarter Turn
 - h.** Warranty – Lifetime Commercial Warranty

2.2 INSTALLATION ACCESSORIES

- A.** Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided by or recommended by the following:
 - 1. Carpet manufacturer.
- B.** Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation.
 - 1. 1. VOC Limits: Provide adhesives with VOC content not more than 50 g/L when calculated according to 40 CFR 59, Subpart D (EPA method 24).
- C.** Metal Edge/Transition Strips: Extruded aluminum with mill finish, 1-1/4" to 1-1/2 " wide, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A.** Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance. Examine carpet tile for type, color, pattern, and potential defects.
- B.** Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A.** General: Comply with CRI 104, Section 6.2, "Site Conditions; Floor Preparation," and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.
- B.** Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions **1/8 inch (3 mm)** wide or wider and protrusions more than **1/32 inch (0.8 mm)** unless more stringent requirements are required by manufacturer's written instructions.
- C.** Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet tile manufacturer.
- D.** Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

- A.** General: Comply with CRI 104, Section 14, "Carpet Modules," and with carpet tile manufacturer's written installation instructions.
- B.** Installation Method: As recommended in writing by carpet tile manufacturer.
- C.** Maintain dye lot integrity. Do not mix dye lots in same area.
- D.** Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- E.** Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- F.** Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, non-staining marking device.

3.4 CLEANING AND PROTECTION

- A.** Perform the following operations immediately after installing carpet tile:
 - 1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
 - 2. Remove yarns that protrude from carpet tile surface.
 - 3. Vacuum carpet tile using commercial machine with face-beater element.
- B.** Protect installed carpet tile to comply with CRI 104, Section 16, "Protecting Indoor Installations."
- C.** Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 09681

SECTION 09705

DECORATIVE QUARTZ FLOORING SYSTEM

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Furnish necessary material, labor, and equipment required to prepare designated areas and install a breathable Decorative Quartz Flooring System.

1.02 RELATED WORK

- A. Drawings and general provisions of contract including General and Special Conditions and Division I, excepting special Submittal and Quality Assurance provisions in this section.

1.03 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:
 - 1. Obtain materials from a single manufacturer with a minimum of 10 years verifiable experience providing materials of the type specified in this section.
- B. Contractor's Qualifications:
 - 1. Installation must be performed by a manufacturer approved contractor with skilled mechanics having not less than three years satisfactory experience in the installation of the type of system as specified in this section, and must be approved in writing by the manufacturer.
- C. Floor System Thickness Verification:
 - 1. At the owner's discretion and under his supervision the contractor shall take (4) 1" random cores per 500 sq. ft. through the system into the substrate to verify proper system thickness.

1.04 WARRANTY

- A. Manufacturer's One year Warranty. The labor and material guarantee shall include loss of bond and wear-through to the concrete substrate from normal use.

1.05 SUBMITTAL

A. Submit manufacturer's specifications on cured system and individual system components including:

- a. Physical properties
- b. Performance properties
- c. Material Safety Data Sheets.
- d. Manufacturer's standard color chart from manufacturer's full range of color options.
- e. 6" x 6" cured system sample which the contractor has made for verification purposes and finish texture approval.
 - i. 3 samples total

B. EXPERIENCE

- a. The contractor shall furnish a list of projects using either specified material or equivalent that they have installed during the last (3) years. Information shall include the following:
 1. Project name
 2. Square footage
 3. Owner
 - a. Contact name
 - b. Owner's address and phone number.
 4. Resumes detailing the experience of key project personnel

1.06 MATERIAL DELIVERY, HANDLING AND STORAGE

A. Primary system materials shall be delivered in the manufacturer's undamaged, unopened containers. Each container shall be clearly marked with the following:

- a. Product name(s) and/or number(s)
- b. Manufacturer's name
- c. Component designation (A, B, etc.)
- d. Product Mix Ratio
- e. Health and Safety Information
- f. Provide equipment and personnel to handle the materials by methods which prevent damage.

1.07 JOB CONDITIONS

A. The contractor shall visit the jobsite prior to beginning the installation of the Flooring System to evaluate substrate condition, including substrate moisture content, and the extent of repairs required, if any. Concrete substrates shall be tested to verify that the moisture content of the substrate does not exceed the manufacturers' recommendations.

- B.** The contractor should exercise care during surface preparation and system installation to protect surrounding substrates and surfaces, as well as in-place equipment. The contractor shall prepare the substrate to remove laitance and open the surface. This shall be achieved by light brush grit blasting. Surface profile achieved shall be similar to medium grit sandpaper and free from bond-inhibiting contaminants. Costs incurred that are associated with damage from negligence or inadequate protection shall be the sole responsibility of the contractor.
- C.** Remove existing floor surfacing to original concrete surface. At area of new drain match slope of existing surface. Each drain in the installation area must be working and raised or lowered to the actual finished elevation of the Flooring System.
- D.** The minimum slab temperature must be conditioned to 40°F before commencing installation, during installation, and for at least 72 hours after installation is complete.
- E.** Minimum uniform installation light level:
 - a. 50 or more foot-candles in areas where the Breathable Decorative Quartz Flooring System is being installed.

PART 2 – PRODUCTS

2.01 MATERIALS

- A.** Basis of Design
 - 1. General Polymers FasTop Ceramic Carpet Flooring System as manufactured by Sherwin-Williams
 - 2. Urethane Slurry System:
 - a. 4080 Binder Resin
 - b. Slurry:
 - i. 5035 Neutral Aggregate
 - c. Bonding Coat:
 - i. 3745 Self-Leveling Epoxy as bonding coat, grout and seal coat
 - d. Non Slip Surfacing
 - i. 5900 Ceramic Quartz for broadcast.
 - 3. Approved Substitute: Arizona Polymers
 - 4. Substitutions: Approved Equal

B. Typical Physical Properties @ 73°F (unless otherwise noted)

Typical Physical Properties

Color Decorative	Pre-Blended Colors,

	Custom color Blends available
Cure Time	Recoat
	8-12 hours
	Foot Traffic
	18-24 hours
	Full Service
	36-48 hours
Abrasion Resistance	20-30 mgs lost
ASTM D 4060, CS-17 Wheel, 1,000 Cycles	
Hardness, Shore D	75
ASTM D 2240	
Tensile Strength	550-600 psi
ASTM C 307	
Compressive Strength	5,000 psi
ASTM C 579	
Flexural Strength	3,700 psi
ASTM C 580	
Impact Resistance	Withstands 16 ft. lbs. without cracking, delamination or chipping
MIL-D-3134, Sec. 4.7.3	

PART 3 - EXECUTION

3.01 SURFACE PREPARATION

Remove all existing surface coatings (Acrylic Surfacing) and prepare existing surface for installation of new flooring surface as recommended by manufacturer.

3.02 INSTALLATION

A. General:

1. Apply each component of the Flooring System in compliance with manufacturer's written installation instructions and strictly adhere to mixing and installation methods, recoat windows, cure times and environmental restrictions.
2. Terminate Floor System at the edge of isolation and expansion joints as designated in the drawings. Integral cove base shall be installed throughout entire area of installation as specified in the drawings.
3. Repair existing surface cracks, control joints, or treatment existing concrete substrates as required for complete install as recommended by manufacturer

3.03 CURING, CLEANING AND PROTECTION

- A.** Cure Flooring System materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of the installation and prior to completion of the curing process.
- B.** Protect the Flooring System from damage and wear during other phases of the construction operation, using temporary coverings as recommended by the manufacturer, if required.

END OF SECTION 09705

SECTION 09720
VINYL / ACRYLIC RIGID SHEET

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes the following types of wall protection systems:
 - 1. Wall Covering

1.02 REFERENCES

- A. National codes (IBC, UBC, SBCCI, BOCA and Life Safety)
- B. American Society for Testing and Materials (ASTM)
- C. Underwriters Laboratories (UL)

1.03 SUBMITTALS

- A. General: Submit the following in accordance with conditions of contract and Division 1 specification section 01330 "Submittal Procedures".
- B. Product data and detailed specifications for each system component and installation accessory required, including installation methods for each type of substrate.
- C. Shop drawings showing locations, extent and installation details of wall covering products.
- D. Samples for verification purposes: Submit the following samples, as proposed for this work, for verification of color, texture, pattern and thickness:
 - 1. Sample of each product specified.
- E. Product test reports from a qualified independent testing laboratory showing compliance of each component with requirements indicated.
- F. Maintenance data for wall protection system components for inclusion in the operating and maintenance manuals specified in Division 1.

1.04 QUALITY ASSURANCE

- A. Installer qualifications: Engage an installer who has no less than 3 years experience in installation of systems similar in complexity to those required for this project.
- B. Manufacturer's qualifications: Not less than 5 years experience in the production of specified products and a record of successful in-service performance.
- C. Code compliance: Assemblies should conform to all applicable codes including IBC, UBC, SBCCI, BOCA and Life Safety.
- D. Fire performance characteristics: Provide wall protection system components with UL label indicating that they are identical to those tested in accordance with ASTM-E84 (CAN/ULC S102.2) for Class 1 characteristics listed below:
 - 1. Flame spread: 25 or less
 - 2. Smoke developed: 450 or less

- E.** Impact Strength: Provide assembled wall protection units that have been tested in accordance with the applicable provisions of ASTM F476.
- F.** Chemical and stain resistance: Provide wall protection system components with chemical and stain resistance in accordance with ASTM D-1308.
- G.** Color match: Provide wall protection components that are color matched in accordance with the following:
 - 1.** Delta Ecmc of no greater than 1.0 using CIELab color space. (Specifier note: Construction Specialties' colors are matched under cool white fluorescent lighting and computer controlled within manufacturing tolerances. Color may vary if alternate lighting sources are present).
- H.** Single source responsibility: Provide all components of the wall protection system manufactured by the same company to ensure compatibility of color, texture and physical properties.

1.05 DELIVERY, STORAGE AND HANDLING

- A.** Deliver materials to the project site in unopened original factory packaging clearly labeled to show manufacturer.
- B.** Store materials in original, undamaged packaging in a clean, dry place out of direct sunlight and exposure to the elements. A minimum room temperature of 40°F (4°C) and a maximum of 100°F (38°C) should be maintained.
- C.** Materials must be stored flat.

1.06 PROJECT CONDITIONS

- A.** Materials must be acclimated in an environment of 65-75°F (18-24°C) for at least 24 hours prior to beginning the installation.
- B.** Installation areas must be enclosed and weatherproofed before installation commences.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A.** KoroSeal
- B.** Inpro, IPC
- C.** Acrovyn
- C.** Approved Equal

2.02 MATERIALS

- A.** Vinyl/Acrylic: Rigid sheet, High Impact
 - 1.** Texture: Matte, texture.
 - 2.** Thickness: nominal .040" thickness.

3. Sheet Size: 4' x 8'
4. Colors:
 - a. RVS-1, Koroguard Standard Colors – Solid Color to be selected
 - b. RVS-2, Koroguard Standard Colors – Fog 48"x96" Locker Room Walls
 - c. RVS-2, Koroguard Standard Colors – Simply White 48"x96" Shower Room Ceiling
5. Sealants: Color-matched caulk and vinyl/acrylic trim as needed for joints/transitions.
6. Trim: Manufactures aluminum trims.

2.03 FABRICATION

- A. General: Fabricate wall covering to comply with requirements indicated for design, dimensions, detail, finish and sizes.

2.04 ACCESSORIES

- A. Wall Covering shall be furnished as a complete packaged system, containing all primers and adhesive. Primer and adhesive materials shall be water based and non-hazardous.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verification of conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.
 1. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Surface preparation: Prior to installation, clean substrate to remove dirt, debris and loose particles. Perform additional preparation procedures as required by manufacturer's instructions.
- B. Protection: Take all necessary steps to prevent damage to material during installation as required in manufacturer's installation instructions.

3.03 INSTALLATION

- A. Install the work of this section in strict accordance with the manufacturer's recommendations, using approved adhesive.
- B. Temperature at the time of installation must be between 65-75°F (18-24°C) and be maintained for at least 48 hours after the installation to allow for adhesive set up.
- C. Relative humidity shall not exceed 80%.
- D. Do not expose wall covering to direct sunlight during or after installation. This will cause the surface temperature to rise, which in turn will cause bubbles and delamination.

3.04 CLEANING

- A.** General: Immediately upon completion of installation, clean wall covering and accessories in accordance with manufacturer's recommended cleaning method.
- B.** Remove surplus materials, rubbish and debris resulting from installation as work progresses and upon completion of work.

3.05 PROTECTION

- A.** Protect installed materials to prevent damage by other trades. Use materials that may be easily removed without leaving residue or permanent stains.

END OF SECTION 09720

SECTION 09726

TACKABLE WALLCOVERING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Resilient cork/linoleum tackable wallcovering.
 - 2. Accessories.

For installation in Pool Office 102

- B. Related Divisions:
 - 1. Division 09900 - Interior Painting

1.2 SUBMITTALS

- A. Comply with Division 01330.
- B. Product data indicating compliance with specified requirements.
- C. Installation Instructions.
- D. Samples: 7 inch (18 centimeter) by 9 inch (23 centimeter) samples of each type of tackable wallcovering material required.

1.3 QUALITY ASSURANCE

- A. Surface Burning Characteristics Classification: Provide materials that meet classification ratings below: ASTM E84 (Flame Spread and Smoke Developed) II/B
- B. Single Source Responsibility: Obtain tackable wallcovering system components from a single source.
- C. Deliver materials in original factory packaging, labeled with manufacturer, brand name, size, color, and lot number.
- D. Store materials in original, undamaged packaging inside a well-ventilated area protected from weather, moisture, soiling, and extreme temperatures. Maintain room temperature within the storage area at not less than 68 degrees Fahrenheit (20 degrees Celsius) during the period materials are stored.
- E. Mock-ups: Prepare mock-ups for architect's review and to establish requirements for seaming and finish trim.
 - 1. Correct areas, modify method of application/installation, or adjust finish texture as directed by architect to comply with specified requirements.
 - 2. Maintain mock-ups accessible to serve as a standard of quality.
 - 3. Install sample panel of each type of wallcovering specified.

4. Install panels in areas designated by architect.

1.4 PROJECT CONDITIONS

Maintain ambient temperature within the building at not less than 68 degrees Fahrenheit (20 degrees Celsius) for a minimum of seventy-two hours prior to beginning of installation.

1. Do not install tackable wallcovering until the space is enclosed and weatherproof.
2. Do not install tackable wallcovering until temperature is stabilized and permanent lighting is in place.

1.5 MAINTENANCE

Maintenance Instructions: Include precautions against cleaning materials and methods that may be detrimental to finishes and performance.

1.6 WARRANTY

Submit manufacturer's limited five-year written warranty against manufacturing defects.

PART 2 - PRODUCTS

2.1 PRODUCTS

- A. Basis of Design
 1. Walltalkers tac wall® resilient, tackable, linoleum surface material as manufactured by KoroSeal, 3875 Embassy Parkway, Fairlawn, Ohio
 2. Width: 48 inch
 3. Gauge: 1/4 inch
 4. Flexible enough to bend around a 2-3/4 inch (7 centimeter) radius.
 5. Homogeneous tackable linoleum surface consisting of linseed oil, granulated cork, rosin binders, and dry pigments calendered onto natural burlap backing. Color shall extend through thickness of material.
 6. **Color: 62 Pewter**
- B. Approved Equal

2.2 ACCESSORIES

- A. Adhesive: Solvent-free, SBR type linoleum adhesive (L-910) or polyvinyl acetate dispersion type (contact adhesive) when used in a press.

- B. Color match caulk:
- C. ¼ inch aluminum trim tackable surface
 - 1. H2XX-00: XX = 08 or 12 for length Clear satin, anodized aluminum, 1/2 inch (13 millimeter) face H Trim
- D. Q-Pins:
 - 1. WTQP-00: 24 Push Pins Black and White.

PART 3 - EXECUTION

3.1 EXAMINATION

Examine areas and conditions in which tackable wallcoverings will be installed.

- 1. Complete finishing operations, including painting, before beginning installation of tackable wallcovering materials.
- 2. Wall surfaces to receive wallcovering materials shall be dry and free from dirt, grease, loose paint, and scale.
- 3. Notify the contractor and architect in writing of any conditions detrimental to the proper and timely completion of the installation.
- 4. Beginning of installation means acceptance of surface conditions.

3.2 PREPARATION

Surface Preparation: Remove hardware, accessories, plates, and similar items to allow tackable wallcovering to be installed.

- 1. Plaster surface: Remove surface chalk. In new work, use moisture meter to determine moisture content. Do not begin installation when moisture content is greater than five percent.
- 2. Gypsum board surface: Recess nails and screws. Repair irregular tape joints, sand and remove dust.
- 3. Painted surface: Remove loose paint or scale. Sand surface of enamel or gloss paint and wipe clean with damp cloth.
- 4. Ensure wall surfaces scheduled to receive tackable wallcovering are properly sealed with a quality primer specified for use under flexible vinyl wallcoverings.

3.3 APPLICATION

- A. Comply with manufacturer's printed installation instructions.
- B. Cut sheets to size including a few inches of overage. Allow sheets to lay flat for at least twenty-four hours prior to the application. Mark roll direction and sequence on the backside of each sheet. Hang sheets in sequence as cut from the roll, do not reverse sheets.

- C. Permanent HVAC system should be set to 68 degrees Fahrenheit (20 degrees Celsius) for at least seventy-two hours prior to, during, and after the installation.
- D. Back roll each sheet prior to the installation to release curl memory.
- E. For seamed applications, using a seam and strip cutter remove the factory edge of one sheet. Using the same tool, overlap and trace cut the mating edge of the second sheet. Repeat this step for as many sheets as required for the job.
- F. Scribe, cut, and fit material to butt tightly to adjacent surfaces, built-in casework, and permanent fixtures and pipes.
- G. Apply adhesive with a 1/16 inch square notch trowel to the area to receiving the sheet (apply enough for one sheet at a time).
- H. Work from top to bottom then side to side. Roll sheet firmly into adhesive for positive contact and to remove air bubbles.
- I. Remove adhesive residue immediately after each panel is hung with a mild soap/water solution and a soft cloth/sponge.

3.4 CLEANING

- A. Clean wallcovering using a sponge with a neutral pH cleaning solution. Do not use abrasive cleaners. Rinse thoroughly with water and let dry before using.
- B. It is important to remove adhesive while wet.

3.5 PROTECTION

Protect installed product and finish surfaces from damage during construction.

END OF SECTION 09726

SECTION 09840
ACOUSTICAL WALL TREATMENT

PART 1 GENERAL

1.01 SCOPE

- A. The requirements of the instructions to Bidders, General Conditions, Supplementary General Conditions and Section apply to all work hereinafter specified.
- B. This section shall include the furnishing of all tools, equipment and labor necessary to complete all acoustical panels work shown on drawings and/or herein specified.
- C. Manufacturer shall furnish acoustical panels complete with hardware to provide complete installation. The acoustical panels hereinafter specified shall be installed by qualified factory trained craftsmen skilled in this trade.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 03300 Cast-in-Place Concrete
- B. Section 06100 Rough Carpentry
- C. Section 06200 Finish Carpentry
- D. Section 09650 Finish Flooring
- E. Section 09680 Carpet
- F. Section 09900 Painting

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM) Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method: ASTM C423-90a and E795-90a.

1.04 SUBMITTALS

- A. One sample of each color material to be used on the project.
- B. Copies of properly identified manufacturer's literature with proposed catalog numbers identified. Complete shop drawings showing elevations of units, locations in the buildings, conditions at openings with wall thickness and materials, typical and special details of construction, location and installation requirements for hardware shape and thickness of materials, joints and connections and material finishes.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to job site and protect unsealed materials from abrasions.
- B. Identify each container with material name and identification number. Store

materials under cover, protected from weather and construction activities.
Safe storage of materials prior to installation is to be the responsibility of the general contractor.

1.06 ACCEPTABLE MANUFACTURERS

The following manufacturers are acceptable if the product bid meets the criteria outlined in the specifications and detailed on the drawings. All others must submit to the architect for approval, no less than 10 days prior to the bidding, sufficient information to show that their product will meet the intent of the specifications: **LB-BOYD WALLCOVERINGS**.

PART 2 PRODUCTS

2.01 ACOUSTICAL WALL PANELS shall match the existing acoustical wall panels.
The existing Acoustical Wall panels are:

1. Ecocore as manufactured by LBI-Boyd Wallcoverings, U.S.A.
2. Match color, construction, fabric and edge detail

2.02 PANEL SIZES: All standard acoustical wall panels shall be 24" (610mm) wide by 48" (1220mm) long. Custom size panels shall be available from the manufacturer to specification in any size up to 48" wide by 96" long.

2.03 PANEL CONSTRUCTION: Panels shall be framed produced from 7 to 7.5 lb. density polyester core with chemically hardened square edges wrapped with LSI stipple Vinyl Wallcovering with a 18% open face perforation pattern. Color to be color matched to existing panels.

2.04 HARDWARE: All mounting hardware suitable for applying the panels to the wall shall be supplied by the manufacturer. There shall be no exposed fasteners or trim.

PART 3 EXECUTION

3.01 EXECUTION

1. Prior to installation, inspect the opening. Surfaces shall be clean and dry. Concrete surfaces shall be free of excess mortar and lumps. Surfaces shall be secure and free of voids..

3.02 PREPARATION

Open containers and verify that all required parts are available and undamaged before disposing of containers. Arrange materials in proper sequence to conform to manufacturer's information and installation instructions.

3.03 INSTALLATION

Installer shall conform to the manufacturer's installation instruction sheets.

3.04 CLEANING

- A. Clean all panel fabric surfaces to remove soil without using abrasive cleaners or solutions containing corrosive solvents.
- B. Remove debris from worksite.

3.05 DEMONSTRATION

- A. After all adjustments, lubrications and clean up, the installer shall demonstrate and instruct the proper operation, function and maintenance procedures for the panels.
- B. Deliver all maintenance manuals to the owner.

END OF SECTION 09840

SECTION 09912

INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes surface preparation and the application of paint systems on the following interior substrates:
 - 1. Gypsum board.
 - 2. Metal Frames

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).

1.4 PROJECT CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Interior Wall Paint
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Sherwin Williams
 - b. Fuller O'Brien
 - c. Devoe Paint, Wonder Pure Label

- d. Rodda
- e. Olympic
- f. PPG

2.2 PAINT, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

2.3 PRIMERS/SEALERS

- A. Interior Latex Primer/Sealer:
 - 1. Kilz low voc interior primer
 - 2. Olympic premium kitchen and bath safecoat

2.4 ACRYLIC PAINTS

- A. Olympic 72902
- B. PPG Aquapon

2.5 EPOXY PAINTS @ locker rooms and shower room GWB

- A. Sherwin Williams – Pro Industrial Water based catalyzed Epoxy
- B. PPG Aquapon

2.6 LATEX PAINTS

- A. Rodda Masterpaint Pearl (563101x)
- B. Sherwin Williams, Emerald Interior Acrylic Latex , Satin

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Gypsum Board: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Vertical Surfaces (Walls)
 - 1. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.
 - 2. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - a. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
 - b. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 - 3. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
 - a. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
 - 4. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions.
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat. Notify Owners Representative between each coat of paint, prior to application of successive coat of paint.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.3 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.4 INTERIOR PAINTING SCHEDULE

- A. Gypsum Board Substrates:
 - 1. Institutional Low-Odor/VOC Latex System: MPI INT 9.2M.
 - a. Prime Coat: Interior latex primer/sealer.
 - b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
 - c. Topcoat: Institutional low-odor/VOC interior latex eggshell.
 - 2. Color Schedule
 - a. PNT-1 General Wall/Ceiling: Benjamin Moore 2124-70 Distant Gray
 - b. PNT-2 Door Frames: Rodda 0539 Place of Dust
 - c. PNT-3 Doors: Rodda 0537 Dove's Wing

END OF SECTION 09912

SECTION 10155

TOILET COMPARTMENTS/ SHOWER STALLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A.** This Section includes solid-polymer units as follows:
 - 1.** Toilet Enclosures: Overhead braced and Floor anchored.
 - 2.** Shower stalls: Overhead braced and Floor anchored.
- B.** Related Sections include the following:
 - 1.** Division 6 Section "Rough Carpentry" for blocking.
 - 2.** Division 10 "Toilet and Bath Accessories" for toilet tissue dispensers, grab bars, purse shelves, and similar accessories.

1.3 SUBMITTALS

- A.** Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B.** Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 - 1.** Show locations of cutouts for compartment-mounted toilet accessories.
- C.** Samples for Initial Selection: For each type of unit indicated.

1.4 QUALITY ASSURANCE

- A.** Comply with requirements in CID-A-A-60003, "Partitions, Toilets, Complete."

1.5 PROJECT CONDITIONS

- A.** Field Measurements: Verify actual locations of walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication and indicate measurements on Shop Drawings.
 - 1.** Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating toilet compartments without field measurements. Coordinate wall, floor, ceilings, and other contiguous construction to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 SOLID-POLYMER UNITS

- A.** Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1.** Accurate Partitions Corporation.
 - 2.** Ampco.
 - 3.** Bradley Corporation; Mills Partitions.
 - 4.** Capitol Partitions, Inc.
 - 5.** Comtec Industries.
 - 6.** General Partitions Mfg. Corp.
 - 7.** Global Steel Products Corp.
 - 8.** Metpar Corp.
 - 9.** Santana Products, Inc.
 - 10.** Sanymetal; a Crane Plumbing Company.
 - 11.** Weis-Robart Partitions, Inc.
- B.** Door, Panel, and Pilaster Construction: Solid, high-density polyethylene (HDPE)] panel material, not less than 1 inch(25 mm) thick, seamless, with eased edges, and with homogenous color and pattern throughout thickness of material.
 - 1.** Color and Pattern: One color and pattern in each room
 - a.** ASI Global Partitions 9201 White
- C.** Pilaster Shoes: Manufacturer's standard design; stainless steel.
- D.** Brackets (Fittings):
 - 1.** Full-Height (Continuous) Type: Manufacturer's standard design; Stainless Steel
- E.** Heat-Sink Strip: Manufacturer's standard continuous, extruded-aluminum strip fastened to exposed bottom edges of solid-polymer components to prevent burning.

- F. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not be less than 100 percent.

2.2 ACCESSORIES

- A. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories.
 - 1. Material: Stainless steel.
- B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with anti-grip profile and in manufacturer's standard finish.
- C. Support Posts for Urinal Screens: Manufacturer's standard aluminum post with floor shoe for anchoring to floor construction.
- D. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel or chrome-plated steel or brass, finished to match hardware, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use hot-dip galvanized or other rust-resistant, protective-coated steel.

2.3 FABRICATION

- A. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, fasteners, and anchors at pilasters to suit floor conditions. Make provisions for setting and securing continuous head rail at top of each pilaster. Provide shoes at pilasters to conceal supports and leveling mechanism.
- B. Floor-Anchored Units: Provide manufacturer's standard corrosion-resistant anchoring assemblies complete with threaded rods, lock washers, and leveling adjustment nuts at pilasters for structural connection to floor. Provide shoes at pilasters to conceal anchorage.
- C. Doors: Unless otherwise indicated, provide 24-inch-(610-mm-) wide in-swinging doors for standard toilet compartments and 36-inch-(914-mm-) wide out-swinging doors with a minimum 32-inch-(813-mm-) wide clear opening for compartments indicated to be accessible to people with disabilities.
 - 1. Hinges: Manufacturer's standard self-closing type that can be adjusted to hold doors open at any angle up to 90 degrees.
 - 2. Latch and Keeper: Manufacturer's standard recessed latch unit designed for emergency access and with combination rubber-faced door strike and keeper. Provide units that comply with accessibility requirements of authorities having jurisdiction at compartments indicated to be accessible to people with disabilities.
 - 3. Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent door from hitting compartment-mounted accessories.

4. Door Bumper: Manufacturer's standard rubber-tipped bumper at out-swinging doors.
5. Door Pull: Manufacturer's standard unit at out-swinging doors that complies with accessibility requirements of authorities having jurisdiction. Provide units on both sides of doors at compartments indicated to be accessible to people with disabilities.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.
 1. Maximum Clearances:
 - a. Pilasters and Panels: 1/2 inch(13 mm).
 - b. Panels and Walls: 1 inch(25 mm).
- B. Overhead-Braced Units: Secure pilasters to floor and level, plumb, and tighten. Secure continuous head rail to each pilaster with not less than two fasteners. Hang doors to align tops of doors with tops of panels and adjust so tops of doors are parallel with overhead brace when doors are in closed position.
- C. Floor-Anchored Units: Set pilasters with anchors penetrating not less than 2 inches(50 mm) into structural floor, unless otherwise indicated in manufacturer's written instructions. Level, plumb, and tighten pilasters. Hang doors and adjust so tops of doors are level with tops of pilasters when doors are in closed position.
- D. Wall-Hung Post-Supported Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb and to resist lateral impact.

3.2 ADJUSTING

- A. Hardware Adjustment: Adjust and lubricate hardware according to manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doorstop return doors to fully closed position.

END OF SECTION 10155

SECTION 10400

IDENTIFYING DEVICES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Types of signage include the following:

1. Interior Sign Types A, B, C Wall-mounted plaque signs,

B. Interior Sign Types:

1. Type A (2-color sign face per Drawings) - Number / Function - Provide Type A signs for all rooms noted. These signs are to be located on the hallway side next to the strike side of the doors. Rooms with more than one door to the hallway are to have a sign at each door. No sign is required at doors between rooms.
2. Type B - Room Function - Provide a Type B sign for all rooms EXCEPT those indicated to receive a Type A sign (as noted above) or those indicated to receive a Type C sign (Toilet rooms - see below). These signs are to be located next to the strike side of the doors on the outside of the room. Rooms with more than one door to an adjoining room or hallway are to have a sign at each door (count pair doors as one). Rooms to receive these signs include all storage, equipment, mechanical/electrical and other miscellaneous spaces..
3. Type C - Restroom - Provide a Type C sign for all rooms noted on the plans as a "Toilet Room," "Rest Room" or otherwise has a toilet in the room.

1.2 QUALITY ASSURANCE

- A.** Provide each sign as a complete unit produced by a single manufacturer.
- B.** Sign finish shall be smooth, free of scratches, gouges and other imperfections. Sign edges shall be straight, smooth and free of cutting marks and other imperfections. Sign material laminations shall be smooth, consistent and free of bubbles, bulging and foreign matter, and shall not delaminate or cause discoloration or deterioration of any materials used in fabrication.
- C.** Qualifications of Sign Fabricator: A sign company which is regularly engaged in the fabrication and installation of specialty signs of the types specified and has been in business for a period of at least two (2) years.

- D. Qualifications of Workers: Layout of messages, and subsequent compositions, shall be accomplished by technicians skilled in lettering and letterspacing, according to the letter interspacing specified. Letterspacing shall be consistent and optically correct.
- E. Substitutions: See Section 01630 for product substitutions.

1.3 SUBMITTALS

- A. Manufacturer's Data: Submit manufacturer's technical data and installation instructions for each type of sign required.
- B. Samples: Review of samples will be for color and texture only. Compliance with other requirements is the exclusive responsibility of the Contractor.
 - 1. Submit samples for approval of the following materials and assemblies prior to proceeding with work:
 - a. Full size mock-up, finished, showing construction methods for sign Types A and B, and Classroom Identification.
- C. Shop Drawings: Submit shop drawings of all sign components, fittings, parts, wiring, and installation procedures showing layout, jointing, and complete anchoring and support systems for the various applications and mounting details. Drawings shall indicate sizes, thickness, finishes of materials and shall include methods of attachment, demonstrating proper anchoring, expansion, and sealing. Drawings shall show provisions for all performance functions described herein. Provide details and sections at full size. Differences from the Contract Documents shall be clearly identified. Submit in accordance with Section 01340. Coordinate attachments with substrate and surrounding materials and products.
- D. Sign Face Patterns: Submit, in duplicate, accurate full-size sign face drawings drawn to accurately show the relationship of all typography and symbols to each other and to the sign border, and a description of method of executing work. Patterns shall be reviewed by the Architect before proceeding with work. Contractor shall allow for rearrangement of the copy and final letterspacing at this stage, in the Contract scope.
- E. Letterspacing: Provide sample of words "Rooms," "Girls," "124" for approval. Use normal spacing.

- F. Typography: Selection of typeface shall be by Architect.
- G. Sign elevations show typical sign messages. See building plans for specific room name at each sign location. Room numbers will be provided by Owner/Architect and may not be those numbers shown on plan. Typical elevations are for layout purposes only. Provide separate shop drawing for each message.
- H. Colors: Sign colors shall be selected by Architect. Colors may deviate from school to school.

1.4 CODES AND STANDARDS

- A. Signage shall meet the requirements of the Americans with Disabilities Act, and ANSI A117.1.
- B. Provide additional copy, raised lettering, etc. to meet all requirements of ADA. Adjust materials as required to satisfy ADA with integrated, monolithic sign. Surface-applied graphics or other surface-applied materials are not acceptable.

1.5 CONSTRUCTION OBSERVATION

- A. All signs shall be inspected and approved by Contractor. On completion of all signs and Contractor's inspection, Architect shall conduct a review prior to installation. Architect's review does not constitute approval of deviations, if any, from the approved sample unless their acceptance is specifically noted.
- B. The factory approval shall in no way relieve the Contractor from the responsibility for damage during installation or satisfactory operation of the signs after installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work including the following manufacturers, or approved:
 - 1. National Sign
 - 2. ASI Sign Systems

3. Architectural Graphics Resource, Inc.
4. Messenger Signs
5. Express Signs

2.2 GRAPHICS

- A. Letterforms for signs in this section shall be as selected by Architect from a minimum of twelve (12) letter styles. Letter, number and word spacing shall be tight but not touching.
- B. All letterforms, and line rules, must be aligned as to maintain a base line parallel to the sign format. Margins must be maintained as shown in sign layout diagrams. All edges of letterforms and line rules shall be sharp and clean. All surfaces of letterforms and line rules shall be without pinholes. All lettering shall be correctly spaced, true and precise.
- C. Graphics shall be raised or depressed from main surface.

2.3 MATERIALS

- A. Plastic Laminate: Provide high-pressure plastic laminate, in finishes and color combinations indicated or, if not indicated, as selected from the manufacturer's standards.
- B. Fasteners: Use tamper-resistant fasteners fabricated from metals that are not corrosive to the sign material and mounting surface.
- C. Anchors and Inserts: Use nonferrous metal or hot-dipped galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete masonry.

2.4 INTERIOR PANEL SIGNS

- A. Basis of Design: Sand carved system, Mohawk Series 200A – Sand Carved or comparable product.
 1. Tactile characters shall be raised the required 1/32" inches from sign face. Glue-on letters or etched backgrounds are not acceptable.

2. All text shall be accompanied by Grade 2 braille. Braille shall be separated 1/2" from the corresponding raised characters or symbols. Grade 2 braille translation to be provided by signage manufacturer.
 3. All letters, numbers and/or symbols shall contrast with their background, either light characters on a dark background or dark characters on a light background. Characters and background shall have a non-glare finish.
- B.** Plaque material shall be melamine plastic laminate, approximately 1/8" thick with contrasting core color. The melamine shall be non-static, fire-retardant and self-extinguishing. The plastic laminate will be impervious to most acids, alkalies, alcohol, solvents, abrasives and boiling water.
- C.** Letterform as selected by Architect.
- D.** Size of letters and numbers shall be as follows:
1. Room numbers shall be 1".
 2. Lettering for room ID signs shall be 3/4".
 3. Symbol size shall be 4".
 4. Standard Grade 2 braille shall be 1/2" below copy.
 5. Copy position: [as indicated on drawings](#).
- E.** Sign Types and Size: See typical sign layouts.

2.5 COPY

- A.** A schedule of copy will be furnished by Architect after receipt of submittal and shall be returned to Contractor with approved signage material submittals.

PART 3 - EXECUTION

3.1 INSPECTION

- A.** Installer must examine the substrate and conditions under which signs are to be installed. Notify the Architect of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

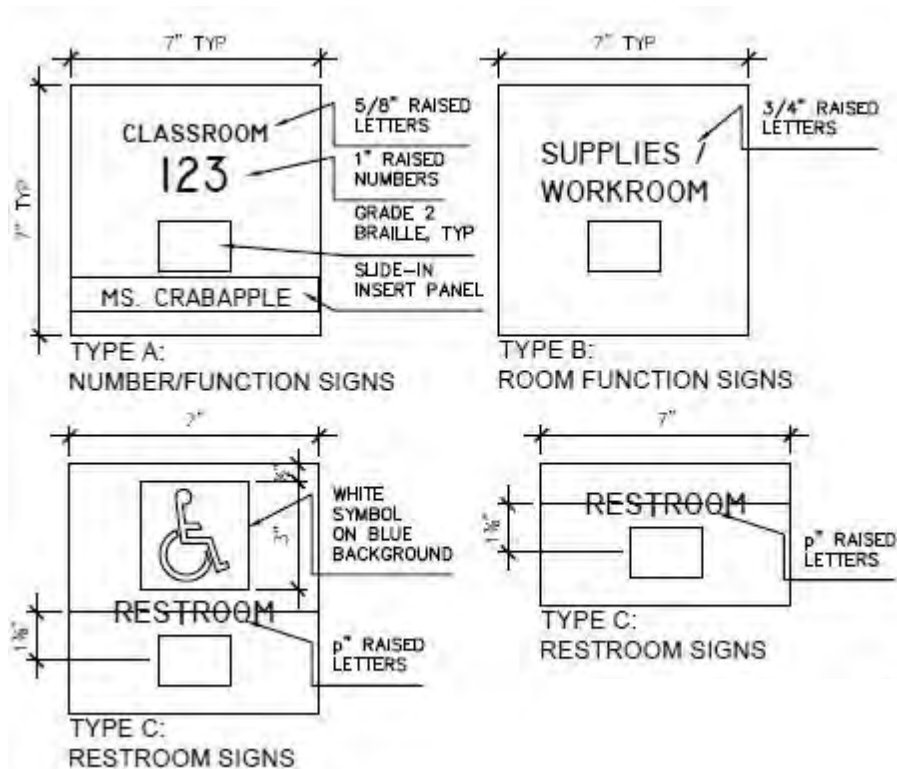
3.2 INSTALLATION

- A.** Examine the substrate and conditions under which the signs are to be installed and verify that all such work is complete for proper installation of the signs. Installer shall notify General Contractor of unsatisfactory conditions; installer shall not proceed until unsatisfactory conditions are corrected.
- B.** Install sign units and components at the locations shown or scheduled, securely mounted. Verify clearance, anchorage methods and final location for each sign before installation. Some reasonable adjustment of location shall be assumed as part of the basic work, at no additional cost.
- C.** Unless prohibited by backing type (ie. Glass), signs shall be mechanically fastened in accord with manufacturer's instructions.
- D.** Install letters and signs level, plumb and in locations and at mounting heights shown. Cooperate with other trades for installation of sign units to finished surfaces.
- E.** Avoid relite/signage conflicts. Do not mount signs on glazing. If mounting on glazing is required than provide blank backer sign that is the same size and color.

3.3 ROOM SIGNAGE SCHEDULE

[illegible]

3.4 ROOM SIGNAGE TYPES



3.5 CLEANING AND PROTECTION

- A. At completion of installation, clean all surfaces in accordance with manufacturer's instructions. Protect units from damage until acceptance by the Owner. Repair or replace damaged units as directed.

END OF SECTION 10400

SECTION 10500

STORAGE LOCKERS AND BENCHES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Storage lockers.
- B. Locker room benches.

1.2 RELATED SECTIONS

- A. Section 06100 - Rough Carpentry
- B. Section 09705 - Epoxy Flooring

1.3 REFERENCES

- A. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- 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: Submit shop drawings indicating room sizes, layout, dimensions, material thickness, size and location of units and unit identification.
- D. Selection Samples: For each finish product specified, two complete sets of plot
- E. color chips representing manufacturer's full range of available colors and patterns.
- F. Verification Samples: For each finish product specified, two samples, minimum size 4 inches (101 mm) square representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Single manufacturer with a minimum of fifteen years experience will provide all primary products specified in this section.
- B. Installer Qualifications: Single installer with a minimum of ten years demonstrated experience in installing products of the same type and scope as specified in this section will install all products listed.
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Finish areas designated by Architect.
 - 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect or Owner.
 - 3. Refinish mock-up area as required to produce acceptable work.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of hazardous materials in accordance with requirements of local authorities having jurisdiction.

1.7 PROJECT CONDITIONS

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

1.8 WARRANTY

- A. At project closeout, provide to the owner representative an executed copy of 15-year warranty against defects in material and 2 years against workmanship signed by an authorized representative.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer:
 - 1. Spec-Rite Designs
 - 2. Approved Equal
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 MATERIALS

- A. Panels: Decorative papers impregnated with the melamine resin on faces with a clear protective overcoat and integrally compression molded within a core consisting of phenolic resin impregnated kraft paper.

1. Fire resistance: Core meets Underwriters Laboratories (UL) Class A fire resistance per ASTM E 84.
 2. Core Color: To Be Selected from Manufacturers Standard Colors
 - a. Interior Color: Manufacturer's standard stocking color range.
 - b. Doors and Ancillary Panels: As selected by the architect from the manufacturer's standard stocking color range.
- B. Doors: 1/2 inch (13 mm) thick solid phenolic composite material.
1. Corners: Rounded.
 2. Edges: Crescent profile; machine polished and free from tooling imperfections.
 3. Limit Arm: Provide stainless steel limit arm to allow maximum opening to 90 degrees.
 4. Door Fastening: Through Bolted.
- C. Bodies:
1. Exposed Edges: Straight profile; eased edges to remove sharpness; machine polished and free from tooling imperfections.
 2. Tops, Bottoms, and Intermediate Shelves: 1/2 inch (13 mm) thick solid phenolic composite material with ventilation holes.
 3. Backs: 1/4 inch (8 mm) thick solid phenolic composite material.
 4. Sides: 3/8 inch (10 mm) thick solid phenolic composite material.
 5. Bench Lid: 1/2 inch (13 mm) thick solid phenolic composite material.
 6. Lower Storage Bottom and Front: 1/2 inch (13 mm) thick solid phenolic composite material with ventilation holes.
- D. Ancillary Panels: Finished end panels and closures fabricated of 1/2 inch (13 mm) thick solid phenolic composite material.
- E. Hardware:
1. Fasteners: Stainless steel - Grade 316.
 2. Reinforcement: Aluminum or metal profiles for reinforcements are not permitted.
 3. Hinges:
 - a. Material: Stainless steel - Grade 316.
 - b. Quantity: Three for full height doors and two for multi-tier units.
 4. Interior Hooks:
 - a. Material: Stainless steel - Grade 316.
 - b. Top Hook: Two-prong; one per opening or 1, 2 and "Z" tiers.
 - c. Side Hook: Single prong; two per opening for 1, 2 and "Z" tiers.
- F. Ventilation:
1. Interior Vent: Provide six 3/8 inch (10 mm) diameter ventilation holes on tops, bottoms, and intermediate shelves. Provide three 3/8 inch (10 mm) diameter ventilation holes on 'Z' type intermediary shelves.
 2. Door Vent: Provide minimum of 20 square inches opening of front ventilation for full tier 12 inches (305 mm) wide by 72 inches (1829 mm) high. For other styles, provide front ventilation 1.43 square inches (9.2 sq cm) per lineal foot (305 mm) of door perimeter.
- G. Base:

1. Curb mounted base furnished by others.
- H. Configuration:
 1. Number of Doors: As Shown on Drawings
 2. Number of Tiers: As Shown on Drawings
 3. Overall Height: As Shown on Drawings
 4. Overall Width: As Shown on Drawings
 5. Overall Depth: As Shown on Drawings

2.3 ACCESSORIES AND OPTIONS

- A. Locking System:
 1. Preparation for padlock.
- B. Unit Top: Flat.
- C. Door Identification:
 1. Number Plates: Brushed Aluminum Disk 1-1/2 inch (38 mm) diameter with permanent adhesive.
 2. Font: Minimum 1/2 inch (13 mm) high and up to four alphanumeric characters.
 3. Numbering sequence to be provided by architect.
- D. Hang Rod: Chrome plated zinc, galvanized, cadmium-coated steel.
- E. Additional Door Ventilation:
 1. Holes through door in a circular pattern.
- F. ADA Accessibility: Provide the following options.
 1. Shelf Kit: Acts as false bottom to meet reach range requirements.
 2. Door Kit: Includes additional door handle to meet door pull requirements and includes handicap signage, logo, or similar identification.

2.4 SOLID PHENOLIC BENCHES

- A. Integral H-frame: 2 inch by 2 inch (51 mm x 51 mm) powder coated aluminum frame adjustable from 18 inch (457 mm) to 22 inch (559 mm) high, with minimum of 1/2 inch (13 mm) thick bench top, 13 inch (330 mm) wide bench top.
- B. Bench Schedule:

Identifier	Mounting	Size	Location
B1	Floor Mounted	12"x6'	(2) Mens Locker 106 (4) Womens Locker 114
B2	Wall Mounted ADA	22"x4'	(1) Mens Locker 106 (1) Family Locker 110

B3	Floor Mounted ADA	22"x4'	(1) Womens Locker 114
B4	Floor Mounted	12"x5'	(1) Mens Locker 106
B5	Floor Mounted	15"x36"	(1) Staff Locker 100

2) EXECUTION

a. EXAMINATION

- i. Do not begin installation until substrates have been properly prepared.
- ii. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

b. PREPARATION

- i. Clean surfaces thoroughly prior to installation.
- ii. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

c. INSTALLATION

- i. Install in locations as shown on contract drawings in accordance with manufacturer's instructions.
- ii. Install plumb, level, square, rigid, and flush.
- iii. Install all required trim, fillers, end panels, and closures per manufacturer's instructions.
- iv. Use hardware supplied or recommended by the manufacturer.
- v. Attach number plates to doors as indicated on shop drawings.

d. CLEANING AND ADJUSTMENT

- i. Clean all surfaces in accordance with manufacturer's instructions. Do not use abrasive cleaners.
- ii. Adjust doors and locks for smooth operation without binding.
- iii. Lubricate door hinges and locks per manufacturer's instructions.

e. PROTECTION

- i. Protect installed products until completion of project.

- ii. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 10500

SECTION 10800

TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A.** This Section includes the following:
 - 1. Washroom accessories.
 - 2. Owner Furnished Contractor Installed (OFCI) washroom accessories, including existing washroom accessories.
 - 3. Under lavatory guards.
- B.** Related Sections include the following:
 - 1. Division 09301 "Ceramic Tile"
 - 2. Division 09720 "Vinyl Acrylic Wall Panels"

1.3 SUBMITTALS

- A.** Product Data: For each type of product indicated. Include the following:
 - 1. Construction details and dimensions.
 - 2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
 - 3. Material and finish descriptions.
 - 4. Features that will be included for Project.
 - 5. Manufacturer's warranty.

1.4 COORDINATION

- A.** Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B.** Coordinate and install required blocking in wall.

1.5 WARRANTY

- A.** Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.
 - 1.** Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A.** Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.0359-inch(0.9-mm) minimum nominal thickness.
- B.** Galvanized Steel Sheet: ASTM A 653/A 653M, with G60(Z180) hot-dip zinc coating.
- C.** Galvanized Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.
- D.** Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.
- E.** Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).
- F.** Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.
- G.** ABS Plastic: Acrylonitrile-butadiene-styrene resin formulation.

2.2 PUBLIC-USE WASHROOM ACCESSORIES

- A.** Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1.** American Specialties, Inc.
 - 2.** Bobrick Washroom Equipment, Inc.
 - 3.** Bradley Corporation.
- B.** Toilet Tissue (Roll) Dispenser (OFCI):
 - 1.** Basis of Design: Georgia Pacific, 59206
 - a.** Two roll
 - b.** Side by side
 - c.** Color: Translucent Smoke
 - d.** Mounting: Surface mounted.

- C. Sanitary Napkin Disposal: (OFCI):**
1. Basis of Design: Hospeco Product No. ND-1W
 2. Description: Surface Mounted Sanitary Napkin Disposal
 3. Mounting: Recessed
 4. Size: 11.6"x8.25"x4.5"
 5. Material and Finish: Galvanized Sheet Metal , Primed and Painted
- D. Paper Towel Dispenser (OFCI)**
1. Georgia Pacific Max 3000 Single Roll Towel Dispenser (Y Series)
 2. Description: Wall Mounted Towel Dispenser
 3. Mounting: Surfaced Mounted
 4. Size 13.75"x9.5"x13.625" (LxWxH)
 5. Material and Finish: Plastic
- E. Liquid-Soap Dispenser (OFCI) :**
1. Basis of Design: Deb ProLine Curve Dispenser (Item no. 750615)
 2. Description: Designed for dispensing soap in liquid or lotion form.
 3. Mounting: Horizontally oriented, surface mounted.
 4. Capacity: 1L
 5. Materials: Plastic
- F. Grab Bar (CFCI):**
1. Basis of Design: American Specialties 3700P series
 2. Mounting: Flanges with fasteners.
 3. Material: Stainless steel, 0.05 inch (1.3 mm) thick.
 - a. Finish: Smooth, No. 4, satin finish on ends and slip-resistant texture in grip area.
 4. Outside Diameter: 1-1/2 inches (38 mm)].
 5. Configuration and Length:
 - a. As illustrated on drawings
 - 1) 36" length
 - 2) 42" length
 6. Provide eschuteon plates at end of bars.
- G. Swing Up Grab Bar (CFCI)**
1. Basis of Design: Bobrick B-4998.99
 2. Mounting: Flange with fasteners (contractor to provide all blocking as required)
 3. Material: Stainless steel, 0.05 inch (1.3 mm) thick.
 - a. Finish: Smooth, No. 4, satin finish on ends and slip-resistant texture in grip area.
 4. Outside Diameter: 1-1/4 inches (32 mm)].
 5. Configuration and Length:
 - a. As illustrated on drawings
 - 1) 29" length

- H. Mirror Unit(s)
 - a. Basis of Design: Bradley 780
 - b. M1: 60"x36" Field Verify Width – Fill entire width of opening @ Mens 106, Womens, 104
 - c. M2. 18"x36" @ Family 110
 - 1. Frame: One Piece Stainless-steel angle, 0.75x.75 Stainless Steel.
 - a. Corners: Manufacturer's standard.
 - 2. Hangers: Produce rigid, 18 Ga. tamper- and theft-resistant installation, using method indicated below.
 - a. One-piece, galvanized steel, wall-hanger device with spring-action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
 - b. Wall bracket of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.
- I. ADA Folding Shower Seat
 - a. Basis of Design: Bobrick B-5191
 - b. Install per manufacturer's instructions.
- J. Hand / Hair Dryer
 - 1. Basis of Design: Excel Hand Dryer (HO-IC)
 - 2. Hand or Hair Dryer: Warm air electric hand dryer; push-button; Hands On series; entire dryer internally grounded.
 - a. **Warranty Period:** 10 years; unlimited warranty
 - b. **Controls,** Hand Dryers: Push button; electronic timer with adjustable time cycle; set to 30 seconds.
 - c. **Controls,** Hair Dryers: Push button; electronic timer with adjustable time cycle; set to 3 minutes.
 - d. **Cover:** One piece, heavy duty, rust-resistant, rib-reinforced, die-cast zinc alloy. Recessed instruction plate.
 - e. **Nozzle:** 360 degree revolving, chrome plated nozzle.
 - f. **Push Button:** Die-cast, chrome plated, zinc alloy push button.
 - g. **Air Intake:** Perforated metal screen fixed to cover; designed to keep foreign
 - h. **Mounting:** Surface, mounted on cast zinc alloy wall plate, with four 5/16 inch (8 mm) diameter holes for surface mounting to wall and three 7/8 inch (22mm) diameter holes for electrical wiring; bottom hole suitable for surface conduit.
 - a. Nominal Size: 10-3/4 inches (273 mm) wide by 8 inches (203 mm) high by 10-1/8 inches (257 mm) deep including nozzle.
 - b. Weight: 18 pounds (8.1 kg).
 - i. **Power Source:** 110/120 volt, 20 amp, 60 Hz.
 - j. **Motor:** 60 Hz. Capacitor-initiated; brushless, for longer life and quiet operation; 1/10 HP, 3,450 RPM; self-lubricating bearings; self-resetting thermal protection.

- k. **Blower Fan:** Single inlet centrifugal, 150 cubic feet per minute (0.071 cubic meters per second); mounted on motor shaft; insulated with resilient rubber mounting to obtain maximum sound and vibration dampening.
 - l. **Heater:** Nichrome wire element, side mounted on blower housing to be vandal proof.
 - m. **Air Temperature:** 145 degrees F (63 degrees C).
 - n. All metal parts coated according to Underwriters Laboratories, Inc. requirements.
 - o. Mount dryers at heights indicated on Drawings.
- K. Wall Hooks**
- 1. Basis of Design: Safco
 - a. Chrome plated double steel hooks with ball tips
 - b. Wall mounting hardware
 - c. 48" length at Mens and Womens Lockerroom Safco 4162
 - d. 16" length in Family and Staff Changing Rooms – Safco 4161
- L. Ceiling Mounted Shower Rods**
- 1. Basis of Design: Trax
 - a. Track: Extruded 1-3/8" aluminum alloy, U-Shaped, Ceiling mount and Rust-Proof
 - b. Finish: Brushed Aluminum
 - c. Mount: Flush to Ceiling
 - d. No stops allowed in track
 - e. Size: Match layout on drawings
 - f. Radius: 12" curves to define corners
 - g. Rolling Carriers" Nylon, formed nickel plated steel swivels, steel bead chain with hardened aluminum hooks for curtain attachment.
- M. Shower Curtains**
- a. Basis of Design: Trax
 - b. Material: Water repellent 100% Nylon Fabric
 - c. Thread count: 200
 - d. Mildew resistant
 - e. Weighted bottom hem
 - f. 30 rust-proof metal grommets
 - g. Color: to be selected by owner
 - h. Machine washable
 - i. Construction: Reinforced triple folded header, 1 $\frac{3}{8}$ inches wide, reinforced with a strip of no-tear buckram, and have 30 metal rust proof grommets. Side hems are 1/2 inch wide, double folded. Bottom hems contain a heavy chain weight, covered with a mildew resistant material, which is stitched in to the bottom of the hem. We adjust the length of the liner shower curtain to be about 7 inches from the bottom of the bathtub and 1/2-to-1 inch from shower pan floor.
 - j. Size: Match layout on drawings

2.3 UNDERLAVATORY GUARDS

- A.** Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Plumberex Specialty Products, Inc.
 - 2. TCI Products.
 - 3. Truebro, Inc.
- B.** Under-lavatory Guard :
 - 1. Description: Insulating pipe covering for supply and drain piping assemblies that prevent direct contact with and burns from piping, and allow service access without removing coverings.
 - 2. Material and Finish: Antimicrobial, molded-plastic, white.

2.4 FABRICATION

- A.** General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.
- B.** Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of 4 keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

- A.** Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B.** Grab Bars: Install to withstand a downward load of at least 250 lb, when tested according to method in ASTM F 446.
- C.** Verify blocking has been installed properly; comply with manufacturers recommendations for backing and support.
- D.** Conceal evidence of drilling, cutting and fitting to room finish.

3.2 ADJUSTING AND CLEANING

- A.** Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

- B.** Remove temporary labels and protective coatings.

Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 10800

SECTION 11130

AUDIO VIDEO EQUIPMENT

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. All work shown on 'AV' (Audio Video) series Contract Drawings is provided under this section. Refer to the drawings for plans, graphic representations, schedules, and notations showing Audio Video System work.
 - 1. Refer to 'E' (Electrical) series drawings for related work provided under Division 16.
 - 2. Switches, switchboards, contactors, panel boards, transformers, conduit, wire, outlets, connectors and other electrical devices specified herein or on accompanying drawings shall conform to provisions of other sections of Division 16 of these Specifications unless otherwise noted.

1.2 SUMMARY

- A. Supply, delivery, supervision, coordination, installation of equipment items specified herein and shown on drawings as well as testing, documentation, and instruction related to complete Audio Video Systems, Equipment Racks, Consoles, Cables, and Control wiring for the following systems:
 - 1. Audio Systems Electronics and Wiring, including connection to existing digital audio network for derivation of source signals.
 - 2. Control Systems Electronics and Wiring, including connection to existing control system network and the addition of new pages to existing touch control panel to allow control of new devices.
 - 3. Coordination with other trades.
 - 4. Miscellaneous portable equipment and accessories.
- B. Provision of system testing, commissioning, demonstration, documentation, and instruction of Owner Personnel.

1.3 REFERENCES

- A. National Electric Code (N.E.C.).
- B. National Electric Safety Code (N.E.S.C.).
- C. Davis, Don, Sound System Engineering, Second Edition, Howard W. Sams and Co., Indianapolis, Indiana, 1986.
- D. Society of Cable Telecommunications Engineers (S.C.T.E).
- E. National Fire Protection Association (N.F.P.A.).

- F. American National Standards Institute (A.N.S.I.).
- G. Electronics Industries Association (E.I.A.).
- H. Telecommunications Industries Association (T.I.A.).
- I. Audio - Design and Installation, Giddings, Howard W. Sams, 1990.
- J. Society of Motion Picture and Television Engineers (S.M.P.T.E.)
- K. American Society for Testing Materials (A.S.T.M.).
- L. Building Seismic Safety Council (B.S.S.C.)

1.4 SYSTEM DESCRIPTION

A. AV System

1. The system shall comprise two input panels, a control panel, an AV switcher, audio amplifiers and ceiling loudspeakers. The input panels shall each receive computer video and composite video, stereo audio for each, and microphone audio. Each input shall be actively buffered. The control panel shall allow control of the AV switcher to switch between inputs and raise/lower audio volume.

1.5 SUBMITTALS

- A. Product Data: In addition to the quantities required by "Division 01, Submittal Procedures" and before ordering, submit one (1) additional set of catalog data sheets to the A/E be retained by the AV Consultant.
 1. Submit a schedule of finishes indicating proposed materials and color selections for all exposed items subject to A/E's selection.
 2. Submit a list showing coordination of selected frequencies for all wireless transmitters.
- B. Shop Drawings: In addition to the quantities required by "Division 1, Submittal Procedures", submit one (1) additional bond set of drawings to the A/E to be retained by the AV Consultant.
 1. Provide Shop Drawings and Record Drawings using the following scales:
 2. Plans - not less than 1/8" = 1'-0"
 3. Details - not less than 1/4" = 1"
 4. Submit point-to-point wiring diagrams and typed wire lists identifying every connection for information. Include electronic devices such as switches,

transformers, and terminal blocks. Indicate locations of all components. Identify cables by types, colors, and wire numbers.

5. Show details of weatherproofing, lightning protection and grounding, strain relief and cable support, fire stop protection, and wall penetrations through all rated partitions.
6. Submit diagrams with full plan view, front elevation, and side elevation of the projection systems. Include projection distances, lens selections, and use of mirror assemblies.
7. Submit system plans showing all device locations and ceiling distributed loudspeaker layouts with transformer (wattage) tap settings.
8. Submit conduit riser diagrams showing connection of all devices, required conduit sizes, types and quantities of cables to be used, and cable identification tags.
9. Submit rack layouts indicating the proposed arrangement of mounted equipment including junction boxes and locations of conduit penetrations.
10. Submit fully dimensioned construction details of all panels, plates and other custom fabricated items or modifications (e.g. installation of audiovisual equipment in lecterns). Include complete parts lists and, as required, schematic diagrams.
11. Submit mounting and support details for all items mounted overhead, including video projectors, televisions, plasma displays, and distributed ceiling loudspeakers, complete with parts lists and dimensions. Include a full plan view, front elevation, and side elevation of each item with corresponding support structure and mounting hardware. Verify load ratings of all hanging components including attachment hardware. Details shall be stamped by a structural engineer registered in the State of Alaska.

1.6 CLOSEOUT SUBMITTALS

- A. Drawings: Maintain a full set of shop drawings at the project site marked up to indicate actual locations, settings, and, in general, the true state of the installation. Furnish one initial set of record drawings along with the results of all source quality control tests specified in Part 2 and field quality control tests specified in Part 3 to the

Consultant for use during acceptance testing and equalization. Submit one (1) bond black line set. If 'as installed' documents are rejected, correct and resubmit in the manner specified.

1. After approval of 'as installed' documents, submit record drawings to A/E in accordance with Section 01800.

- B. Manuals: Furnish one initial set of product manuals to the Consultant for use during acceptance testing and equalization. At the time of contract closeout, submit the system Operation Manual and the Maintenance Data Manual in accordance with Section 01800.

1. Operation Manual

- a. Table of Contents
- b. Typed description of each system including key features and operational concepts (e.g. remote control features, switching or routing functions, patch points, mixing and linking capabilities).
- c. Setup diagrams and typed instructions for use in typical situations as directed by the Consultant.
- d. Small scale plans showing locations and circuit numbers for all system outlets and receptacles.
- e. Single-line block diagrams showing all major system components.
- f. Two sets of 'A' size drawings showing the components and wiring in each individual rack. One drawing of each rack shall be mounted in a plastic jacket to the rear door of the associated rack. The other complete drawing set shall be included in the manual.
- g. Manufacturer's operation manuals for equipment intended for operation by system users (e.g. CD players, communication equipment).
- h. A properly licensed working copy of the latest version of any and all software required to operate or configure the systems specified herein shall be a part of the system supplied. This includes, but is not limited to, all software, firmware and hardware required for configuration, adjustment, diagnosis and repair.
- i. All software shall be fully documented, and that documentation included.
- j. Software shall be included in its "installable" state on industry standard CD-ROM, or other appropriate format. A back-up copy of the working software may be provided as an additional inclusion. Disk images are unacceptable.
- k. Any and all user definable software configurations and/or programming shall become the sole property of the owner. This includes all source code, source code copyrights, and related documentation.
- l. Software compiler shall be property of the Owner with all related documentation.
- m. Key schedule cross-referencing all keys to their respective functions.

2. Maintenance Data Manual

- a. Table of contents
- b. Company name, address, telephone number and contact name for system service or maintenance.
- c. Listing of all equipment and materials with names of manufacturers and model numbers or part numbers.
- d. Catalog data sheets displaying manufacturer's names, addresses, and telephone numbers.
- e. Product manufacturers' warranties and a typed one-year system warranty explicitly covering all materials and labor.
- f. Manufacturers' service manuals for all major equipment items.
- g. Test documentation showing results of source quality control tests, field quality control tests, acceptance testing, and equalization. Document final settings for all non-user devices and controls after completion of acceptance testing and equalization including raw and equalized house curves. Document the physical position of settings as well as input and output signal levels measured in dBmV.
- h. Provide a recommended preventative maintenance schedule with reference to the applicable pages in the manufacturer's maintenance manuals. Where the manufacturer provides inadequate information, provide the information necessary for proper maintenance.

3. Electronic Submittals: Submit all files necessary to produce the above submittals as follows:

- a. Transportation media shall be in IBM-type structure on CD ROM format.
- b. A Disk Master File List in text format shall be placed on the CD ROM with a short description of files on that disk.
- c. A Master File List in text format shall be placed on each CD ROM with a short description of files in the submittal.
- d. Drawings shall be in AutoCAD R2010 or later drawing (.DWG) format. Drawing Exchange File Format (.DXF) is not acceptable. All external references, fonts, and other drawing parts necessary to the drawings shall be included
- e. Word processing files shall be in MS Word 2010 or later format. Graphs and charts shall be in MS Excel 2010 or later format. Any graphic imag-

es necessary for the reproduction of the submittals shall be included in the files, and shall be included in JPEG (.JPG) file format.

- f. Manufacturers' data sheets, equipment manuals, and other documentation provided by the Manufacturers to the Contractor or documents that are similarly not otherwise available to the Contractor in electronic format shall be excluded from this requirement.

4. Keys:

- a. Submit (3) keys required for access to and operation of the systems.

1.7 QUALITY ASSURANCE

A. Section 01400

B. Qualifications

1. Submit the following contractor qualifications:
 - a. A minimum of five years' experience installing systems of similar size and scope to the work specified in this Section.
 - b. Evidence of an in-house electronic service department including:
 - 1) The names and certifications of full-time service technicians.
 - 2) In-house electronic test equipment for use during the source quality control tests specified in Part 2 and field quality control tests specified in Part 3 as well as use by the A/E's Consultant at the project site during acceptance testing and equalization.
 - c. Evidence of full-time personnel with experience on projects of similar size, scope, and construction schedule to the work of this Section including:
 - 1) The name, date of employment, qualifications, and experience of the installation supervisor for this project.
 - 2) The company's drafting capabilities including the name, date of employment, qualifications, and experience of the employee who will draft shop drawings and project record drawings for this installation.
 - 3) The names, dates of employment, qualifications, and experience of all other personnel to be used on this project.
2. Submit a statement that the bid is based upon specified products or accepted substitutions by systems design Consultant.

3. Submit a work plan indicating scheduling of employees and time frames for shop drawings, ordering of equipment, installation, testing, punch-list correction, and instruction.

C. Regulatory Requirements

1. Obtain all required permits and inspections.
2. Furnish material and workmanship for this work in conformance with all code requirements.
3. Obtain review from compliance officials responsible for enforcement of applicable codes and regulations to establish that the work complies with all requirements of reference codes indicated herein. Show corrections, changes, and/or compliance in the final submittal as described herein.

D. Field Samples

1. Before delivery of equipment to the job site, submit test reports for all measurements specified under Source Quality Control Tests.
2. Before delivery to the job site, submit photographs depicting the quality of wiring and grounding within equipment racks.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Section 01300

B. Packaging, Shipping, Handling, and Unloading

1. Coordinate with Owner's Representative for any equipment and materials to be delivered or stored on site.

C. Storage and Protection

1. Provide appropriate protection of stored and/or installed equipment from both damage to the item and damage to other work or finishes.

1.9 PROJECT CONDITIONS

A. Project Environmental Requirements

1. Seismic Safety

- a. Observe mechanical and electrical support means of all installed equipment as required for the seismic hazard zone for this installation. Refer to Federal Emergency Management Agency (FEMA) Document 303: Recommended Provisions for Seismic Regulations for New Buildings and Other Structures. Also refer to any applicable local building codes.

- b. All equipment racks are to be anchored with suitable anchors to meet safety standards.
- c. Appropriate safety attachments shall be made as required for over-head mounting of devices.
- d. Shock and/or vibration isolation of equipment or fixtures shall be employed as required.

2. Fiber Optic Cable Safety

- a. The following warnings shall be posted on the job site: WARNING: PERMANENT EYE DAMAGE CAN RESULT FROM LOOKING DIRECTLY INTO A LIGHT BEAM GENERATED BY AN LED OR LASER SOURCE OR INTO THE END OF A CABLE FIBER CONNECTED TO ONE OR THESE SOURCES. CAUTION: LIGHT GENERATED BY THESE SOURCES MAY NOT BE VISIBLE, YET REMAINS HAZARDOUS TO THE EYE. LOOK FOR WARNING LABELS ON SOURCE DEVICES.
- b. Observe all warning signs on equipment and all written safety precautions in the instruction manual or equipment technical manual.
- c. Always handle cable carefully to avoid personal injury. Care should be taken with individual fibers to prevent injury to the eyes or penetration of the fibers into the skin.

B. Existing Conditions

- 1. Verify all project site conditions applicable to the work of this Section. Notify the A/E in writing of any discrepancies, conflicts, or omissions prior to bid opening. Otherwise, correct these at no additional cost to the Owner.
- 2. Continue to monitor the project site. If conditions develop requiring a need to vary from the Specifications or Drawings, notify the A/E's Consultant immediately in writing. Otherwise, make recommendations, submit drawings showing how the work may be done, and proceed, on approval, with the necessary changes without additional cost to the Owner.

1.10 SUBSTITUTIONS

- A. Shall comply with the requirements of Division 01.

1.11 WARRANTY

- A. Provide system warranty for a period of one (1) year against faulty materials and defects in workmanship. In addition to the above warranty, honor any manufacturer warranties that exceed this period of time.

B. During the system warranty period, answer all service calls and requests for information within 24 hours. Repair or replace faulty materials and correct faulty workmanship within 24 hours of all service calls.

PART 2 PRODUCTS

2.1 GENERAL

- A. Equipment, excepting Owner Furnished Equipment (OFE), and materials shall be new, latest version at time of bid and shall conform to applicable UL, CSA, and ANSI provisions. Take care during installation to prevent scratches, dents, chips, etc.; equipment with significant or disfiguring cosmetic flaws will be rejected.
- B. Any such statement referencing substitutions should be coordinated with Division 1.

2.2 EQUIPMENT

A. Audio System

- 1. **Loudspeaker** – 12" Coaxial full-range loudspeaker. Loudspeaker shall have sensitivity of at least 101 dB (1 W/ 1 m) and frequency response of 113Hz -18 kHz (+/-3 dB) or better. The coverage pattern shall be 80° conical. Power handling shall be 400 W continuous, 1600 W peak. The mounting brackets and speaker shall be fully weatherized outdoor rated.
 - a. Basis of Design: Danley Sound Labs OS80 with mounting brackets
 - b. Approved Equal
- 2. **Subwoofer** – 15" long excursion transducer. Subwoofer shall have sensitivity of at least 106 dB (1 W/ 1 m) and frequency response of 38Hz -200 Hz (+/-3 dB) or better. Power handling shall be 1000 W continuous, 2000 W program. The mounting brackets and speaker shall be fully weatherized outdoor rated.
 - a. Basis of Design: Danley Sound Labs TH-115 with mounting brackets
 - b. Approved Equal
- 3. **Audio Mixer** – Digital signal processor base unit. Shall use modular expansion cards to provide up to twenty-four channels of input / output audio matrixing and processing. Each expansion card shall have an individual DSP processor. Expansion cards shall be factory installed or easily installed in the field without the need to reprogram. The processor control and programming shall be accomplished using

a PC platform through a standard Ethernet connection. An RS-232 jack shall be provided for control and monitoring by a third-party controller. Multi-level security and no front panel controls shall insure tamper-resistant operation. Input channel processing blocks shall include a Mic/Line Preamp with 48V Phantom Power, Gain, Pink Noise Generator, Delay, fifteen EQ Filters, Gate, Autoleveler and Ducker. Output channel processing blocks shall include a Cross-Point Mixer, HPF/LPF, Delay, fifteen EQ Filters, Gain, and Limiter. The cross point mixer shall allow any input to be routed to any output at any level and mute any input at any output without affecting the true input configuration. Rear panel Euroblock connectors shall include eight preset recall contact closures plus eight remote potentiometer level controls. The DSP processor shall mount in a standard 19" rack using 2 spaces (3.5" high).

a. Basis of Design: Ashly ne24.24M 8 input/ 4 output Audio DSP matrix Processor

b. Approved Equal

4. **Audio Power Amplifier**– 4 channel 4 x 3000 W @ 2 Ohms, 4 x 1250 W @ 8 Ohms. Bandwidth of 20-20000 Hz (+/- 0.05 dB) Acceptable products:

a. Basis of Design: Ashly nX3.04 4 channel 1250W@8Ohms Amplifier

b. Approved Equal

5. **Wireless Microphone System** – System shall be in UHF 480-934 MHz, S/N ratio of 105dB or greater. Frequency response 50Hz – 18kHz.

a. Basis of Design: MiPro 727a Wireless microphone system w/ Handheld mic

b. Approved Equal

B. Control System

1. Control System – wall-mount push button control panel with volume control and control port for Ashly devices. Unit shall mount in a standard one-gang back box. Acceptable products:

a. Basis of Design: Ashly WR-5 remote wall control for ne24.24M

b. Approved Equal

2. Wireless Control System – Ashly Remote App for iPad. Scriptable App for Ashly Audio Control. Acceptable products:

a. Basis of Design: Ashly Remote for iPad

b. Approved Equal

C. Miscellaneous

1. Wire and Cable

- a. Basis of Design: Belden 5000UP CL3 2C12 (12ga 2 conductor) Speaker Cable
- b. Basis of Design: Clark Wire & Cable SPA 22Ga Audio Cable

2. Connectors

- a. Basis of Design: Neutrik Connectors: NC3FDL Pnl mount XLR, NF2D-0 Pnl mount RCA, NL4FX Speakon

3. Other

- a. Power Sequencer ETA ESC3 or equivalent
- b. 12 space wall mount audio rack, 20 inches deep.

D. Fabrication

1. Shop Assembly:

- a. Complete all custom fabrication work at the shop.
- b. Verify the depth of each rack prior to assembly to ensure that mounted equipment will fit completely inside with the rear door closed. Install all rack-mounted equipment and test the systems before delivery of equipment racks to the project site.

E. Source Quality control

1. Tests

- a. After assembly of rack systems in the shop, measure and record the DC resistance between the racks ground bus bar and the chassis of all rack-mounted components. Also measure and record the DC resistance between the rack ground bus bar and the signal common for all components.
- b. Use a sine-wave signal generator, dual trace oscilloscope and dBm meter to measure and document the signal level which produces clipping at each component input used in the system.
- c. Using a +4 dBm sine-wave input, set controls of each component to produce a +4 dBm sine-wave output. Under these operating conditions (unity gain), note the presence of any waveform distortion, interference, or oscillations. Take corrective action to eliminate the anomalies and document the corrective measures

F. Verification of Performance

1. In the shop, photograph the interconnect wiring within racks, including patch panels and grounding, to show the quality of workmanship and compliance with the specified grounding procedures.
2. Submit the test reports and photographs to the A/E's Consultant before delivery of racks to project site.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Execute all work in accordance with the NEC, NESC, and with all local state codes, ordinances, and regulations.
- B. Install all rack mounted equipment with black, stainless steel 10-32 pan head machine screws with flat black plastic washers protecting equipment panel.
- C. Provide security covers on non-user-operated equipment having front panel controls. Install covers at the conclusion of Acceptance Testing. Rack slides shall be provided for all equipment requiring access to side or top panels for routine adjustment or cleaning including all Video Cassette and Open Reel Video Tape Recorders and all Picture Monitors over 20 pounds.
- D. Provide rack slides and mounts equal to those of the original manufacturer for the OFE requiring rack mounting. Where no same manufacturer mount is available, contractor shall supply custom mounts as manufactured by Middle Atlantic Audio Products.
- E. Mount all equipment to be installed over public areas in a manner adequate to support the equipment loads with a minimum safety factor of five, using methods recommended in the referenced HandBook for Riggers and in JBL Technical Notes Volume 1, Number 19. Use attachment hardware with a minimum SAE Grade 5 load rating. Do not use formed eyebolts or lag-screws for support of suspended equipment.
- F. Firmly and permanently attach electrical boxes, enclosures, and permanent equipment to the building. Rigidly mounted equipment and devices shall be plumb and square.
- G. Choose colors and finishes of all exposed and custom fabricated items and labels to blend in with the surroundings as approved by the A/E and/or Interior Designer.
- H. Install equipment in accordance with manufacturers' recommendations. Ensure that levels and impedances are properly matched between components. Verify that projector distances and lenses are appropriate for the corresponding screen sizes.

- I. Provide shaft locks or security covers on all non-user equipment as directed by the A/E's Consultant during acceptance testing and equalization.
- J. Grounding and Shielding
 - 1. Mount and enclose all electrical and electronic equipment in metal enclosures or equipment racks.
 - 2. Use EMT type conduit for all wiring outside of equipment racks unless directed otherwise by the A/E or Owner as long as said direction is in accordance with local building codes.
 - 3. Mount equipment racks in a manner that provides electrical isolation from the building structure and electrical raceways. Use flexible conduits and PVC fittings to provide insulated connections between equipment racks and the building electrical raceways.
 - 4. Ground the chassis of all rack-mounted components in accordance with the Drawings and verify a D.C. resistance between each chassis and the rack ground bus of no more than 0.01 Ohms.
 - 5. Ground the shields of interconnecting wires on one end only in accordance with the Drawings and treat the unused opposite ends as described below under Wiring Practices. Shield drain wires shall be insulated in all instances by use of appropriately sized black heat shrink tubing equal to Alpha FIT-221 series.
- K. Wiring Practices
 - 1. Where specific instructions are not given, perform all wiring in strict adherence to standard broadcast and sound engineering practices as described in the referenced Broadcast Audio Equipment for AM, FM, Television and in Sound System Engineering.
 - 2. Group all wiring into the following classifications by power level or signal type:
 - a. Microphone Level: less than -20 dBm.
 - b. Line Level Audio and DC Control Circuits: -20 dBm to +30 dBm.
 - c. Speaker Level: greater than +30 dBm.
 - d. Video/RF Circuits
 - e. AC Power Circuits
 - 3. Maintain a minimum six-inch separation between wiring of different level classifications wherever possible. Otherwise, cross them perpendicular to each other. Where wiring of different level classifications share a common enclosure or junction,

tion box, provide metallic isolation barriers to completely electrically separate wiring groups.

4. Neatly harness wires together within racks by power level classification using horizontal and vertical wiring supports as required. Rigidly support all wires within twelve inches of connection points.
5. All cable installed under this specification which is to be terminated by others for "future" or Owner Furnished Equipment (OFE) in racks, shall be provided with ten (10) feet of slack when dressed to the location of future or OFE equipment. All cable installed under this specification which is to be terminated by others, shall be provided with twenty (20) feet of slack when ending in a rack enclosure. All cable provided under this specifications, to be terminated by others, shall be provided with fifty (50) feet of slack when terminating in an equipment room without a clear point of demarcation, or in a group of racks where the destination is not known.
6. Terminate all field wiring in terminal boxes mounted to the walls in each equipment room prior to connection to any equipment or devices unless otherwise noted. All equipment in each equipment room shall connect to the field wiring at the appropriate terminal box. Field wiring shall not terminate directly in equipment racks unless otherwise noted. Provide 10% spare terminals at each location. Label each terminal with a unique number. Video, RGBS, and RF cables are exempted from this requirement.
7. Splices in any cable - base band or RF - are not acceptable, except in cases of difficult "pulls", and then by prior written approval only. Terminate all cables at active or passive devices.
8. Audio System
 - a. Observe consistent polarity throughout the audio systems as follows:
 - 1) XLR Type Connectors
 - a) Positive = Pin 2
 - b) Negative = Pin 3
 - c) Common = Pin 1
 - 2) TRS Type Connectors
 - a) Positive = Tip
 - b) Negative = Ring
 - c) Common = Sleeve

- b. Use only balanced differential inputs throughout all sound systems unless noted otherwise. Use approved transformers to convert all unbalanced inputs to balanced inputs. Output signals may be unbalanced if inputs of subsequent devices are within the same rack. Otherwise use approved transformers to balance the outputs.
- c. Exercise care in wiring to avoid damaging the cables and equipment. Use grommets around cut-outs and knock-outs where conduit or chase nipples are not installed.
- d. Cut off unused wire ends approximately one-half inch ($\frac{1}{2}$ ") past the wire jacket. Fold them back over the jacket, and secure in place with heat-shrink tubing.
- e. Make connections using rosin-core solder or approved mechanical connectors.

L. Cable Installation in Conduit and Duct Banks

- 1. Pull mandrel one size smaller than the conduit, through entire length of all underground conduits.
- 2. Cable pulling lubrication shall be utilized when pulling cable.
- 3. A dynamometer shall be used to measure pulling tension during long or difficult runs. The dynamometer is to be placed between the cable puller and the pull line to monitor pulling tension. The manufacturer's pulling tension maximum range shall not be exceeded.
- 4. Pulling grips suitable for use with fiber cables shall be applied to the ends of the cable. Consult cable manufacturer to determine appropriate pulling grip and method of attachment. Breakaway or fuse links shall be used at the pulling grip. Insure that the correct "fuse pin" is installed in the fuse link.
- 5. Cable caps (heat-shrinking type) shall be used to seal the ends of the cable to protect the cable ends prior to terminating.
- 6. Use of cable blocks shall facilitate the bending of cable. For bends between 5 degrees and 45 degrees, a 45-degree cable block shall be utilized. For 45 degree to 90 degree bends, utilize a 90-degree cable block.
- 7. The bend radius for all cables shall conform to manufacturers specifications.
- 8. Provide spare cables between terminal cabinets equal to 10% of the installed cables or a minimum of two cables of each type cable installed. Provide spare cables between terminal cabinets and equipment racks/consoles equal to 15% of the installed cables or a minimum of five cables of each type cable installed. Label all spare cables as spares with unique identifiers. Do not use any spare cables without prior approval from the A/E's Consultant.

M. Labeling

1. Label products in a logical, legible, and permanent manner corresponding to the Drawings using wording, format, style, color, and arrangement of text approved by the A/E.
2. Label all panels and wall plates using 1/8" engraved lettering. On dark colored panels and plates, fill engraving with white paint, and on light colored, unpainted aluminum, or unpainted stainless steel panels and plates, fill engraving with black paint.
3. Provide engraved plastic labels similar to Lamicoid, squarely and permanently attached, to label patch panels, barrier strips, terminals, transformers, switches, relays and similar devices as well as the front and rear of all signal processing equipment (e.g., PA, LIM, EQ). Label all controls on distribution amplifiers, mixers, etc. as to the function of each.
4. Label push-button switches with engraved lettering filled with contrasting color paint.
5. Label all permanent wiring on both ends with approved permanent clip-on type or sleeve type markers. Wrap-around adhesive labels will not be accepted unless completely covered with clear heat shrink tubing.
6. Label all portable wiring as specified above plus color code all cable lengths with permanent paint applied in a one-inch band at each end of the cable. Color code may be covered by heat shrink in conjunction with label. Label and color shall not obstruct each other. Use colors as stated below:
 - a. 5 foot cables - green
 - b. 10 foot cables - gray
 - c. 25 foot cable - purple
 - d. 50 foot cables - burnt orange
 - e. 100 foot cables – yellow

3.2 FIELD QUALITY

CONTROL

A. General Testing

1. Maintain a competent supervisor and supporting technical personnel, acceptable to the Owner during the entire installation. Change of supervisor during the project shall not be acceptable without prior written approval from the Owner.
2. Before connecting any equipment to electrical power outlets, measure and record the A.C. voltages between hot, neutral, and ground and verify correct outlet polarity. Verify, test, and document correct and safe function of isolated ground power systems.
3. Determine the best sequence of energizing systems to minimize the risk of damage.
4. After successfully energizing the systems, make preliminary adjustments and document the settings of all controls, parameters of corrective networks, voltages at key interconnection points, gains, and losses as applicable. Replicate the unity gain tests performed at the shop and document the absence of any waveform distortion, interference signals, or oscillations.
5. Upon completion of the system installation, it shall be the responsibility of the Contractor to perform the necessary adjustments and balancing of all signals, amplifier gain, and other level controls to ensure proper system operation. The system shall be physically inspected by the Owner to assure that all equipment is installed in a neat and workmanlike manner as called for by the Drawings and Specifications.
6. Verify the performance parameters of the individual systems following established professional procedures, in addition to those specified herein. Document all acceptance testing, calibration, and correction procedures described herein, being careful to include the following information:
 - a. Performance date of the given procedure.
 - b. Condition of performance of procedure.
 - c. Type of procedure and description.
 - d. Parameters measured and their values, including values measured prior to calibration or correction, as applicable.

- e. Parameters associated with calibration or corrective networks, components, or devices.
- f. The names of personnel conducting the procedure.
- g. The equipment used to conduct the procedure

B. Audio Testing

- 1. Test all low-level audio cables and connections for continuity and ground faults and correct polarity.
- 2. Upon completion of initial tests and adjustments, submit written results of tests to A/E/Consultant. In addition, submit written notification that the installation has been completed in accordance with the requirements of the Contract Documents, and is ready for equalization and inspection by representatives of the A/E/Consultant and Owner.

3.3 TEST EQUIPMENT

A. Provide the following test equipment on site during construction and available to the Owner during final adjustment and acceptance testing:

- 1. Laptop computer with all installed software
- 2. Multimeter - Measurement range, DC to 20,000 Hz, 100 mV to 300 V, 10 mA to 10A: Fluke 75, or as approved
- 3. Real Time Analyzer: Ivie IE-30 or equivalent.
- 4. NTSC Television Generator.
- 5. High Level Synchronous Sweep System: Wavetek Stealth, Tektronix, Calan, or as approved.
- 6. Low Level Synchronous Sweep System equal to Advantest.
- 7. NTSC Television Waveform Monitor: Tektronix
- 8. NTSC Television Vectorscope: Tektronix
- 9. Time Domain Reflectometer: Tektronix 1502B with paper tape recorder or equivalent.
- 10. Microphone terminated cable
 - a. 10 foot cables – Qty (x)
 - b. 25 foot cables - Qty (x)
 - c. 50 foot cable - Qty (x)

- d. 100 foot cables - Qty (x)
- e. 150 foot cables – Qty (x)
- 11. Speaker terminated cable
 - a. 25 foot cables - Qty (x)
 - b. 50 foot cable - Qty (x)
 - c. 100 foot cables - Qty (x)
- 12. RF and Video cable
 - a. 25 foot cables - Qty (x)
- 13. Portable speaker
- 14. Microphones, microphone stands, and assortment of jumper cables and adapters

3.4 COMMISSIONING

- A. Not Required

3.5 INSPECTION – COORDINATE INSPECTION REQUIREMENTS WITH DIVISION 1

- A. Provide a statement of completion, certifying that the system is installed and is ready for acceptance testing and equalization, to the A/E/Consultant.
- B. Schedule a time for the A/E's Consultant to perform system acceptance testing and equalization with at least 14 days advance notice.
- C. Designate technicians who are familiar with and qualified to operate the systems for instruction of the Owner. Provide instruction of Owner-designated personnel in the design features and proper operation of the systems. Provide a minimum of 24 hours for on-site instruction and videotape the training sessions. Make any Owner requested changes to the control system programming during this time. Coordinate instruction times through the A/E.
- D. Under the direction of the A/E's Consultant, adjust signal levels and loud-speaker aiming as required to achieve the uniform sound distribution within a tolerance of +/-2dB.
- E. Record the final settings on all equipment and submit with contract closeout documents.

- F. Heat shrinking tubing shall be shrunk to cover the external connection to amplifier/passive components only after system alignment and acceptance has been completed.
- G. Upon completion of initial tests and adjustments, submit written report of tests to the Owner along with all documents, diagrams, and record drawings required herein. Cable SRL, system sweep, Egress / CLI, and all FCC tests shall be performed and submitted. Report shall include date of each test, pertinent conditions such as control settings, etc., test circuit, and test equipment employed. In addition, submit written notification that the installation has been completed in accordance with the requirements of the Contract Documents, and is ready for final equalization and acceptance testing.
- H. If the system does not meet criteria or if additional trips to the job site for testing or equalization are required, the Contractor shall reimburse the owner for all expenses and professional time encountered by the A/E and its Consultant.

3.6 CLEANING

- A. Remove all unnecessary tools and equipment, unused materials, packing materials, and debris from each area where work has been completed unless designated for storage.
- B. Clean all areas around system equipment and be sure that the inside of each equipment rack is free of wire stripping and other debris.

3.7 DEMONSTRATION

- A. Upon completion of the Work, the Owner may elect to verify test data as part of the acceptance procedure. Provide personnel and equipment, at the convenience of the Owner, to reasonably demonstrate system performance and to assist with such tests without additional cost to the Owner.
- B. Within three months after final acceptance, the Owner reserves the right to direct changes to the control system software. Such changes shall be made without additional cost to the Owner.

END OF SECTION 11130

SECTION 11664

INDOOR SCOREBOARD

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A.** Single-sided LED scoreboard

1.02 REFERENCES

- A.** Standard for Electric Signs, UL-48, 14th Edition
- B.** Standard for Control Centers for Changing Message Type Signs, UL-1433, 4th Edition
- C.** Standard for CAN/CSA C22.2 No. 207-M89
- D.** Federal Communications Commission Regulation Part 15
- E.** National Electric Code

1.03 SUBMITTALS

- A.** Product data: Submit manufacturer's product illustrations, data and literature that fully describe the scoreboards and accessories proposed for installation.
- B.** Shop drawings: Submit mechanical and electrical drawings.
- C.** Maintenance data: Submit manufacturer's installation, operation, and maintenance manuals.

1.04 DELIVERY, STORAGE, AND HANDLING

- A.** Product delivered on site
- B.** Scoreboard and equipment to be housed in a clean, dry environment

1.05 PROJECT CONDITIONS

- A.** Environmental Limitations: Do not install scoring equipment until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for project when occupied for its intended use.
- B.** Field Measurements: Coordinate scoreboard location and height with the customer. Verify dimensions by field measurements.
- C.** Supply weight and mounting method for owner to verify that building structure is capable of supporting the scoreboard's weight in addition to the auxiliary equipment.

1.06 QUALITY ASSURANCE

- A.** For indoor use only
- B.** Source Limitations: Obtain each type of scoring equipment and electronic displays through one source from a single manufacturer.
- C.** ETL listed to UL Standards 48 and 1433
- D.** NEC compliant

- E. FCC compliant
- F. ETLC listed to CAN/CSA 22.2

1.07 WARRANTY

- A. Provide 5 years of no cost parts exchange including standard shipping on electronics parts and radios due to manufacturing defects
- B. Provide toll-free service coordination
- C. Provide technical online and phone support during Colorado Time Systems business hours

PART 2 - PRODUCTS

2.01 MANUFACTURER

2.02 PRODUCT

- A. Basis of Design Product: Colorado Time Systems (Playcore Company) Substitutions allowed in conformance to Section 01600.

2.03 START SYSTEM

- A. General information
 - 1. Championship Start System
 - 2. Dimensions: 13.25"H x 13" W x 5.75" D
 - 3. Weight: 17.4 lbs
 - 4. Features
 - a. (3) Separate microphone inputs: two wired and an optional wireless microphone
 - b. Independent volume control for each microphone input; microphone volume is independent of start tone volume.
 - c. Speedlights that flash simultaneously with the championship start peaker tone and strobe light.
 - d. External 360 degree strobe – flashes with start signal.
 - e. Underwater Speaker
 - f. Battery and 110v power
 - g. Limited public address system

2.04 TIMING CONSOLE

- A. General information
 - 1. Sytem 6 timing system
 - 2. UL certification
 - 3. Dimensions: 9.75" H x 18.38" W x 11.5" D
 - 4. Weight: 10 lbs
 - 5. Power : 120V 50/60 Hz 0.8 amps
 - 6. Construction: Durable molded plastic
 - 7. Features

- a. Subtracted Splits
- b. Scoreboard Cycling
- c. Intensity Control
- d. Intelligent button handling
- e. Expanded lane capacity
- f. Relay judging
- g. Start Reaction
- h. Declare Start/Finish end
- i. Dynamic Sponsor message
- j. Lane Re-arming
- k. Enhanced split handling
- l. Meet Management
- m. Rechargeable Battery for backup in case of power outage
- n. Internet upgrade capability
- o. USB Functionality
- p. Multi-sport options
- q. Wireless Options

2.05 CHAMPIONSHIP TOUCHPADS

- A.** General information
 - 1. Caddy Dimension:
 - a. Dimensions: 82" x 47" x 22"
 - b. Weight: 105 lbs
 - 2. AquaGrip gutterhung touchpad
 - a. Dimensions: 60" x 22"
 - 3. Accessories
 - a. Touchpad Test Meter
 - b. Vacuum pump

2.06 FULL COLOR LED MATRIX/VIDEO DISPLAY

- A.** General information
 - 1. Dimensions: 7'-6" (1.83 m) high, 12'-0" (2.44 m) wide
 - 2. Base power requirement: 200 W – options may increase wattage
 - 3. Features
 - a. 2.4 GHZ wireless
 - b. Time of day clock
 - c. Service Access
- B.** Construction
 - 1. All-aluminum 5052-alloy construction
 - 2. Cabinet is required to withstands high-velocity impact from air-filled sports balls without the need for protective screens
- C.** Digits & Indicators
 - 1. LED digit display
- D.** Software

1. Displaylink+ (DL+)

PART 3 EXECUTION

3.01 EXAMINATION

- A.** Verify that mounting surface is ready to receive scoreboard. Verify that placement of conduit and junction boxes are as specified and indicated in plans and shop drawings.

3.02 INSTALLATION

- A.** Power conduit, cables and outlet boxes to be provided and installed by the electrical contractor. Signal raceways, conduit and boxes to be provided by the electrical contractor. Electrical contractor is also responsible for any required wire and terminators between each scoreboard and control location.
- B.** Mount scoreboards and interior displays to wall in location detailed and in accordance with manufacturer's instructions. Unit to be plumb and level.

3.03 INSTALLATION—CONTROL CENTER

- A.** Provide boxes, cover plates and jacks as required to meet control specification requirements. Control cables to control panels shall be concealed.
- B.** Test the operation of the scoreboard, controller and all control jacks; leave control unit in carrying case and other loose items with owner's designated representative.
- C.** Conduct operator training on the scoreboard/controller operation.

END OF SECTION 11664

SECTION 13030

SAUNA

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Sauna, including the following:
 - 1. Custom built saunas.
 - 2. Sauna accessories.

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-In-Place Concrete: Floor construction.
- B. Section 06100 - Rough Carpentry: Wall and ceiling framing.
- C. Section 07210 - Building Insulation: Insulation and Vapor Retarders in walls and ceiling.
- D. Section 16155 - Equipment Wiring: Wiring and connections to building electrical service.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01300.
- 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: Indicate room layout, equipment locations, details of assembly and anchorage, and rough-in locations. Include required clearances.
- D. Verification Samples: Two samples, minimum size 6 inches (150 mm) square, accurately representing appearance of wall panels.
- E. Operation and Maintenance Data: For entire system.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A company with not less than 10 years of experience in manufacturing components of the type required for this project.
- B. Regulatory Requirements: Provide UL listed equipment and controls.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging, in dry, heated storage area until installation.

1.6 WARRANTY

- A. Warranty: Provide manufacturer's standard warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer:
 - 1. (Basis of Design) Superior Sauna & Cabin MFG. , KKC, Ashland Wi.
 - 2. Helo Sauna & Steam
 - 3. Approved Equal
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 SAUNAS

- A. Custom-Cut Sauna: Commercial custom-cut wall and ceiling finish for installation on framed walls, dimensioned as indicated on drawings, with wall and ceiling finish as follows;
 - 1. 1 x 4 (25 x 100 mm) V-joint T&G boards. (Interior Wall and Ceiling Surfaces)
 - 2. Species: Clear Western Red Cedar, kiln-dried to 12 percent maximum moisture content.
 - 3. Lengths: As required to eliminate butt joints, with boards installed vertically if horizontal length of wall is over 96 inches (2440 mm).
- B. Door: Standard type as described below, including handles, casing, and jambs, and continuous stainless hinges with a ball catch. Optional: Self-closing hinges.
 - 1. Commercial Door: Pre-hung, handicapped accessible door, with vertical grain Douglas Fir rails and sealed, tempered, double pane window.
 - a. Mahogany jambs.
 - b. Dimensions: 36 x 80 x 1-3/4 inches (915 x 2032 x 44.5 mm).
- C. Windows: Standard type windows,
 - a. Manufacturers standard windows. Fixed
 - b. Dimensions: (1) 24 wide x 36 tall x 1-3/4" inches

Sauna Heater:

- 2. Floor-Mounted Heaters:
 - a. Existing sauna heater to be salvaged and reused. The heater

meets the requirements for the new volume.

- C. Heater Controls:
 - 1. Use existing heater controls and timer system. The existing system is operational and is to be salvaged and re-used on the new sauna.
- D. Benches: S4S, kiln-dried softwood.
 - 1. Tops: 24 inches (533 mm) wide, 2x 4, clear Western Red Cedar; boards spaced at 9/16 inch (6.35 mm).
 - 2. Face: 2 x 4, clear Western Red Cedar.
 - 3. Internal Framing: 2x4 or 2x6.
 - 4. Fasteners: 6d stainless steel finish screws.
 - 5. All interior framing to be 2X4 clear Western Red Cedar
- E. Floor Finish: Composite Cedar slat floor on plastic support Grid, snap together grid. $\frac{3}{4}$ " overall height
- F. Heater Guard Rail: Re-Use existing
- G. Accessories:
 - 1. Thermometer: Manufacturer's standard design.
 - 2. Light: Ceiling-mounted, UL listed, vapor-proof recessed halogen fixtures 8 total. (Manufacturer's standard lighting kit)
 - 1) Stainless Steel Trim
 - 2) 20 w lights
 - 3) wiring harness
- H. Adjacent Construction for Pre-Cut Saunas:
 - 1. Wall and Ceiling Framing: Specified in Section 06100
 - 2. Wall and Ceiling Insulation: Specified in Section 07210.
 - 3. Exterior Wall Finish: Furnished by others; to match other walls in room.
- I. Sauna Fabrication: Assemble saunas and sauna components with blind nailing and concealed fasteners at exposed surfaces, to prevent physical contact with metal by sauna occupants.
- J. Requests for substitutions will be considered in accordance with provisions of Section 01600.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that required utilities are properly sized and in correct locations. Verify that substrates are in proper condition to receive work of this section. Do not begin installation until substrates have been properly prepared. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding

3.2 INSTALLATION

- A. Install units and accessories in accordance with approved shop drawings

and manufacturer's printed instructions. Install in proper relationship with adjacent construction.

- B. Install and connect components to utilities in accordance with manufacturer's printed instructions.

3.3 CLEANING AND PROTECTION

- A. Clean soiled surfaces in accordance with manufacturer's instructions.
- B. Protect components from damage until completion of project.
- C. Touch-up, repair or replace damaged products after Substantial Completion

END OF SECTION 13030

SECTION 13150
POOL EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A.** It is the intent of this section to place the responsibility for the installation of the pool equipment under one vested contractor. Pool equipment covered in this section is Ultra Violet System, pool chemistry controller and PH balancing system.
- B.** It is the intention of this section to provide a complete installation. All accessory construction and apparatus necessary in the preparation, testing or performance of the work shall be included.
- C.** Related Sections:
 - 1. Division 15 – Plumbing Requirements
 - 2. Division 16 – Electrical Requirements

1.2 SCOPE OF WORK

- A.** Design and provide labor, materials and equipment to replace existing CO2 chemical treatment system with a new buffered acid system with associated peristaltic pump, replace existing pool chemistry controller with a new chemistry controller, and install a new Ultra Violet (UV) system.
- B.** The Pool Equipment Contractor shall complete and supervise or approve the work noted below:
 - 1. Provide shop drawings and services required for coordination and installation of all new equipment related to pool system.
 - 2. Remove existing CO2 system with controller, flow sensor, injectors, valves and tubing.
 - 3. Remove existing pool chemistry controllers.
 - 4. Furnish and install a complete low pressure Ultra Violet System
 - 5. Furnish and install a programmable chemical automation system designed for the continuous treatment and monitoring of pool water.

6. Automation system shall include a web based automated chemistry control system with web based on-line customer support. Support to include installation, maintenance and day to day operations.
7. Furnish and install a buffered acid PH balancing system with sensors, controls and injection system.
8. Furnish wiring directions to Electrical Contractor.
9. Approve control wiring to chemical controller, buffered acid system and UV system. UV system shall be interlocked with the main filter pump.
10. Approve grounding and bonding of all pool equipment and embedded anchors in accordance with Article 680 of the N.E.C. (See Division 16).
11. Start, test, calibrate and adjust all newly installed equipment. Instruct the Owner's representative in the systems operation and maintenance. Provide tracking forms to monitor the function of chemistry controller and chemical levels in pool.
12. Obtain final approval from jurisdictional regulatory agency.

1.3 REFERENCES

- A. 2009 International Mechanical Code (IMC).
- B. 2009 Uniform Plumbing Code.
- C. 2009 National Electrical Code.

1.4 SUBMITTALS

- A. Division 1 – Administrative Requirements.
- B. Submittal Requirements: In addition to submittal procedures as outlined under Division 1, pool equipment submittals shall be submitted as follows:
 1. Product Data: Submit manufacturers catalog data.
 2. Manufacturer's Installation Instructions: Submit special procedures and assembly of components.

1.5 QUALITY ASSURANCE

- A. Confirm to requirements of Federal Guidelines as specified in NSF-50 standards and local state and county health codes.

1.6 QUALIFICATIONS

- A.** Manufacturer: Company specializing in the manufacturing, engineering, and designing of UV Systems and automatic control systems shall have a minimum of five years documented experience.
- B.** Installer: Company specializing in installing pool equipment systems shall have a minimum of five years documented experience.

1.7 FIELD MEASUREMENTS

- A.** Contractor shall verify field measurements prior to installation to ensure pool equipment will adequately fit in existing filter room while maintaining clearances as required by equipment manufacturer for access and equipment operation.

1.8 WARRANTY

- A.** Division 1 – Closeout Submittals.
- B.** Provide manufacturer's warranty on all pool equipment.

PART 2 - PRODUCTS

2.1 ULTRA VIOLET SYSTEM

- A.** Manufacturers:
 - 1.** TMI SaltPure.
 - 2.** No substitutions allowed.
- B.** General:
 - 1.** Low Pressure UV System to reduce combined chlorine in the water.
 - 2.** UV system shall be sized to closely match the full flow rate for the existing swimming pool.
 - 3.** Standard units shall be shipped with enough wiring to install the control panel 10 feet away from the UV reactor.
 - 4.** The unit shall be pre-assembled and packaged in a manner to protect the unit during shipping.
 - 5.** Conform to requirements of Federal Guidelines as specified in NSF-50 standards and local state and county health codes
- C.** UV Reactor
 - 1.** Chamber constructed of HDPE.

2. Pressure rated for 150 PSI maximum operation.
 3. Floor mount, tubular design.
 4. Plumbed for bottom inlet and outlet on top.
 5. Sensors
 - a. Temperature sensor to turn system off if the water inside the reactor reaches temperatures above 112° F.
 - b. UV intensity sensor to constantly monitor the output of the UV lamp to determine when dosing falls below 60 mJ/cm².
- D. UV Lamp**
1. Output between 220nm to 400nm in wavelength
 2. Guaranteed life of 100 hours.
 3. Quartz sleeve with a quick release lamp fastening system for simplified lamp replacement.
 4. ABS cover for lamp service openings to protect wiring and lamp leads.
- E. Hardware**
1. Complete set of flanges, bolts and gaskets supplied with each reactor. Flanges shall be constructed from SCH80 PVC; bolts to be galvanized and gasket constructed of neoprene
- F. Control Panel**
1. Microprocessor controlled controller with PLC interface.
 2. NEMA 12 (IP-54) rated enclosure, ventilated with an electric fan to prevent overheating.
 3. Features:
 - a. Power light to indicate if electrical service has been interrupted.
 - b. Lamp run light to indicate if lamp is illuminated.
 - c. Lamp on/off control switch.
 - d. Internal circuit breakers to protect control panel.
 - e. Pre-wired connections in bottom of box connected to UV reactor.

- ## 2.2 POOL CHEMISTRY CONTROLLER

1. TMI SaltPure. (Peristaltic pump by Stenner)
2. No Substitutions.

1. Programmable Pool Chemical Automation System for continuous monitoring and control of the recreational water chemistry and related disinfection equipment.

1. NEMA Type 4X (rain and splash proof) lockable injection molded cabinet with a lockable enclosure.

D. Accuracy:

1. The controller shall automatically activate the appropriate chemical feeders in order to maintain the sanitizer level within ± 0.1 parts per million (PPM) or ± 10 mV (millivolts) of Oxidation Reduction Potential (ORP) and the pH within ± 0.1 pH unit of the setpoints selected by the operator.

E. Features

1. All setpoint and calibration levels shall be adjustable with a numeric keypad mounted on the front panel of the unit.
2. The controller shall be capable of actuating all outputs in the following operator selectable modes: off, manual, automatic, proportional and PID control. The controller must be able to interface pulse output chemical feed pumps for true PID control to ensure chemical conservation. The controller shall have ORP, pH, temperature, and free and total chlorine probe for indoor or outdoor applications. The controller must be capable of controlling a UV system based on a combined chlorine calculation.
3. The controller must utilize both ORP and PPM control. For indoor / outdoor applications units MUST incorporate probes for real time combined chlorine readings
4. The controller shall have the capability to operate a UV system via combined chlorine real time readings. Controller shall be programmable to turn UV on and off or ramp power up and down based on combined chlorine reading and programmable alarm settings. Controllers that utilize DPD testing or do not control based on real time combined chlorine levels shall not be considered equal.
5. The controller shall include a temperature sensor and automatic control of the heater
6. The controller shall include standard a flow-switch incorporated into the sample line for chemical probes to ensure shut down of chemical feed should there be a no flow condition or block in the recirculation lines. The system must also display via remote communication the status of flow-switch and its "on time" / "off time" for a 24-hour period.
7. The controller shall continuously calculate and display the Langelier Saturation Index and Ryznar Index using sensor data and/or manual input for TDS, total alkalinity and calcium hardness.
8. The controller shall include programmable high and low alarm levels for all sensor inputs and control functions with operator-selectable feed lockout and alarm buzzer. A Remote Alarm relay shall be included in parallel with alarm buzzer for operator-selectable voltage or dry contact

output. The controller shall be standard with e-mail out alerts on alarm activation. The controller shall also email out a user-defined notification if any automatic control feature is deactivate or changed at the site by an operator. Controllers without email notifications shall not be considered equal.

9. The controller shall have standard real-time monitor and control via a smartphone, ipad or tablet device using a 10-baseT Ethernet jack, or 3G/WiFi router/access point. The HTML server shall be an integral part of the controller. Controllers not having an integral HTML server or interface shall not be considered. The controller shall also be capable of utilizing 3G internet access with optional EVDO provided interface. All communication functions shall function with standard internet browsers. Controllers needing additional software installed shall not be considered.
10. The controller shall have real time monitoring of the heat exchanger corrosion rates and alarm out should corrosion rates exceed standard mil/year erosion rates when supplied with optional LogR package.
11. The controller shall come standard with no less than 7 fully configurable digital inputs
12. The controller shall have 10 configurable analog inputs.
13. The controller shall have a minimum of 5 fully assignable relays.
14. The controller shall have a minimum of 4 fully assignable digital outputs.
15. The controller shall be supplied at factory on Acrylic backboard.
16. The controller shall include an optional conductivity sensor.
17. The controller shall include recirculation flow rate via paddle wheel flow sensor. Flow-sensor to be supplied by chemical automation provider.
18. The control shall have flashing LED status indication with flashing light notification when in alarm status.
19. The flow-cell shall incorporate both a flow-switch and flow meter to indicate & regulate flow through cell. Controllers not having true flow indication shall not be considered.
20. The controller shall come standard with remote monitoring software for auto polling with options including no less than the following:
21. Routine checking of alarms with e-mail out on alarm detection, with operator selected frequency

22. Routine downloading of readings to be emailed to operator on Hourly/Daily/Weekly/Monthly schedules, day/time to be fully selectable by operator
23. Periodic auto downloading of all stored data in controller

2.3 PH BALANCING SYSTEM

A. Manufacturers:

1. TMI SaltPure.
2. No Substitutions.

B. General:

1. Complete buffered acid system with chemistry controller and peristaltic pump.

C. Pump:

1. Peristaltic design: self-priming, can run dry without damage, pumps gaseous solutions, chemicals are metered without exposure to air.
2. Housing: Polycarbonate
3. Pump Tube: Santoprene, FDA Approved
4. Check Valve Duckbill: Pellathane
5. Pump Head Rollers: HDPE:
6. Motor: 25rpm, 1/30 HP, shaded pole, class B
7. Electrical Connection: Power cord with plug end.

3.2 PIPING

- A.** Piping shall be NSF approved.
- B.** All recirculation piping and fittings shall be schedule-80 PVC.
- C.** Connections between metallic pipe fittings and PVC and/or equipment fittings shall be flanged connections.
- D.** Piping or conduits for tubing used for chemical feed lines shall be Schedule-40 PVC piping with sweep fittings.

3.3 VALVES

- A.** Valves to be Asahi/American or equal.
- B.** Valves 3 inches and larger shall be butterfly type valves with PVC body, 175# SWP with stainless steel shaft, polypropylene disc and replaceable resilient seat bonded to a rigid shaft and guarantee for bubble tight shutoff from 27-inch vacuum to 150 psi.
- C.** Valves 2-1/2 inches and smaller shall be PVC true union ball valves, suitable for 125# SWP, full port, three-piece construction, blowout proof stem, Teflon seat, level handle.
- D.** The valves on the chemical feed piping system shall be PVC body valves with Teflon seats and EPDM seals.

PART 3 - EXECUTION

3.1 INSTALLATION – GENERAL

- A.** Protect existing equipment, piping valves etc against damage caused by completing work in this section.
- B.** Install materials in accordance with manufacturer's instructions.
- C.** Maintain manufacturer's recommended clearances around and over equipment, and as required by local Code.
- D.** Start, test, calibrate and adjust all new equipment, chemical feed systems and controllers.
- E.** Adjust and balance the water chemistry in the pool to comply with regulations.
 - 1.** The contractor shall maintain the chemical balance of the pool water until the pool system is fully operational and accepted by the owner.
 - 2.** The contractor shall provide the necessary chemicals to adjust and balance the pool water chemistry to levels approved by the owner.

3.2 PIPING

- A.** All piping shall be supported by blocking and/or secured by non-metallic framing and hangers and as required to eliminate any movement during operation.
 - 1.** Framing and hangers shall be by Strut-Tech, Entrum Industries or equal.
- B.** Contractor shall follow the applicable provisions in Division 15 for installation of piping systems.

3.3 IDENTIFICATION AND LABELING

- A.** All pool equipment shall be affixed with a metallic stamped label identifying the device to which it is connected.
- B.** Valves shall be identified with brass tags attached to valves with a brass jack chain. Valves shall be described as to their function and referenced in the operating instruction manual and on the wall-mounted piping diagram.
- C.** Exposed piping shall be color coded and totally coated with paint to match existing.
 - 1.** Paint requirements:
 - a.** Surface preparation: Scarify the pipe surface with #80grit sand paper. Clean pipe in accordance with SSPC-SP1.
 - b.** First and second coats: Apply one full coat of Tnemec Hi-build Epoxoline, series 66 at thickness of 2.0 to 3.0 mls.
- D.** Provide arrows indicating the direction of flow.

3.4 TESTING

- A.** Pressure and suction piping shall be subjected to a hydrostatic pressure of not less than 50 lbs per square in gauge and proved tight at this pressure for a period of two hours.

3.5 MAINTENANCE MANUALS

- A.** Update the existing maintenance manual to include instructions covering all new equipment. Include wiring diagrams and user maintenance instructions.
 - 1.** A wall mounted, waterproof piping flow diagram shall be prepared and installed in the equipment room.
 - a.** Diagram to be “as-built” and color coded to match color on piping. Valves shall be numbered as installed.
 - b.** Operating cycles shall be specifically described in outline format and in referenced detail.
 - 2.** Include manufacturer’s recommended maintenance schedule, parts lists, piping diagram and troubleshooting information for all new pool equipment.
 - 3.** Include one set of approved submittals as part of the manual.

3.6 DEMONSTRATION AND TRAINING

- A.** Demonstrate operation and maintenance procedures for a time period of eight (8) hours with a certified representative familiar with the complete system.

END OF SECTION

SECTION 13700

VIDEO SURVEILLANCE SYSTEM

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Network HD cameras.
- B. Housing and accessories.
- C. HD monitor.
- D. Network Video Switch.
- E. Security Workstation.
- F. Client Workstation.
- G. Medial converters.

1.2 RELATED SECTIONS

- A. Section 16120 - Wire and Cable.
- B. Section 16132 - Raceway and Boxes.
- C. Section 16755 - Telecommunications Raceway and Wiring System.
- D. Section 16766 - Security Alarm and Detection.
- E. Section 08710 – Door Hardware

1.3 SYSTEM DESCRIPTION – NETWORK SURVEILLANCE SYSTEM

- A. Description: Provide a network HD camera system to include interior color cameras with integral enclosures, mounting accessories and color monitors. All cameras shall be connected into a unified system, with local monitoring stations as indicated on the Drawings. Provide licensing for each camera furnished under this contract. Provide new security workstation and client workstations, including software.

- B. This is a performance type specification describing the minimum acceptable video security system. The Contractor shall design and install the video surveillance system. The devices on the drawings are shown in suggested locations. The final locations of all video surveillance devices shall be solely determined by the Contractor for complete interior coverage of common spaces.
- C. All equipment and assemblies shall be Underwriters Laboratories approved if applicable.

1.4 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Shop Drawings:
 - 1. Indicate layout of system control equipment and wiring interconnections required. Show locations of all cameras with field of view on drawings.
 - 2. Floor plan drawings showing the locations of all cameras, along with camera name, camera type and mounting (i.e. wall or ceiling), lens selection, conduit routing, and telecom closet/rack assignment.
 - 3. Drawings shall be done in a scale that allows the smallest text on the drawing to be legible when the drawing is reduced to 11" x 17".
- C. Product Data: Provide for each device and accessory.
- D. Manufacturer's Installation Instructions: Indicate suitable methods for installing devices.

1.5 PROJECT RECORD DRAWINGS

- A. Accurately indicate actual locations of all cameras, security workstation, client workstations, monitors, keyboards, etc.
- B. Show the actual installed cable pathway route, including type and size of pathway.
- C. Include a reduced set (11" x 17") set of the video surveillance system project record drawings in the operation and maintenance manual.

1.6 OPERATION AND MAINTENANCE DATA

- A. Submit under provisions of Division 1.
- B. Document ratings of system and of each major component.
- C. Include instructions for starting and operating network camera system.

- D. Identify operating limits, which may result in hazardous or unsafe conditions, or in equipment damage.
- E. Include routine preventive maintenance schedule.
- F. List special tools, maintenance materials, and replacement parts.
- G. Include repair instructions for procedures to check, repair, and test equipment during typical malfunctions.
- H. Include copies of manufacturer product warranties for all equipment.

1.7 QUALIFICATIONS

- A. Installer: Company specializing in installing the products specified in this Section with minimum three years documented experience, and authorized by product manufacturer.
- B. Maintenance Service and Support: The Installer shall be able to provide initial contact on warranty service and/or service contract requests from their principal location within four (4) hours of notification. During the warranty period, the Contractor may choose to attempt troubleshooting of the system by telephone with the facility maintenance staff. If the problem cannot be resolved within 24 hours, the Installer shall travel to the facility on the next business day to repair the system.
- C. System Suppliers: Companies specializing in supplying the products specified in this Division with minimum three years documented experience, and authorized by product manufacturers.
- D. All systems and components shall be provided with an explicit manufacturer warranty.

1.8 COORDINATION

- A. Coordinate work under provisions of Division 1.
- B. Coordinate camera locations with outlets and signal wiring
- C. Coordinate with Door Hardware.

1.9 MAINTENANCE SERVICE

- A. Furnish service and maintenance of installed network HD camera system for one year from Date of Substantial Completion.

1.10 SYSTEM DEMONSTRATION AND ACCEPTANCE

- A. Provide systems demonstration under provisions of Division 1 and this Section.

- B. At the time of the Substantial Completion Inspection, the Contractor and Security Installer shall be on-site to demonstrate the operation of the video surveillance system to the Owner's Representatives and Engineer. All video surveillance system components shall be installed and fully operational at the time of the system demonstration.
- C. The Owner's Representatives shall review the demonstration and provide the Contractor with a list of modifications and/or adjustments deemed appropriate for the proper operation of the system. The Contractor shall make all modifications prior to final completion and at no additional cost to the Owner.
- D. System demonstration shall be conducted as directed by the Owner but generally described as follows:
 - 1. Call up each camera on the security workstation monitor.
 - 2. Call up each camera on the security remote monitor, using the keyboard controller.
 - 3. Call up each camera on a designated PC, using the remote viewing software.
 - 4. Demonstrate search and review of video segments using both the keyboard controller and the remote viewing software.
 - 5. Demonstrate search, review, and download of selected video segment to CD or DVD using both the on-board security workstation controls and the remote viewing software. Demonstrate that the CD or DVD can be viewed on another PC.
- E. After all changes have been made to the system, the Contractor shall provide the Owner's authorized personnel with operation and maintenance training for the video surveillance system, as specified in this section.

1.11 VIDEO SURVEILLANCE SYSTEM TRAINING

- A. In accordance with the requirements of Division 1 and this section, include all costs for the following training on the video surveillance system:
 - 1. Operator Training: Train designated operations personnel in the video surveillance system use, including the following functions:
 - a. Camera call-up, search, review/playback, using both the keyboard and the remote viewing software.
 - b. Download video segments to CD or DVD using both the security workstation on-board controls and the remote viewing software.
 - 2. Operator training shall include a total of eight (8) hours of classroom instruction. At the Owner's discretion, the training may be broken up into two 4-hour sessions, in order to accommodate the required facility staff.
- B. Training sessions for the video surveillance system shall be held at the project site and conducted by certified representatives of the Security System Installer, including installers who are directly responsible for and familiar with this specific project.
 - 1. Training session shall occur during normal working hours, i.e., Monday through Friday, 8:00 AM to 4:30 PM.

2. Training session schedule shall conform to the requirements of the Owner.
 3. Submit schedule to Owner for approval not less than two weeks prior to training session.
- C. Total class attendance for each of the classes noted above shall be a maximum of ten (10) people.
- D. The Contractor shall have approved operation and maintenance manuals, parts lists, and project record drawings for all equipment on hand at time of instruction.

1.12 EXTRA MATERIALS

- A. Provide spare parts under provisions of Division 1.
- B. Provide two keys of each type for all lockable equipment.
- C. Cameras: Provide one of each type of camera used on the project.
- D. Provide two (2) backup copies on CD of the configuration settings for all security and client workstations.

PART 2 - PRODUCTS

2.1 MANUFACTURERS – NETWORK HD IP CAMERAS

- A. Ubiquiti Networks Inc.
- B. Substitutions: On pre-approval of the City of Unalaska IT department.

2.2 CAMERA TYPES

- A. Type 1 – UVC-Dome, interior locations.

2.3 NETWORK VIDEO SWITCH

- A. Cisco 3560 series PoE switch, 24 or 48 port as needed for 25% spare capacity at each floor level.
- B. Substitutions: On pre-approval of City of Unalaska IT.

2.4 SECURITY WORKSTATION (Provided by City of Unalaska)

- A. Dell Optiplex 9020
- B. 32GB memory.

- C. 1GB network interface card.
- D. (1) 1 TB solid state drive,
- E. Dell USB Entry Keyboard
- F. USB optical mouse.
- G. 16X DVD RW drive
- H. Windows 2008 operating system.
- I. No substitutions.

2.5 STORAGE

- A. QNAP, TS-269 PRO, 2-BAY, NAS 1.8TB OR LARGER

2.8 GENERAL HARDWARE AND MOUNTS

- B. Anchoring: Anchoring shall be rated for the load and mounting surface.
 - 1. All anchoring sets shall be installed per manufacturers' instructions and be appropriate for the surface to which they are mounted.
 - 2. All manufacturers' torque specifications shall be adhered to as applicable and be appropriate for the surface to which the anchoring sets are mounted.
 - 3. Mounts shall be rated for the weight, external weight (i.e., snow or rain), twist, and wind loading of the equipment used.
 - 4. All hardware shall be installed so that it cannot be removed without the use of hand tools.
 - 5. All exterior exposed mounting hardware including arms, poles, adapters conduit and boxes shall be painted to match the architecture of the building.

2.9 VIDEO SURVEILLANCE SIGNS

- A. All exterior warning signs shall be fabricated with Type I, Level A (encased lens) reflective sheeting and single span sheet aluminum. Sheet aluminum shall be alloy 6061-T or ally 5155-H36 as specified in ASTM B 209. The thickness of the aluminum sheet shall be .080. Aluminum base metal sheets shall be treated with chromate conversion coating for aluminum conforming to requirements of ASTM B-449, Class 2.
 - 1. Sign shall be 12" wide by 18" high with white reflective background.
 - 2. Line 1 is red letters 2" tall.
 - 3. Lines 2 through 6 are black letters 1-1/2" tall.
 - 4. Lines 7 through 9 are black letters 5/8" tall.
 - 5. Reference Exhibit A at the end of this section.
 - 6. Contact Warning Lites of Alaska at 907-562-2124 for a price and availability.

- B. Provide a minimum of 3 signs. Signs to be located at entrances.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide raceway system under provisions of Section 16132.
- C. Provide roof penetrations under provisions of Section 16132.
- D. Install cable under provisions of Section 16120 and 16755.
- E. Provide boxes for mounting devices, cable pulling, and splicing cables under provisions of Division 1 and Section 16132.
- F. Provide all necessary mounting hardware, brackets, and fittings. Mounting brackets shall be appropriate for mounting location.
- G. Exterior Cameras: cables shall be installed in conduit from the exterior camera to the outlet box with the UTP jack. The outlet box shall be located within the building envelope and as close as possible to the camera, while still being readily accessible.

3.2 INTERFACE WITH OTHER PRODUCTS

- A. Interface installation of video surveillance system with security alarm and detection system provided under Section 16766.
- B. Coordinate all camera locations with Owner's Representative prior to rough-in and avoid conflicts with other equipment and objects that may obstruct the field of view or, in the case of light fixtures, may affect the camera performance and quality of the video image.
- C. Coordinate all camera, outlet box, J-hook, conduit, and cable tray locations to avoid conflicts with mechanical piping and ductwork, structural members, and other materials above the accessible ceilings and along the entire cable pathway.
- D. Any camera that is located so that camera performance or field of view is adversely affected shall be relocated by the Contractor at no additional cost to the Owner.

3.3 ADJUSTING

- A. Adjust work under provisions of Division 1.
- B. Field aim cameras as necessary to obtain field of view desired by the Owner.

3.4 LABELING

- A. Furnish and install labels and documentation to identify all cables, jacks, and connections in accordance with TIA/EIA standards, as shown on the Drawings, and under the provisions of Section 16195. As a minimum, each video surveillance jack in each outlet box shall have a unique identifier that matches the identifier at the opposite end and matches the naming scheme on the camera schedule. Identifiers shall be installed on the cable at both ends.
- B. Label all video surveillance junction boxes. For junction boxes above ceilings, mark the box cover with "VIDEO SECURITY" using permanent black marker. For junction boxes in finished areas, mark the inside of the cover.
- C. Provide nameplate label for all new video surveillance racks and enclosures. Rack or enclosure shall be labeled with unique name as shown on the shop drawings.
- D. Label inside door of all wall-mount video surveillance power supplies with panel and circuit number of 120V circuit.
- E. Label the front of each security workstation and client workstation with the assigned IP number and Host Name.

3.5 ADJUSTING, PROGRAMMING, AND CONFIGURATION

- A. Fixed Cameras: The Contractor shall coordinate with the Owner to obtain the desired field of view for each new camera. This includes, but is not limited to, adjusting camera aiming point, white balance, backlight compensation, AGC, iris control, viewing angle, and adjusting vari-focal lenses.
- B. Security and Client Workstations: The Contractor shall completely configure each security workstation video input for camera title, frame rate, resolution, compression, motion detection, alarms, pre/post event recording, macros, and all other features of the security workstation. The security workstation shall be initially configured with the following parameters:
 - 1. Camera Setup: Disable all unused camera inputs.
 - 2. Camera Title: Contact City of Unalaska Representative for specific naming convention for each school.
 - 3. Resolution: High for all cameras.
 - 4. Record Rate: 3 FPS for all cameras.
 - 5. Record Mode: Continuous.

6. Record Lock: OFF.
 7. Auto Delete Mode: OFF.
 8. Turbo Mode: OFF.
 9. Motion Detection: Initially set to OFF. Coordinate with City of Unalaska Representative for which cameras will have motion detection and which areas within each camera view will be masked.
 10. Pre/Post Event Recording: 5 seconds pre-event, 30 seconds post-event.
 11. QuickWave: ON.
 12. Front Panel Lock: Unlocked.
 13. Ethernet Settings: Contact City of Unalaska for proper IP address, subnet mask, host, and gateway settings.
 14. Password: Unit shall utilize three levels of password protection (Installer, Operator, Administrator).
 15. Clock: Set security workstation clock to 12-hour format, MM/DD/YY calendar. Synchronize with City of Unalaska primary and backup servers and update clock once per day. Contact City of Unalaska for server information.
 16. Dwell: Set multi-screen dwell to 3 seconds and full-screen dwell to 6 seconds.
 17. Notification: Notify upon video loss. Contact MSBSD for email address to send notification.
 18. Disk Maintenance: Notify upon failed Disk Test. Contact City of Unalaska for email address to send notification.
 19. Camera AGC: Set signal gain for all cameras to 100%.
- C. Keyboard: Program the keyboard with all camera designations and monitor designations.

3.6 DEMONSTRATION

- A. Provide systems demonstration under provisions of Division 1.
- B. Provide the Owner's authorized personnel with operation and maintenance training for the video surveillance system, as specified in Section 16010.
- C. Conduct walking tour of project and briefly describe function, operation, and maintenance of each component.

Exhibit A



END OF SECTION 16782

SECTION 13930

WET PIPE FIRE SUPPRESSION SYSTEMS

PART 1 - - GENERAL

1.1 SUMMARY

- A.** Section includes wet pipe sprinkler system, system design, installation, and certification.
- B.** Related Sections:
 - 1. Division 1: General Requirements.
 - 2. Section 150000 – Mechanical Identification: Product requirements for Valve and piping identification for placement by this section.
 - 3. Division 16: Requirements for electric connections to equipment specified by this section.

1.2 REFERENCES

- A.** NFPA 13 (National Fire Protection Association) - Installation of Sprinkler Systems.
- B.** IFC (International Fire Code) – 2009 Edition.

1.3 SYSTEM DESCRIPTION

- A.** General: Remodel the existing wet pipe sprinkler system as required to provide coverage in accordance with NFPA 13 requirements. The remodeled areas of the building include locker rooms, sauna, first and second floor office.

1.4 REVIEWS, APPROVALS, AND PERMITS

- A.** The Contractor shall obtain written review and/or approval of the fire protection system design and arrangement from the following authorities:
 - 1. Owner's Representative - Review
 - 2. Alaska State Fire Marshal – Approval
- B.** The Contractor shall comply with all review comments, revising the system design as required, and resubmitting in a timely manner, so as not to delay the construction schedule.

- C. The Contractor shall obtain and pay for all required permits, inspections, tests, and approvals as required by authorities having jurisdiction.

1.5 SUBMITTALS

- A. In accordance with Division 1.
- B. Product Data: Submit data on sprinklers and piping.
- C. Submit a copy of designer's NICET certification and resume', or Alaska P.E. license number, as well as designated project mechanical administrator.
- D. Submit adequate number of State Fire Marshal approved sets of shop drawings, and hydraulic calculations to the Architect/Engineer for their review. Owner's Representative will retain 1 set of "stamped approved" shop drawings. These sets must include the NICET certification or stamp of a licensed professional engineer as described above.
- E. Shop Drawings: Shop drawings shall be submitted in compliance with NFPA 13 requirements for working drawings.
- F. Design Data: Submit design calculations.

1.6 CLOSEOUT SUBMITTALS

- A. In accordance with Division 1.

1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with NFPA 13.
- B. Design Certification: Shop drawings shall be prepared by a person with a minimum certification of level II designer, supervised by a Licensed Professional Engineer or a level III or IV Fire Sprinkler Designer, certified by the National Institute For Certification In Engineering Technologies (NICET), in Fire Protection Engineering Technology Automatic Fire Sprinkler System Layout.
- C. Equipment and components: Bear the "UL" label or the "FM" approval marking.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience.

1.9 COORDINATION

- A.** The Contractor shall examine the architectural, mechanical, electrical and all other drawings relating to the building and plan work accordingly. The Contractor shall check and verify all dimensions at the site before fabricating any portion of the system. Any discrepancies in piping and head locations resulting from failure to do so shall be corrected expeditiously to provide proper coordination of all trades.
- B.** The Contractor shall coordinate work with that of other trades to ensure that adequate space is provided for all work, including requirements for serviceability and accessibility. Locate sprinkler heads to avoid conflict with light fixture and other installed equipment.
- C.** Structural penetrations for piping shall be identified and details of those penetrations shall be submitted to a structural engineer for approval, in a timely manor. Structural members which are damaged cut or penetrated with out approval shall be replaced at no additional expense to the Owner.

1.10 DELIVERY, STORAGE, AND HANDLING

- A.** In accordance with Division 1.
- B.** Store products in shipping containers until installation. Provide and maintain temporary inlet and outlet caps until installation.

1.11 WARRANTY

- A.** In accordance with Division 1.

1.12 EXTRA MATERIALS

- A.** Supply extra sprinklers under provisions of NFPA 13.
- B.** Supply suitable wrenches for each sprinkler type.

PART 2 - - PRODUCTS

2.1 VALVES

- A.** Drain Valves:
 - 1.** Ball Valve: Brass with cap and chain, 3/4 hose thread.

2.2 ABOVE GROUND WET PIPING

- A.** Pipe: Match existing.
 - 1.** Fittings and joints for piping up to and including 2 inches: Malleable iron threaded fittings.

2. Fittings and joints for piping over 2 inches: Wrought steel, butt welded.

2.3 PIPE HANGERS AND SUPPORTS

- A. Conform to NFPA 13.

2.4 SPRINKLERS

- A. Manufacturers: Match existing.
- B. Type: Match existing.
 1. Finish: Chrome plated.
 2. Escutcheon Plate Finish: Chrome plated.
 3. Fusible Link: Glass bulb type temperature rated for specific area hazard.
 4. Freezer/Cooler Applications: Tyco Fire Products dry sprinkler boot Model DSB-1 per manufacturer installation instructions and recommendations.

PART 3 - - EXECUTION

3.1 PREPARATION

- A. Ream pipe ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and foreign material, from inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.2 INSTALLATION – PIPING AND VALVES

- A. Install piping in accordance with NFPA 13 requirements.
- B. Route piping in orderly manner, plumb and parallel to building structure. Maintain gradient.
- C. Install piping to conserve building space, do not interfere with use of space and other work.
- D. Group piping whenever practical at common elevations.
- E. Place piping in concealed spaces above finished ceilings.
- F. Sleeve pipes passing through partitions, walls, and floors.

- G.** Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- H.** Pipe Hangers and Supports: Install in accordance with NFPA 13.
- I.** Slope piping and arrange systems to drain at low points.
- J.** Prime coat and finish exposed piping, fittings, supports and accessories. Refer to Section 099000. Piping, fittings, supports and accessories located in mechanical rooms, pipe shafts, and suspended ceiling spaces are not considered exposed.
- K.** Do not penetrate building structural members unless indicated.
- L.** Provide sleeves when penetrating floors and walls. Seal pipe and sleeve penetrations to achieve fire resistance equivalent to fire separation required.
- M.** When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.
- N.** Install valves with stems upright or horizontal, not inverted.
- O.** Provide drain valves at main shut-off valves, low points of piping and apparatus.

3.3 INSTALLATION – SPRINKLERS AND SYSTEM COMPONENTS

- A.** Install in accordance with NFPA 13.
- B.** Install drum drips within heated portions of the building unless specifically authorized otherwise by the Owner's Representative.
- C.** Hydrostatically test entire system.
- D.** Require test be witnessed by Fire Marshall.
- E.** Perform air pressure leakage test on dry systems per NFPA 13.
- F.** Perform operational tests on wet and dry systems as described in NFPA 13.
- G.** Provide completed NFPA 13 Contractor's Material and Test Certificates to the Owner.

3.4 INTERFACE WITH OTHER PRODUCTS

- A.** Ensure required devices are installed and connected as required to fire alarm system.

3.5 CLEANING

- A.** In accordance with Division 1.
- B.** Flush entire piping system of foreign matter.
- C.** Clean system after installation.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

- A.** In accordance with Division 1.
- B.** Apply masking tape or paper cover to ensure concealed sprinklers, cover plates, and sprinkler escutcheons do not receive field paint finish. Remove after painting. Replace painted sprinklers.

END OF SECTION

SECTION 15000

BASIC MECHANICAL REQUIREMENTS

PART 1 - - GENERAL

1.1 SUMMARY

- A.** Section includes basic mechanical requirements, basic mechanical methods, restricted materials, hangers and supports, mechanical identification, mechanical insulation, demolition, seismic restraint, painting of mechanical systems, and mechanical systems testing and balancing.
- B.** Related Sections:
 - 1.** Division 1: General Requirements.
 - 2.** Division 9: Painting and Finishing: Painting of mechanical systems.
 - 3.** Division 16: Electrical requirements for mechanical equipment.

1.2 SUBMITTALS

- A.** In accordance with Division 1.
- B.** Submittal Requirements: In addition to submittal procedures as outlined under Division 1, mechanical submittals shall be submitted as follows:
 - 1.** Mechanical submittals shall be submitted complete and all at one time. Partial submittals will not be considered and will be returned without review. In some cases the Owner's Representative may review partial submittals where early ordering of some equipment is essential to the project. Review of such partial submittals is at the discretion of the Owner's Representative. Any project delay due to the Contractor's failure to make complete submittals shall be the responsibility of the Contractor. Submittals shall be compiled in a notebook. The data shall be arranged and indexed by specification sections.
 - 2.** Catalog sheets shall be complete and the item or model proposed for use by the Contractor shall be clearly marked, and identified as to which item in the specifications or on the drawings is being submitted.
- C.** Product Data: Submit product data for items specified under this section.
- D.** Control System Data: Submit control system product data and system shop drawings as applicable to work under this project. Shop drawings shall be kept up to date including asbuilt control information for previously completed tenant improvement projects such that shop drawings indicate the entire installed control system.

- E.** Balancing Reports: Submit Balancing Reports as specified under this section.

1.3 CLOSEOUT SUBMITTALS

- A.** In accordance with Division 1.
- B.** Contract Closeout Requirements: In addition to contract closeout requirements as outlined under Division 1, mechanical contract closeout requirements shall include the following:
 - 1.** Record Documents:
 - a.** Record Drawings.
 - b.** Operation & Maintenance Manuals.
 - c.** Valve Tag Schedule.
 - 2.** Testing Reports.
 - 3.** Equipment Startup Reports.
 - 4.** Balancing Reports.
 - 5.** Systems Demonstrations.
 - 6.** Operation & Maintenance Instruction.

1.4 RECORD DOCUMENTS

- A.** Record Drawings: In addition to record drawing requirements as outlined under Division 1, mechanical record drawings shall include the following:
 - 1.** Any and all changes made in the field with respect to original design drawings.
 - 2.** Actual valve locations and valve tag identification.
- B.** Operation & Maintenance Manuals: In addition to Operation & Maintenance Manual requirements as outlined under Division 1, mechanical O&M manuals shall include the following:
 - 1.** Product data for each piece of equipment including local supplier and local manufacturer's representative including address, phone number, and fax number
 - 2.** Manufacturers operation & maintenance instructions for each piece of equipment.
 - 3.** Identification numbers for all parts and nearest source for obtaining parts.

4. Verbal description of each system.
 5. Summary of maintenance instructions to Owner.
 6. Periodic maintenance form.
 7. Testing reports.
 8. Equipment startup reports.
 9. Final balance report.
 10. Valve schedule.
 11. Reduced scale record drawings.
 12. Reduced scale shop drawings.
- C. Valve Tag Schedule: The Contractor shall provide a framed valve tag schedule located in the boiler room.

1.5 OPERATION & MAINTENANCE INSTRUCTION

- A. Notification: The Contractor shall notify the Owner's Representative in a timely manner to schedule O&M instruction such that facility personnel may be present for such instruction.
- B. Instruction: The Contractor shall provide detailed instruction on the operation and maintenance requirements for all mechanical systems. Instruction shall include class time with maintenance personnel and thorough on-site observations and review of each mechanical system and applicable equipment.

1.6 SUBSTITUTIONS

- A. Substitution Requirements: In addition to substitution requirements as outlined under Division 1, mechanical material and equipment substitutions shall meet the following minimum requirements:
1. Size: Proposed substitutions shall be of equivalent size and fit within available space with adequate service access as recommended by the equipment manufacturer.
 2. Performance: Proposed substitutions shall have equal or superior performance to specified equipment.
 3. Quality: Proposed substitutions shall be of equal or greater quality to specified equipment.

4. Weight: Proposed substitutions shall be of equal weight to specified equipment or Contractor shall be responsible for modifications to structure as required for increased weight.
5. Accessories and Options: Proposed substitutions shall be provided with appropriate accessories and options as required for a complete and operational system.
6. System Modifications: The Contractor shall be responsible for modifications to mechanical systems, electrical systems, and building structure and finishes as required for implementing proposed substitute products.

1.7 REGULATORY REQUIREMENTS

- A. Conform to applicable local codes and amendments as adopted by the Municipality of Anchorage.
- B. Products Requiring Electrical Connection: Listed and classified by Underwriters' Laboratories, Inc., as suitable for the purpose specified and indicated.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. In accordance with Division 1 - Transport, handle, store, and products.
- B. Materials shall be delivered, stored, and handled at the project site to prevent damage and facilitate inspection.

1.9 RESTRICTED MATERIALS

- A. Materials containing asbestos in any form are not allowed. Where materials or equipment provided by the Contractor are found to contain asbestos, such items shall be removed and replaced with non-asbestos items at no additional cost to the Owner.
- B. Materials containing lead are not allowed. Where materials or equipment provided by the Contractor are found to contain lead, such items shall be removed and replaced with lead free materials at no additional cost to the Owner.

1.10 BASIC MECHANICAL METHODS

- A. Installation Instructions: Comply with manufacturer's published instructions for delivery, storage, protection, installation, and materials.
- B. Operation of Equipment during Construction: When equipment is operable, and it is to the advantage of the Contractor to operate the equipment during construction, such equipment may be operated provided that the operation is properly supervised, and the Contractor retains full responsibility for the equipment operated. Regardless of whether or not the equipment has or has not been operated, the Contractor shall properly clean the equipment, install new

filter media, make all required adjustments, and complete all punch list items before final acceptance by the Owner's Representative.

- C.** Service Access: Install equipment and materials to provide required access for servicing and maintenance. Coordinate the final location of concealed equipment and devices requiring access with final location of required access panels and doors. Allow ample space for removal of all parts that require replacement or servicing.
- D.** Access Doors: Where mechanical equipment requiring access (including valves) is located above GWB ceilings, within wall assemblies, or other non-readily accessible locations; access doors shall be provided. Access doors within areas of public occupancy shall be lockable type. Coordinate with Division 8.
- E.** Mounting Heights: Where mounting heights are not detailed or dimensioned, install mechanical services and overhead equipment to provide the maximum headroom possible.
- F.** Exposed Systems: Items exposed (in areas without ceilings) shall be installed in a neat, orderly manner. Elements shall be perpendicular and parallel to building lines. Items exposed in normally occupied areas (not including mechanical rooms) shall be finished in accordance with specifications. In those conditions where ductwork is exposed in finished areas, careful craftsmanship and only the highest standards of installation will be acceptable. All routing of exposed ducts, pipes, conduits, shall be approved in advance by the Owner's Representative prior to installation.
- G.** Drawings and Specifications:

 - 1.** The Drawings indicate the general arrangement of systems and are to be followed in so far as possible. If substantial deviations from the layout are necessitated by field conditions, detailed layouts of the proposed departures shall be submitted in writing to the Owner's Representative, for approval before proceeding with the work.
 - 2.** The Contractor shall make all measurements in the field and shall be responsible for correct fitting. Contractor shall coordinate this work with all other trades in such a manner as to cause a minimum of conflict or delay.
 - 3.** Where any work is placed as to cause or contribute to a conflict it shall be readjusted at the expense of the Contractor. The Owner's Representative's decision shall be final in regard to the arrangement of ducts, piping, etc, where conflict arises.
 - 4.** Where offsets in systems are required to complete the installation, or for the proper operation of the system, these shall be deemed to be included in the Contract.
 - 5.** Significant deviations from Drawings must be approved by the Owner's Representative.

H. Location of Mechanical Systems:

1. Mechanical layouts indicated on drawings are diagrammatical. Exact locations of ducts, pipes, and equipment may vary because of conflicts with work of other trades.
2. Locate equipment requiring periodic servicing so that it is readily accessible. Do not back up service sides to walls, nor place it too close to other equipment to make service impractical.

PART 2 - - PRODUCTS

2.1 MATERIALS

- A. Materials and equipment shall be new, unused, and delivered to site in manufacturer's original packaging.
- B. Equipment shall be regularly cataloged items of the manufacturer and shall be supplied as a complete unit in accordance with the manufacturer's standard specifications. Optional items shall be provided as required for proper installation unless noted otherwise. Manufacturer's identification shall be maintained for all equipment.

2.2 HANGERS AND SUPPORTS

- A. Plumbing Piping: Conform to MSS SP58 and UPC.
- B. Hydronic Piping: Conform to MSS SP58.
- C. Ductwork: In accordance with SMACNA requirements.

2.3 MECHANICAL IDENTIFICATION

- A. Valve Tags: 1-1/2 inch diameter, plastic or metal tags with engraved or stamped letters corresponding with valve chart.
- B. Pipe Identification: Painted stencil or pre-manufactured type conforming to ASME A13.1.
- C. Ductwork Identification: Painted stencil, minimum 1-3/4 inch high letters.

2.4 MECHANICAL INSULATION

- A. Plumbing Piping: ASTM C547 Pre-formed, fiberglass pipe insulation with factory applied vapor barrier and pre-manufactured plastic fitting insulation.
- B. Hydronic Piping: ASTM C547 Pre-formed, fiberglass pipe insulation with factory applied vapor barrier and pre-manufactured plastic fitting insulation.

- C. Ductwork: Rigid Mineral Fiber: ASTM C 612 Type IA, IB, II, III, & IV. Flexible Mineral Fiber: ASTM C 533 Type I, or Type II up to 250F, ASTM C 1290 Type III
- D. ADA Fixtures: Pre-manufactured insulation kit for waste and hot water supplies, ADA compliant.

PART 3 - - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
- B. Report in writing to Owner's Representative prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.
- C. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

3.2 DEMOLITION

- A. General: Remove existing mechanical systems, sub-systems, and/or components as indicated on the drawings. Remove existing mechanical components as necessary for connection to and/or extension of existing systems as indicated on the drawings and required for a functional system.
- B. Ancillary Items: Where systems, sub-systems, and/or components are to be removed, remove all ancillary items including but not limited to supports, hangers, power, controls, and similar.
- C. Disposal: The Contractor shall be responsible for removal and disposal of demolished items from the site.

3.3 INSTALLATION - GENERAL

- A. Install in accordance with manufacturer's instructions.

3.4 INSTALLATION – HANGERS AND SUPPORTS

- A. Plumbing Piping: Install pipe hangers and supports in accordance with MSS SP89, ASME B31.9, and UPC.
- B. Hydronic Piping: Install pipe hangers and supports in accordance with MSS SP89 and ASME B31.9.
- C. Ductwork: Install ductwork support in accordance with SMACNA requirements.
- D. Provide copper plated hangers and supports for non-insulated copper piping.

3.5 INSTALLATION – MECHANICAL IDENTIFICATION

- A.** Valve Tags: Install using corrosive-resistant chain. Number tags consecutively by location.
- B.** Piping Identification: Identify piping, concealed or exposed with painted stencil or plastic pipe markers. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers, and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, and at each obstruction.
- C.** Ductwork Identification: Identify ductwork, concealed or exposed with painted stencil. Install in clear view. Locate identification not to exceed 20 feet on straight runs. Identify system type (supply or exhaust). Identify existing ductwork to remain and be re-used.

3.6 INSTALLATION – MECHANICAL INSULATION

- A.** Plumbing Piping and Equipment: Provide 1 inch thick pipe insulation at cold water, hot water and hot water circulating. Provide 1 inch insulation at plumbing vent through roof assemblies.
- B.** Hydronic Piping: Provide 1 inch thick pipe insulation at heating glycol supply and return piping.
- C.** Insulation Shields: Provide insulation shields between hanger and piping for insulated piping systems. For piping larger than 1-1/2 inch, provide insulation insert support.

3.7 SEISMIC RESTRAINT OF MECHANICAL EQUIPMENT

- A.** Seismically restrain equipment in accordance with the International Building Code – 2009 Edition, ASCE 7 chapter 13; and local Municipal requirements. Seismic restraint assemblies shall be premanufactured, or field fabricated, and secured to building structural components. The Contractor shall retain the services of a registered structural engineer to prepare shop drawings for the proposed restraint systems and submit to the Municipality of Anchorage as a differed submittal.

3.8 SEISMIC RESTRAINT OF PIPING AND DUCTWORK SYSTEMS

- A.** Seismically restrain all piping and ductwork systems in accordance with the most current edition of SMACNA Seismic Restraint Manual - Guidelines for Mechanical Systems.

3.9 PAINTING

- A.** Coordinate with Division 9.

- B.** Paint all piping, ductwork, mechanical equipment, hangers, and associated appurtenances exposed within finished spaces (except chrome plated or stainless steel). Insulated piping, ductwork, and equipment shall also apply.
- C.** Paint all piping, ductwork, hangers, and associated appurtenances exposed on the outside of the building. Paint roof mounted piping, ductwork, and associated appurtenances where visible from the ground level.
- D.** Paint mechanical equipment delivered to the site with prime coat.
- E.** Paint mechanical equipment supplied with factory finish where indicated within the contract documents to be field finished.
- F.** Paint access doors to match adjacent wall or ceiling color; or as directed by the Owner's Representative.
- G.** Paint piping and appurtenances exposed within casework; except chrome plated or stainless steel.
- H.** Paint fabricated mechanical support systems, other than galvanized.
- I.** Paint or touch-up, as directed by Owner's Representative, factory painted equipment damaged during shipment or installation.
- J.** Colors as directed by Owner's Representative.

3.10 TESTING

- A.** Testing Requirements: The Contractor shall test systems as specified herein and as required by local code, and local authority having jurisdiction. The Contractor shall be responsible for all materials, equipment, and costs associated with testing. The Contractor shall notify the Owner's Representative with respect to testing schedules in a timely manner such that personnel may be on site to witness testing if so desired by the Owner's Representative. Scheduling of testing with the local authority having jurisdiction shall be the responsibility of the Contractor. The Contractor shall submit testing reports to the Owner's Representative.
- B.** Pressure Piping: Test all domestic water, glycol heating water, and other similar pressure piping systems hydrostatically in accordance with UPC and IMC requirements. Observe piping during this period and repair all leaks.
- C.** Waste and Vent Piping: Test in accordance with UPC requirements.

3.11 SYSTEMS ADJUSTMENT

- A.** Systems shall be adjusted as necessary to ensure proper function of all controls, proper air distribution, elimination of drafts, noise and vibration. All systems shall be fully adjusted and in operating condition at final completion.

3.12 SYSTEMS BALANCING

- A.** General: Balance air and hydronic systems in accordance with AABC or NEBB requirements.
- B.** Qualifications: Testing and Balancing Firm shall be AABC or NEBB certified. Submit qualification certifications.
- C.** Report: Prepare and submit balance report in accordance with AABC or NEBB requirements.

3.13 SYSTEMS DEMONSTRATION

- A.** Notification: The Contractor shall notify and schedule demonstration of systems with the Owner's Representative such that appropriate personnel may be on site for demonstrations.
- B.** Demonstration Personnel: The Contractor shall provide qualified personnel and materials on site as required to demonstrate systems.
- C.** Demonstration: The Contractor shall demonstrate operation of all mechanical systems to the satisfaction of the Owner's Representative.

END OF SECTION

SECTION 15400

PLUMBING

PART 1 - - GENERAL

1.1 SUMMARY

- A.** Section includes domestic water piping, valves, fittings, sanitary waste and vent piping, plumbing fixtures, and accessories.
- B.** Related Sections:
 - 1.** Division 1: General Requirements.
 - 2.** Section 15000 – Basic Mechanical Requirements: Hangers and Supports
 - 3.** Section 15000 – Basic Mechanical Requirements: Mechanical Identification.
 - 4.** Section 15000 – Basic Mechanical Requirements: Mechanical Insulation.

1.2 REFERENCES

- A.** ASME B16.18 (American Society of Mechanical Engineers) - Cast Copper Alloy Solder Joint Pressure Fittings.
- B.** ASME B16.22 (American Society of Mechanical Engineers) - Wrought Copper and Bronze Solder Joint Pressure Fittings.
- C.** ASME B16.26 (American Society of Mechanical Engineers) - Cast Bronze Fittings for Flared Copper Tubes.
- D.** ASME B31.9 (American Society of Mechanical Engineers) - Building Service Piping.
- E.** ASTM B32 - Solder Metal.
- F.** ASTM B88 - Seamless Copper Water Tube.
- G.** MSS SP-110 (Manufacturers Standardization Society of the Valve and Fittings Industry) - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.
- H.** ASME A1126.1 (American Society of Mechanical Engineers) - Water Hammer Arrestors.

- I.** PDI WH-201 (Plumbing and Drainage Institute) - Water Hammer Arrestors.
- J.** ASME B123 (American Society of Mechanical Engineers) - Cast Copper Alloy Solder Joint Drainage Fittings - DWV.
- K.** ASME B129 (American Society of Mechanical Engineers) - Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings - DWV.
- L.** ASTM A74 - Cast Iron Soil Pipe and Fittings.
- M.** ASTM B306 - Copper Drainage Tube (DWV).
- N.** ASTM C564 - Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
- O.** CISPI 301 (Cast Iron Soil Pipe Institute) - Cast Iron Soil Pipe and Fittings for Hubless Cast Iron Sanitary Systems.
- P.** CISPI 310 (Cast Iron Soil Pipe Institute) - Joints for Hubless Cast Iron Sanitary Systems.
- Q.** ASME A112.6.1 (American Society of Mechanical Engineers) - Supports for Off-the-Floor Plumbing Fixtures for Public Use.
- R.** ASME A112.18.1 (American Society of Mechanical Engineers) - Finished and Rough Brass Plumbing Fixture Fittings.
- S.** ASME A112.19.2 (American Society of Mechanical Engineers) - Vitreous China Plumbing Fixtures.
- T.** ASME A112.19.3 (American Society of Mechanical Engineers) - Stainless Steel Plumbing Fixtures.

1.3 SUBMITTALS

- A.** In accordance with Division 1.
- B.** Product Data: Submit data for pipe materials, pipe fittings, valves, drains, pumps, fixtures, rough-in dimensions, trim, finishes, and accessories.

1.4 QUALITY ASSURANCE

- A.** Ensure that products requiring electrical connections are listed and classified by Underwriters Laboratories Inc.
- B.** Lead Free: All fixtures and trim shall be lead free and certified as lead free by the manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A.** In accordance with Division 1.
- B.** Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- C.** Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.
- D.** Accept fixtures on site in factory packaging. Inspect for damage.
- E.** Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

1.6 FIELD MEASUREMENTS

- A.** Verify field measurements prior to fabrication.

PART 2 - - PRODUCTS

2.1 WATER PIPING, BURIED

- A.** Trap Primer Service: Copper tubing, type K, hard drawn; or PEX.

2.2 WATER PIPING, ABOVE GRADE

- A.** Copper Tubing: ASTM B88, Type L, hard drawn.
 - 1.** Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
 - 2.** Joints: ASTM B32, solder, Grade 95TA lead free.

2.3 SANITARY SEWER PIPING, BURIED

- A.** ABS Pipe: ASTM F628, Acrylonitrile-Butadiene-Styrene (ABS) material.
 - 1.** Fittings: ABS.
 - 2.** Joints: ASTM D2235, solvent weld.
- B.** Cast Iron Pipe: CISPI 301, hub-less.
 - 1.** Fittings: Cast iron.
 - 2.** Joints: CISPI 310, neoprene gasket and stainless steel clamp and shield assemblies.

2.4 SANITARY SEWER PIPING, ABOVE GRADE

- A.** ABS Pipe: ASTM F628, Acrylonitrile-Butadiene-Styrene (ABS) material.
 - 1.** Fittings: ABS.
 - 2.** Joints: ASTM D2235, solvent weld.
- B.** Cast Iron Pipe: CISPI 301, hub-less, service weight.
 - 1.** Fittings: Cast iron.
 - 2.** Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.
- C.** Copper Tube: ASTM B306, DWV.
 - 1.** Fittings: ASME B16.23, cast bronze, or ASME B16.29, wrought copper.
 - 2.** Joints: ASTM B32, solder, Grade 50B.

2.5 FLANGES, UNIONS, AND COUPLINGS

- A.** Copper tube and pipe: Class 150 bronze unions with soldered joints.
- B.** Steel pipe: Class 150 malleable iron threaded unions.

2.6 BALL VALVES

- A.** Manufacturers:
 - 1.** Nibco.
 - 2.** Crane.
 - 3.** Hammond.
 - 4.** Substitutions: In accordance with Division 1.
- B.** Construction, 4 inches and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze, two piece body, chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle, solder or threaded ends. AGA listed for gas service.

2.7 WATER HAMMER ARRESTORS

- A.** Manufacturers:

1. Sioux Chief.
 2. J.R. Smith.
 3. Zurn.
 4. Substitutions: In accordance with Division 1.
- B.** ANSI/ASSE 1010, copper body, EPDM o-ring, piston type; or ANSI A1126.1, stainless steel construction, bellows type.

2.8 CLEANOUTS

- A.** Manufacturers:
1. J.R. Smith.
 2. Josam.
 3. Zurn.
 4. Substitutions: In accordance with Division 1.
- B.** Interior Finished Floor Areas: Lacquered cast iron body with anchor flange, reversible clamping collar, threaded top assembly, and round scored cover with gasket in service areas and round depressed cover with gasket to accept floor finish (vinyl or tile) in finished floor areas. Provide adjustable carpet clamping frame at carpeted areas.
- C.** Interior Finished Wall Areas: Line type with lacquered cast iron body and round epoxy coated cover with gasket, and round stainless steel access cover secured with machine screw.

2.9 PLUMBING FIXTURES

- A.** Fixtures: As indicated on drawings.
- B.** Trim: Provide faucets, flush valves, screwdriver type stops, flexible braided stainless steel supplies, and similar trim as indicated on drawings and as necessary for complete and functional fixture. Fixtures requiring ADA compliance shall be provided with ADA compliant trim.
- C.** Traps: Provide fixture trap as required by code and applicable to functional fixture operation. Exposed traps shall be chrome plated brass. Concealed traps shall be PVC, chrome plated brass, or as recommended by the manufacturer. Fixtures requiring ADA compliance, with exposed traps and supplies, shall be provided with pre-manufactured insulation at waste and hot water piping.

- D. Support: Provide adequate support for all fixtures. Wall mounted water closets, urinals, and lavatories shall be provided with floor mounted carrier supports.

PART 3 - - EXECUTION

3.1 EXAMINATION

- A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.
- B. Verify that electric power is available and of the correct characteristics.
- C. Confirm that millwork is constructed with adequate provision for the installation of counter top lavatories and sinks.

3.2 PREPARATION

- A. Ream pipe and tube ends. Remove burrs.
- B. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3.3 INSTALLATION – DOMESTIC WATER PIPING

- A. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- B. Install piping to maintain headroom and neither interfere with use of space nor take more space than necessary.
- C. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- D. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings. Refer to Section 15000.
- E. Provide access where valves and fittings are not exposed. Coordinate size and location of access doors with Section 15000.
- F. Install valves with stems upright or horizontal, not inverted.
- G. Install water piping to ASME B31.9.
- H. Install water hammer arrestors complete with accessible isolation valve.
- I. Install unions downstream of valves and at equipment or apparatus connections.

- J.** Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- K.** Install ball valves for throttling, bypass, or manual flow control services.
- L.** Slope water piping minimum 0.25 percent and arrange to drain at low points.
- M.** Disinfect potable water piping in accordance with UPC requirements.

3.4 INSTALLATION – SANITARY WASTE AND VENT PIPING

- A.** Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for snaking drainage system.
- B.** Install floor cleanouts at elevation to accommodate finished floor.
- C.** Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- D.** Install piping to maintain headroom. Do not spread piping, conserving space.
- E.** Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- F.** Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings. Refer to Section 15000.
- G.** Establish invert elevations, slopes for drainage to 1/4 inch per foot minimum. Maintain gradients.

3.5 INSTALLATION – PLUMBING FIXTURES

- A.** Install each fixture with trap, easily removable for servicing and cleaning.
- B.** Provide flexible supplies to fixtures with stops, reducers, and escutcheons.

- C.** Install components level and plumb.
- D.** Install and secure fixtures in place with wall carriers and bolts.
- E.** Seal fixtures to wall and floor surfaces with sealant as specified in Division 7, color to match fixture.
- F.** Clean plumbing fixtures and equipment.
- G.** Do not permit use of fixtures before final acceptance.

END OF SECTION

SECTION 15500
HYDRONIC HEATING

PART 1 - - GENERAL

1.1 SUMMARY

- A.** Section includes systems, accessories, valves, pipe and pipe fittings, hydronic specialties, circulating pumps, and terminal heating units for glycol heating water.
- B.** Related Sections:
 - 1.** Division 1: General Requirements.
 - 2.** Section 15000 - Basic Mechanical Requirements: Hangers and Supports.
 - 3.** Section 15000 – Basic Mechanical Requirements: Mechanical Identification.
 - 4.** Section 15000 – Basic Mechanical Requirements: Mechanical Insulation.

1.2 REFERENCES

- A.** ASME B31.9 (American Society of Mechanical Engineers) - Building Services Piping.
- B.** ASME B16.18 (American Society of Mechanical Engineers) - Cast Copper Alloy Solder Joint Pressure Fittings.
- C.** ASME B16.22 (American Society of Mechanical Engineers) - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
- D.** ASTM B32 - Solder Metal.
- E.** ASTM B88 - Seamless Copper Water Tube.

1.3 SYSTEM DESCRIPTION

- A.** Use unions, flanges, and couplings downstream of valves and at equipment or apparatus connections.
- B.** Use ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- C.** Use ball valves for throttling or bypass services.
- D.** Use ¾-inch ball valves with hose connection end and cap for drains at main shut-off valves, low points of piping, bases of vertical risers, and at equipment.

- E.** Valve seat materials shall be compatible with glycol solutions applicable to this project.

1.4 SUBMITTALS

- A.** In accordance with Division 1.
- B.** Product Data: Submit data on pipe materials, pipe fittings, valves, accessories, and terminal heating units. Provide manufacturers catalogue information. Indicate valve data and ratings.

1.5 DELIVERY, STORAGE, AND HANDLING

- A.** In accordance with Division 1.
- B.** Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- C.** Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system Protect

1.6 FIELD MEASUREMENTS

- A.** Verify field measurements prior to fabrication.

PART 2 - - PRODUCTS

2.1 GLYCOL HEATING WATER PIPING, ABOVE GROUND

- A.** Copper Tubing: ASTM B88, Type L, hard drawn.
 - 1.** Fittings: ASME B16.18, cast brass, or ASME B16.22 solder wrought copper.
 - 2.** Joints: Solder, lead free, ASTM B32, 95-5 tin-antimony, or tin and silver, with melting range 430 to 535 degrees F.

2.2 UNIONS, FLANGES, AND COUPLINGS

- A.** Copper Pipe: Bronze, soldered joints.

2.3 BALL VALVES

- A.** Manufacturers:
 - 1.** Nibco.
 - 2.** Crane.
 - 3.** Milwaukee.

- 4.** Substitutions: In accordance with Division 1.
- B.** Bronze two piece body, chrome plated brass or stainless steel ball, teflon seats and stuffing box ring, lever handle, solder or threaded ends.

2.4 HYDRONIC SPECIALTIES

- A.** Gauges: ASME B40.1, with bourdon tube, rotary brass movement, brass socket, front calibration adjustment, black scale on white background, cast aluminum case, phosphor bronze bourdon tube, 3-1/2 inch diameter dial size, one percent mid-scale accuracy, PSI scale. Provide gauges with needle valve or ball valve isolation and pulsation damper.
- B.** Air Vents:
 - 1.** Manual Type: Disk type vent with built-in check valve for manual or automatic operation, discs replaceable without draining system, 1/8 inch shank, rated at 50 psi, Hoffman No. 500 or equal; provide with air chamber, brass construction, 6 cubic inch volume, Hoffman No. 550 or equal.
 - 2.** Float Type: Brass or semi-steel body, copper float, stainless steel valve and valve seat; 1/8 inch NPT connection to atmosphere with drain piping suitable for system operating temperature and pressure; with isolating valve. Hoffman No. 79 or equal.
 - 3.** High Capacity Automatic Air Vent: Cast iron body, stainless steel and brass trim, EPDM diaphragm, rated for 300°F, 350 PSIG, 3/4 inch system connection, 1/2 inch NPT connection to atmosphere with drain piping. Provide with isolation valve and strainer upstream of vent. Hoffman 792 or equal.
- C.** Balance Valves: B&G circuit setter or Taco Accu-Flo, no substitutions.
- D.** Glycol Solution: Pre-mixed, inhibited propylene glycol solution. Dowfrost HD, no substitutions. Mix ratio as indicated on drawings.
- E.** Glycol Charging: Plastic fluid holding tank with automatic, self-priming feed pump with integral pressure switch, check valve, and pressure gauge.

2.5 IN-LINE PUMPS

- A.** Manufacturers:
 - 1.** Taco
 - 2.** Grundfos.
 - 3.** B&G.

- 4.** Substitutions: In accordance with Division 1.
- B.** Type: Horizontal shaft, single stage, direct connected, with resiliently mounted motor for motor horizontal, in-line mounting, oil lubricated, for 175 psig maximum working pressure.
- C.** Casing: Cast iron, with flanged pump connections.
- D.** Impeller: Stamped brass or cast bronze, keyed to shaft.
- E.** Bearings: Replaceable bearing cartridge assembly.
- F.** Shaft: Alloy or stainless steel with copper or bronze sleeve, integral thrust collar.
- G.** Seal: Replaceable mechanical seal, 300 degrees F maximum continuous operating temperature, applicable to hydronic fluid service (propylene glycol).
- H.** Drive: Flexible coupling.

2.6 KICK SPACE HEATER

- A.** Manufacturers:
 - 1.** Embassy.
 - 2.** Beacon/Morris.
 - 3.** Substitutions: In accordance with Division 1.
- B.** Heating Elements: Copper tube, aluminum finned heating element.
- C.** Fan Control: Thermostatically controlled, two speed.
- D.** Enclosures: Galvanized steel
- E.** Finish: Factory applied baked enamel of color as selected by Architect.
- F.** Access Doors: For otherwise inaccessible valves, provide factory-made permanently hinged access doors, 6 x 7 inch minimum size.
- G.** Capacity: As scheduled.

PART 3 - - EXECUTION

3.1 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt on inside and outside before assembly.
- C. Prepare piping connections to equipment with flanges or unions.
- D. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.

3.2 INSTALLATION – PIPE AND FITTINGS

- A. Install glycol heating water piping in conformance with ASME B31.9.
- B. Route piping parallel to building structure and maintain gradient.
- C. Install piping to conserve building space, and not interfere with use of space.
- D. Sleeve pipe passing through partitions, walls and floors.
- E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- F. Provide access where valves and fittings are not exposed. Coordinate size and location of access doors with Section 15000.
- G. Slope piping and arrange systems to drain at low points.
- H. Install valves with stems upright or horizontal, not inverted.
- I. Insulate piping; refer to Section 15000.

3.3 INSTALLATION – HYDRONIC SPECIALTIES

- A. Install materials in accordance with manufacturers requirements.
- B. Install pressure gauges at pumps and where indicated on drawings.
- C. Install pressure gages with pulsation dampers. Provide needle valve or ball valve to isolate each gage. Extend nipples to allow clearance from insulation.
- D. Provide instruments with scale ranges selected according to service with largest appropriate scale.
- E. Install gauges and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.
- F. Adjust gages and thermometers to final angle, clean windows and lenses, and calibrate to zero.
- G. Provide manual air vents at system high points and as indicated.

- H. For automatic air vents in ceiling spaces or other concealed locations, provide vent tubing to nearest drain.
- I. Provide drain and hose connection with valve on strainer blow down connection.
- J. Provide balancing valves on water outlet from terminal heating units such as radiation, unit heaters, and heating coils units.
- K. Air Vent Schedule:

<u>Location</u>	<u>Type</u>
Terminal heating units, mains below	Manual
Terminal heating units, mains above	None
Heating mains, at high points in system	Automatic
As Indicated on Drawings	Per Drawings

Note: For terminal heating units, mains above unit, install branch piping connections at bottom of mains or 45° from bottom to allow air migration to mains.

3.4 INSTALLATION PUMPS

- A. Install long radius reducing elbows or reducers between pump and piping. Support piping adjacent to pump such that no weight is carried on pump casings.
- B. Provide line sized shut-off valve and on pump suction, and line sized on pump discharge.
- C. Lubricate pumps before start-up.

3.5 INSTALLATION – TERMINAL HEATING UNITS

- A. Install equipment exposed to finished areas after walls and ceilings are finished and painted. Avoid damage.
- B. Protection: Provide finished cabinet units with protective covers during balance of construction.
- C. Baseboard Radiation: Locate on outside walls and run cover continuously wall-to-wall unless otherwise indicated. Center elements under windows. Where multiple windows occur over units, divide element into equal segments centered under each window. Install end trim where units butt against walls.
- D. Cabinet Unit Heaters: Install as indicated. Seismically restrain units. Coordinate to assure correct recess size for recessed units.

3.6 CLEANING

- A. In accordance with Division 1.

- B.** After construction is completed, including painting, clean exposed surfaces of units. Vacuum clean coils and inside of cabinets.
- C.** Touch-up marred or scratched surfaces of factory-finished cabinets, using finish materials furnished by manufacturer.
- D.** Install new filters.

END OF SECTION

SECTION 15800

VENTILATION

PART 1 - - GENERAL

1.1 SUMMARY

- A.** Section includes low pressure metal ductwork, flexible ductwork, duct accessories, computer room air conditioner and air inlet/outlets.
- B.** Related Sections:
 - 1.** Division 1: General Requirements.
 - 2.** Section 15000 – Basic Mechanical Requirements: Hangers and Supports.
 - 3.** Section 15000 – Basic Mechanical Requirements: Mechanical Identification.
 - 4.** Section 15000 – Basic Mechanical Requirements: Mechanical Insulation.

1.2 REFERENCES

- A.** ASTM A90 - Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles.
- B.** ASTM A525 – General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
- C.** ASTM A527 – Steel Sheet, Zinc-Coated (Galvanized) by Hot-Dip Process, Lock Forming Quality.
- D.** NFPA 90A (National Fire Protection Association) - Installation of Air Conditioning and Ventilating Systems.
- E.** SMACNA (Sheet Metal Air Conditioning Contractors' National Association) - HVAC Air Duct Leakage Test Manual.
- F.** SMACNA (Sheet Metal Air Conditioning Contractors' National Association) - HVAC Duct Construction Standards - Metal and Flexible.
- G.** UL 181 (Underwriters Laboratories, Inc.) - Factory-Made Air Ducts and Connectors.
- H.** ADC 1062 (Air Diffusion Council) - Certification, Rating and Test Manual.

- I. ASHRAE 70 (American Society of Heating, Refrigerating and Air Conditioning Engineers) - Method of Testing for Rating the Airflow Performance of Outlets and Inlets.

1.3 PERFORMANCE REQUIREMENTS

- A. No variation of duct configuration or sizes other than those of equivalent or lower loss coefficient is permitted except by written permission. Size round ducts installed in place of rectangular ducts in accordance with ASHRAE table of equivalent rectangular and round ducts.

1.4 SUBMITTALS

- A. In accordance with Division 1.
- B. Product Data: Submit data for duct materials, fans, duct connectors, flexible duct, duct accessories, and air inlet/outlets.

1.5 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

PART 2 - - PRODUCTS

2.1 DUCT MATERIALS

- A. Galvanized Steel Ducts: ASTM A525 and ASTM A527 galvanized steel sheet, lock-forming quality, having zinc coating of in conformance with ASTM A90.
- B. Flexible Ductwork: UL 181, Class 1, aluminum laminate and polyester film with latex adhesive supported by helical wound spring steel wire; fiberglass insulation; aluminized vapor barrier film. Pressure Rating; 10 inches wg positive and 1.0 inches wg negative. Maximum Velocity; 4000 fpm. Temperature Range; -20 degrees F to 210 degrees F.
- C. Volume Dampers: Fabricate in accordance with SMACNA standards. Provide with locking indicating quadrant regulators.
- D. Duct Access Doors: Fabricate in accordance with SMACNA standards. Rigid and close fitting galvanized steel with sealing gaskets and quick fastening locking devices. For insulated ductwork, install minimum 1 inch thick insulation with sheet metal cover.
- E. Fasteners: Rivets, bolts, or sheet metal screws.
- F. Hanger Rod: ASTM A36; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

2.2 LOW PRESSURE DUCTWORK FABRICATION

- A.** Fabricate and support in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- B.** Construct T's, bends, and elbows with minimum radius 1-1/2 times centerline duct width. Where not possible and where rectangular elbows are used, provide airfoil turning vanes. Where acoustical lining is indicated, provide turning vanes of perforated metal with glass fiber insulation.
- C.** Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
- D.** Provide standard 45-degree lateral wye takeoffs unless otherwise indicated where 90-degree conical tee connections may be used.

2.3 AIR INLETS AND OUTLETS

- A.** Manufacturers:
 - 1.** Titus.
 - 2.** Price.
 - 3.** Kreuger.
- B.** Substitutions: In accordance with Division 1.
- C.** Grilles, Registers, and Diffusers: As indicated on drawings.
- D.** Frames: Provide frames as indicated on drawings or as appropriate for ceiling and/or wall system installation.

2.4 COMPUTER ROOM AIR CONDITIONER

- A.** Manufacturers:
 - 1.** Mitsubishi.
 - 2.** Liebert.
- B.** Substitutions: In accordance with Division 1.
- C.** Description: Direct expansion unit with wall mounted evaporator and remote air cooled condenser.
- D.** Air Distribution: Wall mounted, ductless distribution, washable filter, and three speed fan.
- E.** Condensing Unit: Remote air cooled, twin rotary compressor, R-410A refrigerant

- F.** Control: Wall mounted, wired controller shall include a LCD providing continuous display of operating status and alarm condition. Keypad for setpoint/program control, fan speed selection and unit On/Off shall be located below the display.

PART 3 - - EXECUTION

3.1 EXAMINATION

- A.** Verify sizes of equipment connections before fabricating transitions.
- B.** Verify inlet/outlet locations.
- C.** Verify ceiling and wall systems are ready for installation of air inlet/outlets.

3.2 INSTALLATION

- A.** Install and seal ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.
- B.** During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
- C.** Use double nuts and lock washers on threaded rod supports.
- D.** Paint ductwork visible behind air outlets and inlets matte black. Refer to Division 9.

3.3 INTERFACE WITH OTHER PRODUCTS

- A.** Connect diffusers to low pressure ducts with 5 feet maximum length of flexible duct held in place with strap or clamp.
- B.** Check location of outlets and inlets and make necessary adjustments in position to conform to architectural features, symmetry, and lighting arrangement.

END OF SECTION

SECTION 16050

BASIC ELECTRICAL MATERIALS AND METHOD

PART 1 - GENERAL

1.1 SUMMARY

- A.** Section includes basic electrical requirements, basic electrical methods, and minimum requirements for construction documentation, such as coordination with Owner's representative, Submittals, As-Built Drawing and Operation and Maintenance manual preparation.

1.2 SCOPE OF WORK

- A.** Provide all labor, equipment, materials, and services required for a complete installation, testing, and startup of all systems denoted on the plans and specifications.
- B.** Bring questionable or obscure items, apparent conflicts between plans, specifications, governing codes or utilities regulations to the attention of the Project Manager in writing using the standard Request for Information (RFI) Format.
- C.** Verify existing and local conditions affecting the electrical work prior to bid and commencement of project.
- D.** Coordinate all work with City of Unalaska Aquatic Center Project Manager, including but not limited to, electrical, data, building security and fire alarm control panel. Provide and install all equipment according to all applicable City requirements.
- E.** The contractor will submit plans to and pay for plan review fees, secure and post construction permit and pay for all other fees, permits, etc., required by local and state agencies for work specified in this Division of Specifications.

1.3 ELECTRICAL DRAWINGS AND SYMBOLS

- A.** Electrical drawings are diagrammatic and are not intended to show all features of work. However, the Contractor shall provide products necessary for a complete and operable system in accordance with NEC, EIA/TIA, NFPA 72, NFPA 101, IBC, IFC and all MOA amendments.
- B.** Install undimensioned electrical items in a manner to provide symmetrical appearance. Do not scale drawings for equipment location. Review architectural,

BASIC ELECTRICAL MATERIALS AND METHOD

structural and mechanical drawings for locations. Adjust work to conform to actual conditions shown.

- C. The drawings and specifications are complementary. Refer to specifications for description outlining products to be provided.
- D. Drawing symbols used for basic materials, equipment, etc., are denoted by industry standard symbols. Special items are denoted by symbol legend or called out on the drawings or specification.

1.4 COORDINATION

- A. Exposed Raceways and Cables where specifically allowed shall be routed in such a manner agreeable to the Architect. Coordinate all such work prior to installation.
- B. Coordinate the work specified in this Division under the provisions of Division 1.
- C. Prepare shop drawings showing proposed rearrangement of work to meet job conditions, including changes to work specified under other sections. Obtain permission of Architect/Engineer before proceeding. Provide RCDD signed stamp on all telecommunication shop drawings.
- D. At each switchboard, panelboard and electrical device that requires working clearance by the NEC the contractor shall arrange new equipment to provide adequate clearance including rearrangement of such equipment to optimize actual field conditions. The Contractor shall monitor the work of all trades to assure that the space and clearance requirements of the code are met.
- E. The horsepower and wattage of equipment denoted on the drawings are estimated requirements of equipment furnished under other divisions of this contract. Advise the Project Manager of any equipment changes or substitutions affecting the electrical system. Coordinate overload elements to match actual equipment nameplates.
- F. Obtain written permission from Architect/Engineer prior to cutting, drilling or weakening structural components.

1.5 PAINTING AND REPAIR

- A. All building materials, equipment and existing furniture damaged during the installation of the work must be repaired or replaced with materials in like kind and quality of the original by skilled labor experienced in that particular building trade.
- B. Items scratched or marred in shipment or installation shall be refinished with touchup paint selected to match installed equipment finish.

- C. Contractor to replace all ceiling tiles that are damaged during removal, replacement or the construction process.

1.6 REFERENCES

- A. NECA (National Electrical Contractors Association) - Standard of Installation.
- B. ANSI C2 (National Electrical Safety Code)
- C. NFPA 70 (National Electrical Code – Latest Adopted Edition)
- D. Latest adopted edition of the International Building Code and International Fire Code
- E. NETA (International Electrical Testing Association Inc)
- F. SMACNA (Sheet Metal and Air Conditioning Contractors National Association) - Seismic restraint manual.

1.7 SUBMITTALS

- A. Division 1 – Submittals: Submittal procedures.
- B. Submittal Requirements: In addition to submittal procedures as outlined under Division 1, electrical submittals shall be submitted as follows:
 - 1. Electrical equipment information shall be submitted complete and all at one time. Partial submittals may not be considered and may be returned without review. In some cases the Owner's Representative may review partial submittals where early ordering of some equipment is essential to the project. Review of such partial submittals is at the discretion of the Owner's Representative. Any project delay due to the Contractor's failure to make complete submittals shall be the responsibility of the Contractor. Submittals shall be compiled in a notebook. The data shall be arranged and indexed by specification sections.
 - 2. Catalog sheets shall be complete and the item or model proposed for use by the Contractor shall be clearly marked, and identified as to which item in the specifications or on the drawings is being submitted.
 - 3. Shop drawings shall be submitted as a complete set at one time.

1.8 SHOP DRAWINGS

- A. Seismic Restraint Shop Drawings: Contractor shall submit structurally engineered shop drawings for seismic restraint of all equipment supplied under Division 16 where required by the International Building Code – latest adopted edition, Chapter 16. When required by the local jurisdiction, installation shop

drawings shall be prepared and stamped by a professional engineer registered in the State of Alaska. Structural design shall meet the seismic requirements of the International Building Code for the appropriate seismic zone

1.9 CLOSEOUT SUBMITTALS

- A.** Division 1 – Contract Closeout: Contract closeout procedures.
- B.** Contract Closeout Requirements: In addition to contract closeout requirements as outlined under Division 1, electrical contract closeout requirements shall include the following:
 - 1.** Record Documents:
 - a.** Record Drawings.
 - b.** Operation & Maintenance Manuals.
 - 2.** Testing Reports.
 - 3.** Equipment Startup Reports.
 - 4.** Systems Demonstrations.
 - 5.** Operation & Maintenance Instruction.

1.10 RECORD DOCUMENTS

- A.** Record Drawings: In addition to record drawing requirements as outlined under Division 1, electrical record drawings shall include the following:
 - 1.** Any and all changes made in the field with respect to original design drawings and shop drawings.
- B.** Shop Drawings: Field accurate shop drawings shall be provided to the Owner. Record shop drawings shall be produced utilizing AutoCad version 2000 or more current fully compatible release. Shop drawings shall be provided to the owner in both hardcopy and electronic format on CD media.
- C.** Operation & Maintenance Manuals: In addition to Operation & Maintenance Manual requirements as outlined under Division 1, electrical O&M manuals shall include the following:
 - 1.** Product data for each piece of equipment including local supplier and local manufacturer's representative including address, phone number, and fax number

2. Manufacturers operation & maintenance instructions for each piece of equipment.
3. Identification numbers for all parts and nearest source for obtaining parts.
4. Summary of maintenance instructions to Owner.
5. Periodic maintenance form.
6. Testing reports.
7. Equipment startup reports.

1.11 OPERATION & MAINTENANCE INSTRUCTION

- A. Notification: The Contractor shall notify the Owner's Representative in a timely manner to schedule O&M instruction such that facility personnel may be present for such instruction.
- B. Instruction: The Contractor shall provide detailed instruction on the operation and maintenance requirements for all electrical systems. Instruction shall include thorough on-site observations and review of each electrical system and applicable equipment.

1.12 SUBSTITUTIONS

- A. Division 1 – Substitutions: Substitution procedures.
- B. Substitution Requirements: In addition to substitution requirements as outlined under Division 1, electrical material and equipment substitutions shall meet the following minimum requirements as well as the requirements outlined in each section of these specifications:
 1. Size: Proposed substitutions shall be of equivalent size and fit within available space with adequate service access as recommended by the equipment manufacturer.
 2. Performance: Proposed substitutions shall have equal or superior performance to specified equipment.
 3. Quality: Proposed substitutions shall be of equal or greater quality to specified equipment.
 4. Weight: Proposed substitutions shall be of equal weight to specified equipment or Contractor shall be responsible for modifications to structure as required for increased weight.

- 5. Accessories and Options: Proposed substitutions shall be provided with appropriate accessories and options as required for a complete and operational system.
- C. System Modifications: The Contractor shall be responsible for modifications to mechanical systems, electrical systems, and building structure and finishes as required for implementing proposed substitute products.

1.13 QUALITY ASSURANCE

- A. Workmanship is considered important and is subject to approval. Employ workmen skilled in the trade and familiar with particular techniques applicable to various sections of work.
- B. Provide all Materials to conform with applicable industry standards and Underwriters Laboratories standards. Whenever possible, similar items shall be supplied by the same manufacturer throughout the project.

1.14 EQUIPMENT SCHEDULES

- A. Fixture and equipment schedules on the drawings denoting capacities, ratings, sizes, etc., shown are the minimum acceptable and may not necessarily correspond with catalog ratings or equipment specified.

1.15 WARRANTY

- A. As required in the general conditions of the contract.
- B. All workmanship, labor and materials shall be warranted for a minimum period of one (1) year from the date of final acceptance.
- C. Warranty work shall be promptly performed at Contractor's sole expense.
- D. Correction of Work: Within one year after the Substantial Completion of the work, any work not in conformance with the Contract Documents will be corrected by the Contractor promptly after written notice from the owner outlining the deficiency. This requirement shall survive the acceptance of the work under this Contract and termination of the contract.

PART 2 - PRODUCTS:

2.1 MATERIALS, EQUIPMENT, AND ASSEMBLIES

- A. Materials and Equipment shall be acceptable to the authority having jurisdiction as suitable for the use intended. All materials, equipment and assemblies installed shall bear a third party listing. Listing shall be by UL, ETL, or other nationally recognized, locally acceptable testing agency.

PART 3 - EXECUTION

3.1 COORDINATION

- A.** Division 1 - Coordination: Coordination and project conditions.

3.2 WORKMANSHIP

- A.** All electrical work must be installed in strict accordance with the National Electrical Code and any applicable state or local codes. Equipment support and anchorage shall meet the seismic requirements as required.

3.3 FIELD QUALITY CONTROL

- A.** Division 1 – Contract Closeout.

END OF SECTION

SECTION 16060
GROUNDING AND BONDING

PART 1 - GENERAL

1.1 SUMMARY

- A.** Section Includes:
 - 1. Wire.
 - 2. Mechanical connectors.
 - 3. Rod Electrodes.
 - 4. Exothermic connections.
 - 5. Installation Requirements.

1.2 REFERENCES

- A.** Institute of Electrical and Electronics Engineers:
 - 1. IEEE 142 - Recommended Practice for Grounding of Industrial and Commercial Power Systems.
- B.** International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- C.** National Fire Protection Association:
 - 1. NFPA 70 - National Electrical Code.

1.3 SYSTEM DESCRIPTION

- A.** Grounding systems use the following elements as grounding electrodes:
 - 1. Metal underground water pipe.
 - 2. Metal building frame.
 - 3. Concrete-encased electrode.
 - 4. Rod electrode.

1.4 PERFORMANCE REQUIREMENTS

- A.** Grounding System Electrode Resistance to Earth: 25 ohms maximum for new electrodes.

1.5 SUBMITTALS

- A.** Division 1 - Submittal Procedures: Requirements for submittals.
- B.** Product Data: Submit data on any new grounding electrodes and connections.
- C.** Test Reports: Indicate overall resistance to ground and resistance of each new electrode.

1.6 CLOSEOUT SUBMITTALS

- A.** Division 1 - Execution Requirements: Requirements for submittals.
- B.** Project Record Documents: Record actual locations of components and grounding electrodes.
- C.** Test Reports: Provide copy of Ground Resistance Test Report.

1.7 QUALITY ASSURANCE

- A.** Provide grounding materials conforming to requirements of NEC, IEEE 142, and UL labeled.

1.8 QUALIFICATIONS

- A.** Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years experience.

PART 2 - PRODUCTS

2.1 WIRE

- A.** Material: Stranded copper.
- B.** Grounding Electrode Conductor: Copper conductor, bare for exterior installation, insulated for interior installation.
- C.** Bonding Conductor: Copper conductor, insulated.

2.2 ROD ELECTRODES

- A.** Available Manufacturers:

1. Erico, Inc.
2. O-Z Gedney Co.
3. Thomas & Betts, Electrical
4. Substitutions: Division 1 – Product Requirements.

B. Product Description:

1. Material: Copper-clad steel.
2. Diameter: 3/4 inch.
3. Length: 10 feet.

2.3 MECHANICAL CONNECTORS

A. Available Manufacturers:

1. Erico, Inc.
2. O-Z Gedney Co.
3. Thomas & Betts, Electrical.
4. Substitutions: Division 1 – Product Requirements.

B. Description: Bronze connectors, suitable and listed for specific grounding and bonding application, in configurations required for particular installation.

C. Rod Electrodes: Exothermic welded connection or mechanical compression connection.

D. Building Steel: Exothermic welded connection or mechanical compression connection.

E. Metallic Pipe: Mechanical connection suitable for grounding and bonding applications, in configuration required for particular installation.

2.4 EXOTHERMIC CONNECTIONS

A. Available Manufacturers:

1. Cadweld, Erico, Inc
2. Copperweld, Inc

- 3. Thermo-weld Inc.
- 4. Substitutions: Division 1 – Product Requirements.
- B. Product Description: Exothermic materials, accessories, and tools for preparing and making permanent field connections between grounding system components.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Remove paint, rust, oils, and other surface contaminants at connection points.

3.2 EXISTING WORK

- A. Modify existing grounding system as necessary to maintain continuity to accommodate renovations.
- B. Extend existing grounding system as necessary using materials and methods compatible with existing electrical installations, or as specified.

3.3 INSTALLATION

- A. Install grounding and bonding conductors concealed from view except in unfinished locations such as in mechanical, electrical, and fan rooms. Identify with green tape and printed label a minimum of every 20'.
- B. Clean each mechanical connection and coat with antioxidant prior to connection.
- C. Bond together any new metal siding not attached to grounded structure; bond to ground.
- D. Equipment Grounding Conductor: Install separate, insulated conductor within each new feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing. Size grounding conductors in accordance with NEC. Install from grounding bus of serving panel to ground bus of served panel, grounding screw of receptacles, lighting fixture housing, light switch outlet boxes or metal enclosures of service equipment. Ground conduits by means of grounding bushings on terminations at panelboards with installed number 12 conductor to grounding bus.
- E. Provide bonding for each new metallic raceway, pipe, duct, wireway system, and other metal objects per NEC artic 250.104 to provide continuous electrical continuity. Provide bond to every new box and enclosure.
- F. Provide bonding jumper around inline meters, water heaters, filters, removable devices and discontinuities in metallic piping systems. Provide bonding jumper

of equal to or larger than the grounding electrode conductor to that system required by NEC.

- G.** Permanently ground entire all new light and power system in accordance with NEC, including any new service equipment, distribution panels, lighting panelboards, switch and starter enclosures, motor frames, grounding type receptacles, and other exposed non-current carrying metal parts of electrical equipment.
- H.** Install branch circuits feeding isolated ground receptacles with separate insulated grounding conductor, connected only at isolated ground receptacle, ground terminals, and at ground bus of serving panel.
- I.** Ground electrical system using continuous metal raceway system enclosing circuit conductors in accordance with NEC.
- J.** Permanently attach equipment and grounding conductors prior to energizing equipment.

3.4 FIELD QUALITY CONTROL

- A.** Division 1: Field inspecting, testing, adjusting, and balancing.
- B.** When improper grounding is found, check grounding in entire project and correct. Perform retest.

END OF SECTION

SECTION 16070

ELECTRICAL HANGERS, SUPPORTS AND FIRE-STOPPING

PART 1 - GENERAL

1.1 SUMMARY

- A.** Section Includes:
 - 1. Conduit supports.
 - 2. Formed steel channel.
 - 3. Firestopping relating to electrical work.
 - 4. Firestopping accessories.
 - 5. Equipment bases and supports.
- B.** Related Sections:
 - 1. Division 3 - Concrete: Product requirements for concrete.

1.2 REFERENCES

- A.** American Society for Testing and Materials:
 - 1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 2. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
 - 3. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
- B.** Factory Mutual System:
 - 1. FM - Approval Guide, A Guide to Equipment, Materials & Services Approved By Factory Mutual Research For Property Conservation.
- C.** National Fire Protection Association:
 - 1. NFPA 70 - National Electrical Code.
- D.** Underwriters Laboratories Inc.:

1. UL 263 - Fire Tests of Building Construction and Materials.
2. UL 723 - Tests for Surface Burning Characteristics of Building Materials.
3. UL 1479 - Fire Tests of Through-Penetration Firestops.
4. UL - Fire Resistance Directory.

1.3 DEFINITIONS

- A.** Firestopping (Through-Penetration Protection System): Sealing or stuffing material or assembly placed in spaces between and penetrations through building materials to arrest movement of fire, smoke, heat, and hot gases through fire rated construction.

1.4 SYSTEM DESCRIPTION

- A.** Firestopping Materials: To achieve fire ratings as noted on Architectural Drawings for adjacent construction, but not less than 1 hour fire rating for penetrations of rated surfaces. The contractor responsible shall employ individuals skilled in such work to do the sealing and fireproofing.

1.5 SUBMITTALS

- A.** Division 1 - Submittal Procedures: Requirements for submittals.
- B.** Product Data:
1. Hangers and Supports: Submit manufacturers catalog data including load capacity.
 2. Firestopping: Submit data on product characteristics, performance and limitation criteria.
 3. Firestopping: Submit preparation and installation instructions.
 4. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.6 QUALIFICATIONS

- A.** Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.
- B.** Installer: Company specializing in performing work of this section with minimum three years documented experience.

1.7 ENVIRONMENTAL REQUIREMENTS

- A.** Do not apply firestopping materials when temperature of substrate material and ambient air is below 60 degrees F.
- B.** Maintain this minimum temperature before, during, and for minimum 3 days after installation of firestopping materials.
- C.** Provide ventilation in areas to receive solvent cured materials.

PART 2 - PRODUCTS

2.1 CONDUIT SUPPORTS

- A.** Hanger Rods: Threaded high tensile strength galvanized carbon steel with free running threads.
- B.** Beam Clamps: Malleable Iron, with tapered hole in base and back to accept either bolt or hanger rod. Set screw: hardened steel.
- C.** Conduit clamps for trapeze hangers: Galvanized steel, notched to fit trapeze with single bolt to tighten.
- D.** Conduit clamps - general purpose: One hole malleable iron for surface mounted conduits.

2.2 FORMED STEEL CHANNEL

- A.** Product Description:
 - 1.** Exterior and exposed locations: Galvanized 12 gage thick steel, with holes 1-1/2 inches on center. Field coat cut ends with corrosion resistive paint.
 - 2.** Interior concealed locations: Galvanized or manufacturer painted 12 gage thick steel, with holes 1-1/2 inches on center.
 - 3.** Use manufacturers' standard connectors, brackets and accessories for interconnection of channel components and attachments to structures.

2.3 FIRESTOPPING

- A.** Available Manufacturers:
 - 1.** Dow Corning Corp.
 - 2.** Nelson Firestop.
 - 3.** 3M fire Protection Products.
 - 4.** Specified Technologies, Inc.

5. Substitutions: Division 1 - Product Requirements.
- B.** Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.
1. Silicone Firestopping Elastomeric Firestopping: Single or multiple component silicone elastomeric compound and compatible silicone sealant.
 2. Foam Firestopping Compounds: Single or multiple component foam compound.
 3. Formulated Firestopping Compound of Incombustible Fibers: Formulated compound mixed with incombustible non-asbestos fibers.
 4. Fiber Stuffing and Sealant Firestopping: Composite of fiber stuffing insulation with silicone elastomer for smoke stopping.
 5. Mechanical Firestopping Device with Fillers: Mechanical device with incombustible fillers and silicone elastomer, covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
 6. Intumescent Firestopping: Intumescent putty compound which expands on exposure to surface heat gain.
 7. Firestop Pillows: Formed mineral fiber pillows.
 8. Cable Pathway: Specified Technologies, Inc. "EZ-Path".

2.4 FIRESTOPPING ACCESSORIES

- A.** Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.
- B.** Dam Material: Permanent, as recommended by manufacturer.
- C.** Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.
- D.** General:
1. Furnish UL listed products.
 2. Select products with rating not less than rating of wall or floor being penetrated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A.** Division 1 - Administrative Requirements: Verification of existing conditions before starting work.
- B.** Verify openings are ready to receive firestopping.

3.2 PREPARATION

- A.** Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter affecting bond of firestopping material.
- B.** Remove incompatible materials affecting bond.
- C.** Install backing and/or damming materials to arrest liquid material leakage.
- D.** Do not drill or cut structural members.

3.3 SEISMIC RESTRAINT

- A.** Contractor shall provide complete seismic anchorage and bracing for all electrical raceways, fixtures and equipment required by the International Building Code – latest adopted edition, Chapter 16. When required by the local jurisdiction, installation shop drawings shall be prepared and stamped by a professional engineer registered in the State of Alaska. Structural design shall meet the seismic requirements of the International Building Code for the appropriate seismic zone.

3.4 INSTALLATION - HANGERS AND SUPPORTS

- A.** Anchors and Fasteners:
 - 1.** Concrete Structural Elements: Provide steel expansion head anchors.
 - 2.** Steel Structural Elements: Provide beam clamps.
 - 3.** Concrete Surfaces: Provide steel expansion head anchors.
 - 4.** Hollow Masonry, Plaster, and Gypsum Board Partitions: Provide toggle bolts.
 - 5.** Solid Masonry Walls: Provide steel expansion head anchors.
 - 6.** Sheet Metal: Provide sheet metal screws.
 - 7.** Wood Elements: Provide wood screws.

- B.** Install conduit and raceway support and spacing in accordance with NEC.
- C.** Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.
- D.** Install multiple conduit runs on common hangers.
- E.** Supports:
 - 1.** Fabricate supports from structural steel or formed steel channel. Install hexagon head bolts to present neat appearance with adequate strength and rigidity. Install spring lock washers under nuts.
 - 2.** Install surface mounted cabinets and panelboards with minimum of four anchors.
 - 3.** In wet and damp locations install steel channel supports to stand cabinets and panelboards 1 inch off wall.
- F.** Provide seismic restraint of supports in compliance with the guidelines published in SMACNA seismic restraint manual, or similar recognized publication.

3.5 INSTALLATION – FIRESTOPPING

- A.** Install material at fire rated construction perimeters and openings containing penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.
- B.** Fire Rated Surface:
 - 1.** Seal opening at floor, wall, partition, ceiling, and roof as follows:
 - a.** Pack void with backing material.
 - b.** Seal ends of penetration with UL listed fire resistive silicone compound to meet fire rating of structure penetrated in accordance with manufacturer's instructions.
 - c.** All products and installed assembly must be UL listed or tested by an independent testing laboratory
 - d.** STI EZ-Path System may be used for telecommunication system cable penetrations.
- C.** Non-Rated Surfaces:
 - 1.** At interior wall or floor openings use Tremco Dymonic, Sika Corp. Sikaflex 1a, Sonneborn Sonolastic NPI, or Mameco Vilken 116 urethane caulk or approved equal to effect the seal

2. Exterior wall openings below grade: Assemble rubber links of mechanical seal to size of conduit and tighten in place, in accordance with manufacturer's instructions.
3. STI EZ-Path System may be used for telecommunication system cable penetrations.

3.6 INSTALLATION - EQUIPMENT BASES AND SUPPORTS

- A. Using templates furnished with equipment, install anchor bolts, and accessories for mounting and anchoring equipment.
- B. Construct supports of steel members and/or formed steel channel. Brace and fasten with flanges bolted to structure. Follow manufactures installation instructions and SMACNA guidelines for seismic restraint installation requirements.

3.7 FIELD QUALITY CONTROL

- A. Inspect installed firestopping for compliance with specifications and manufacturer's installation instructions.

3.8 CLEANING

- A. Clean adjacent surfaces of firestopping materials.

3.9 PROTECTION OF FINISHED WORK

- A. Protect adjacent surfaces from damage by material installation.

END OF SECTION

SECTION 16075
ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 SUMMARY

- A.** Section Includes:
 - 1. Nameplates.
 - 2. Labels.
 - 3. Wire markers.
 - 4. Conduit and Raceway Identifications
 - 5. Underground Warning Tape.

1.2 ENVIRONMENTAL REQUIREMENTS

- A.** Install labels only when ambient temperature and humidity conditions for adhesive are within range recommended by manufacturer.

PART 2 - PRODUCTS

2.1 NAMEPLATES

- A.** Product Description: Laminated three-layer plastic with engraved black letters on contrasting background color.
- B.** Letter Size:
 - 1. 1/8 inch high letters minimum for identifying new individual equipment and loads.
 - 2. 1/4 inch high letters minimum for identifying new grouped equipment and loads, panelboards and distribution equipment.
 - 3. 1/4-inch letters minimum for identifying new special systems enclosures such as sound system amplifiers, PA system cabinets, Computer network cabinets, etc.
- C.** Minimum nameplate thickness: 1/8 inch.

2.2 ADHESIVE LABELS:

- A.** Machine printed and laminated adhesive tape, with 3/16-inch black letters on clear background, using 'Dymo' series 5500 label production equipment or equivalent. If necessary to accommodate the limited space provided for data jack identification, the letter size may be adjusted accordingly.

2.3 WIRE MARKERS

- A.** Description: Cloth tape, split sleeve, or tubing type wire markers.
- B.** Legend:
 - 1.** Power and Lighting Circuits: Branch circuit or feeder number.
 - 2.** Control Circuits: Control wire number as indicated on schematic and interconnection diagrams.

2.4 CONDUIT AND RACEWAY IDENTIFICATION

- A.** Description: Using permanent marker, neatly handwrite type ("Telephone", "Power", "Intercom", etc), nominal voltage, and branch circuits contained in each junction or pull box on exposed side of box cover.

2.5 UNDERGROUND WARNING TAPE

- A.** Description: 4 inch wide plastic tape, detectable type, colored red or yellow with suitable warning legend describing buried electrical lines.

PART 3 - EXECUTION

3.1 INSTALLATION

- A.** Install identifying devices after completion of painting.
- B.** Nameplate Installation:
 - 1.** Install nameplate parallel to equipment lines.
 - 2.** Install nameplate for each new electrical distribution and control equipment enclosure with corrosive-resistant mechanical fasteners.
 - 3.** Install nameplates for each new control panel and major control components located outside panel with corrosive-resistant mechanical fasteners.
 - 4.** Secure nameplate to new equipment front using screws or rivets.

5. Install nameplates for the following new items:
 - a. Panelboards, Switchboards, Distribution equipment, Control Panels: Provide engraved nameplate on the front of the enclosure which identifies equipment (Example: Panel A). Provide a nameplate concealed behind the door which identifies the equipment, and the source distribution equipment (Example: Panel A, Fed from MDP).
 - b. Overcurrent Devices at Distribution Panels: Provide nameplate at each overcurrent device that identifies the device number and the load served. (Example: Bkr. No. 1/Panel A)
 - c. Enclosed Circuit Breakers, disconnects, motor starters and similar control equipment: Provide engraved nameplate. Nameplate shall include description of load supplied and supply circuit and origin. (Example: Circulation Pump #1, Panel A-5).
6. New wiring devices such as switches, fractional horsepower motor starter switches, and receptacles: Provide adhesive label. Label shall include supply circuit and origin and load controlled. For example:

UH 1
PANEL A - 42
7. Wire Marker Installation: Wires and cables: Provide wire marker at each new junction and within 6" of termination at wiring devices and panelboards. For power circuits indicate branch circuit or feeder number. For neutral conductors indicate branch circuit supplied. For control circuits indicate wire number indicated on schematic and interconnection diagrams or shop drawings.

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END OF SECTION

SECTION 16095

MINOR ELECTRICAL DEMOLITION FOR REMODELING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A.** This Section includes the following:
 - 1.** Removal of existing electrical equipment, wiring, and conduit in areas to be remodeled; removal of designated construction; dismantling, cutting and alterations for completion of the Work.
 - 2.** Disposal of materials.
 - 3.** Storage of removed materials.
 - 4.** Identification of utilities.
 - 5.** Salvaged items.
 - 6.** Protection of items to remain as indicated.
 - 7.** Relocate existing equipment to accommodate construction.

1.2 RELATED SECTIONS

- A.** Division 2 – Demolition

1.3 COORDINATION

- A.** Division 1 - Administrative Requirements: Requirements for coordination.
- B.** Conduct demolition to minimize interference with adjacent and occupied building areas including any temporary use areas.
- C.** Coordinate demolition work with Owner's on-site representative.
- D.** Coordinate and sequence demolition so as not to cause unscheduled shutdowns of operation of surrounding areas.
- E.** Shut-down Periods:

MINOR ELECTRICAL DEMOLITION FOR REMODELING

1. Arrange timing of shut-down periods with Owner's on-site representative. Do not shut down any utility without prior approval.
2. Keep shut-down period to minimum.
3. Maintain life-safety systems in full operation in occupied facilities. Provide for change-overs only when facility is not occupied by the public.
4. Identify salvage items in cooperation with Owner.

PART 2 - - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. Materials and Finishes for patching and extending work: As necessary to match existing finishes and systems.

PART 3 - - EXECUTION

3.1 EXAMINATION

- A. Division 1 - Coordination: Coordination and project conditions.
- B. Verify field measurements and circuiting arrangements are as shown on Drawings.
- C. Verify that abandoned wiring and equipment serve only abandoned facilities.
- D. Demolition Drawings are based on casual field observation and existing record documents that were provided. Report significant discrepancies to Owner before disturbing existing installation.

3.2 PREPARATION

- A. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

3.3 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Demolish and extend existing electrical work under provisions of Division 1 and this Section. Dispose of all demolished material not identified to be retained by owner off site.

MINOR ELECTRICAL DEMOLITION FOR REMODELING

- B.** Remove all abandoned specialty/communication system and power wiring in area of remodel back to source of supply.
- C.** Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
- D.** Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.
- E.** Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
- F.** Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.
- G.** Relocate and/or extend existing electrical systems to remain that conflict with the installation of new materials and systems, included but not limited to structural members, mechanical systems, walls and ceiling systems.
- H.** Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.
- I.** Reconnect equipment being disturbed by renovation work and required for continue service to nearest available panel.
- J.** Disconnect or shut off service to areas where electrical work is to be removed. Remove electrical fixtures, equipment, and related switches, outlets, conduit and wiring which are not part of final project.
- K.** Install temporary wiring and connections to maintain existing systems in service during construction.
- L.** Perform work on energized equipment or circuits with experienced and trained personnel.
- M.** Remove, relocate, and extend existing installations to accommodate new construction.

MINOR ELECTRICAL DEMOLITION FOR REMODELING

- N.** Repair adjacent construction and finishes damaged during demolition and extension work.
- O.** Remove exposed abandoned grounding and bonding components, fasteners and supports, and electrical identification components, including abandoned components above accessible ceiling finishes. Cut embedded support elements flush with walls and floors.
- P.** Clean and repair existing equipment to remain or to be reinstalled.
- Q.** Protect and retain power to existing active equipment remaining.
- R.** Cap abandoned empty conduit at both ends.
- S.** Extend existing installations using materials and methods compatible with existing electrical installations or as specified.

3.4 EXISTING PANELBOARDS

- A.** Ring out circuits in existing panel affected by the Work. Where additional circuits are needed, reuse circuits available for reuse. Install new breakers that are compatible with and have the same A.I.C. rating as the existing panel.
- B.** Tag unused circuits as spare.
- C.** Where existing circuits are indicated to be reused, use sensing measuring devices to verify circuits feeding Project area or are not in use.
- D.** Remove existing wire no longer in use from panel to equipment.
- E.** Provide new updated directories where more than three circuits have been modified or rewired.

3.5 REUSABLE ELECTRICAL EQUIPMENT

- A.** Carefully remove equipment, materials, or fixtures which are to be reused.
- B.** Disconnect, remove, or relocate existing electrical material and equipment interfering with new installation.

MINOR ELECTRICAL DEMOLITION FOR REMODELING

- C.** Relocate existing lighting fixtures, equipment, and devices where indicated on Drawings. Clean fixtures and re-lamp. Test fixture to see if it is in good working condition before installation at new location.

3.6 CLEANING AND REPAIR

- A.** Division 1 - Execution Requirements: Requirements for cleaning.
- B.** Remove demolished materials as work progresses. Legally dispose.
- C.** Clean and repair existing materials and equipment that remain or are to be reused.
- D.** Keep workplace neat.
- E.** Existing panelboards modified under this project: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing complete revised circuit arrangement.

END OF SECTION 16095

SECTION 16123
BUILDING WIRE AND CABLE

PART 1 - GENERAL

1.1 SUMMARY

- A.** Section includes building wire and cable and wiring connectors and connections.

1.2 REFERENCES

- A.** NECA (National Electrical Contractors Association) - Standard of Installation.
- B.** NETA ATS (International Electrical Testing Association) - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- C.** NEMA WC5 (Thermoplastic-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy)

1.3 WIRING METHODS AND PRODUCT REQUIREMENTS

- A.** Product Requirements: Use products as indicated and as follows:
- 1.** Use stranded conductors for conductors size 8 AWG and larger.
 - 2.** Use stranded conductors for control circuits.
 - 3.** Use conductor not smaller than 12 AWG for power and lighting circuits.
 - 4.** Use conductor not smaller than 16 AWG for control circuits.
 - 5.** Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.
 - 6.** Use 10 AWG conductors for 20 ampere, 277volt branch circuits longer than 175 feet.
- B.** Wiring Methods: Use wiring methods indicated and as follows:
- 1.** Concealed Dry Interior Locations: Use building wire with type THHN/THWN or XHHW insulation, in raceway, prefabricated metal clad cable (on approval from owner and as permitted by governing codes).

2. Exposed Dry Interior Locations: Use building wire with type THHN/THWN or XHHW insulation, in raceway, prefabricated metal clad cable (on approval from owner and as permitted by governing codes).
3. Above Accessible Ceilings: Use building wire with type THHN/THWN or XHHW insulation, in raceway, prefabricated metal clad cable (on approval from owner and as permitted by governing codes).
4. Wet or Damp Interior Locations: Use building wire with type THHN/THWN or XHHW insulation, in raceway. Provide raceway and components listed for use in damp or wet locations.
5. Exterior and underground locations: Use building wire with type XHHW insulation in raceway. Provide raceway and components listed for use in damp and wet locations

1.4 SUBMITTALS

- A. Division 1 – Submittals: Submittal procedures.
- B. Product Data: Submit for building wire and each cable assembly type.

1.5 CLOSEOUT SUBMITTALS

- A. Division 1 – Contract Closeout: Closeout procedures.
- B. Project Record Documents: Record actual locations of components.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

1.7 COORDINATION

- A. Division 1 - Coordination: Coordination and project conditions.
- B. Where wire and cable destination is indicated and routing is not shown, determine exact routing and lengths required.
- C. Wire and cable routing indicated is approximate unless dimensioned.

PART 2 - PRODUCTS

2.1 BUILDING WIRE

- A. Manufacturers:

1. Diamond Wire & Cable Co.
 2. Rome Cable.
 3. General Cable Co.
 4. Substitutions: Division 1 - Substitutions.
- B.** Product Description: Solid and stranded conductor insulated wire.
- C.** Conductor: Copper.
- D.** Insulation Voltage Rating: 600 volts.
- E.** Insulation: NFPA 70; Type THHN/THWN and XHHW insulation for feeders and branch circuits as scheduled, rated 90 degrees C.

2.2 METAL CLAD CABLE

- A.** Conductor: Copper.
- B.** Grounding Conductor: Copper.
- C.** Insulation Voltage Rating: 600 volts.
- D.** Insulation: 600 volt rating; thermoplastic material rated 75 degrees C, minimum
- E.** Armor Material: Steel.
- F.** Armor Design: Corrugated tube.

2.3 WIRING CONNECTORS

1. Units of size, ampacity rating, materials, type, and class suitable for specific application.

PART 3 - EXECUTION

3.1 EXAMINATION

- A.** Division 1 - Coordination: Coordination and project conditions.
- B.** Verify that mechanical work likely to damage wire and cable has been completed.
- C.** Verify that raceway installation is complete and supported.

3.2 PREPARATION

- A. Completely and thoroughly swab raceway before installing wire.

3.3 EXISTING WORK

- A. Remove exposed abandoned wire and cable, including abandoned wire and cable above accessible ceiling finishes. Patch surfaces where removed cables pass through building finishes.
- B. Disconnect abandoned circuits and remove circuit wire and cable. Remove abandoned boxes when wire and cable servicing boxes is abandoned and removed. Install blank cover for abandoned boxes not removed.
- C. Provide access to existing wiring connections remaining active and requiring access. Modify installation or install access panel.
- D. Extend existing circuits using materials and methods compatible with existing electrical installations, or as specified.
- E. Clean and repair existing wire and cable remaining or wire and cable to be reinstalled.

3.4 INSTALLATION

- A. Route wire and cable as required to meet Project conditions.
- B. Provide insulation test of each new feeder conductor prior to energization.
- C. Install wire and cable in accordance with the NECA "Standard of Installation.
- D. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- E. Group grounded and ungrounded conductors of each multi-wire branch circuit within the panel with an approved means.
- F. Identify and color code wire and cable under provisions of Section 16075. Identify each conductor with its circuit number or other designation indicated.
- G. Special Techniques-Building Wire in Raceway:
 - 1. Pull all conductors into raceway at same time.
 - 2. Use suitable wire pulling lubricant for building wire 4 AWG and larger.
- H. Special Techniques - Cable:
 - 1. Protect exposed cable from damage.
 - 2. Use suitable cable fittings and connectors.

I. Special Techniques-Wiring Connections:

1. Clean conductor surfaces before installing lugs and connectors.
 2. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
 3. Tape uninsulated conductors and connectors with electrical tape to 150 percent of insulation rating of conductor.
 4. Use split bolt or reversible pressure connectors for copper conductor splices and taps, 6 AWG and larger.
 5. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.
 6. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.
 7. Termination of solid conductors No. 10 AWG and smaller must be on screw terminals of wiring devices. Termination of stranded wire shall be with compression or clamp type terminals.
 8. No splices shall be allowed in panelboards or distribution panels.
 9. Where conductors are to be connected to a metal surface, the metal surface shall be polished before installing the conductor.
- J. Where conductor insulation has been damaged, the conductor shall be repaired or replaced at the discretion of the Owner.

3.5 WIRE COLOR

A. General

1. For wire sizes 10 AWG and smaller - wire shall be colored as indicated below.
2. For wire sizes 8 AWG and larger - identify wire with colored tape at all terminals, splices and boxes.
3. Colors to be as indicated below.
 - a. Use black, red, and blue for circuits at 120/208 volts single or three phase.

- B. Neutral Conductors:** White for circuits at 120/208 volts single or three phase. Where there are two or more neutrals in one conduit, each shall be individually

identified with the proper circuit. For 4 AWG and larger, identify with white tape at both ends and all visible points included in all junction boxes

- C.** Branch Circuit Conductors: Three or four wire home runs shall have each phase uniquely color coded.
- D.** Ground Conductors: Green for 6 AWG and smaller. For 4 AWG and larger, identify with green tape at both ends and all visible points and in all junction boxes.

3.6 FIELD QUALITY CONTROL AND TESTING

- A.** Division 1 – Contract Closeout.
- B.** General Reference: Inspect in accordance with NETA ATS.

END OF SECTION

SECTION 16130
RACEWAY AND BOXES

PART 1 - GENERAL

1.1 SUMMARY

- A.** Section includes conduit and tubing, surface raceways, wireways, outlet boxes, pull and junction boxes, and handholes.

1.2 REFERENCES

- A.** ANSI C80.1 – Rigid Steel Conduit, PVC Coated.
- B.** ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
- C.** ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated.
- D.** NECA (National Electrical Contractor's Association) - "Standard of Installation".
- E.** NEMA FB 1 (National Electrical Manufacturers Association) - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
- F.** NEMA TC 2 (National Electrical Manufacturers Association) – Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
- G.** NEMA OS 1 (National Electrical Manufacturers Association) - Sheet-steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
- H.** NEMA 250 (National Electrical Manufacturers Association) - Enclosures for Electrical Equipment (1000 Volts Maximum).

1.3 SYSTEM DESCRIPTION

- A.** Raceway and boxes located as shown on Drawings, and at other locations where required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements. Raceway and boxes are shown in approximate locations unless dimensioned. Provide raceway as required to complete wiring system.
- B.** Wet and Damp Locations: Use rigid steel conduit or intermediate metal conduit. Use corrosion resistant metal weatherproof outlet, pull, and junction boxes. Use flush mounting outlet box in finished areas.

- C.** Building interior below grade: Use rigid steel conduit, PVC conduit or PVC coated rigid steel conduit with compatible fittings and accessories. For transitions out of or through concrete use rigid steel conduit. Minimum size conduit shall be $\frac{3}{4}$ ".
- D.** Concealed Dry Locations: Use rigid steel, intermediate metal conduit, electrical metallic tubing, or metal clad cable. Metal clad cable may be used as a wiring means within interior partition walls where approved by owner and as allowed by governing codes. Use sheet-metal boxes. Use flush mounting outlet box in finished areas.
- E.** Exposed Dry Locations: In finished areas where concealed installation is not possible, use surface metal raceway systems unless indicated otherwise. In unfinished areas, such as exposed ceilings, mechanical, electrical, and similar rooms, use rigid steel, intermediate metal conduit, or electrical metallic tubing. Use only rigid steel or intermediate metal conduit where subject to possible damage or traffic. Use sheet-metal boxes.
- F.** Equipment Connections: Connections to light fixtures, motors, transformers, vibrating equipment or equipment that requires removal for maintenance or replacement: Flexible metal conduit in dry locations and liquidtight flexible metal conduit in damp or wet locations. Maximum length 6 feet in length.

1.4 DESIGN REQUIREMENTS

- A.** Minimum Raceway Size: 1/2 inch unless otherwise specified.
- B.** Minimum Raceway Size: 3/4 inch conduit for all homerun conduits from panelboards to first supplied device unless specifically noted otherwise.
- C.** Box Minimum Size: Provide all boxes sized and configured per NEC Article 314.

1.5 SUBMITTALS

- A.** Product Data: Submit for the following:
 - 1.** Flexible metal conduit.
 - 2.** Liquidtight flexible metal conduit.
 - 3.** Nonmetallic conduit.
 - 4.** Flexible nonmetallic conduit.
 - 5.** Raceway fittings.
 - 6.** Conduit bodies.

- 7. Surface raceway.
- 8. Wireway.
- 9. Pull and junction boxes.

1.6 CLOSEOUT SUBMITTALS

- A. Division 1 - Execution Requirements: Closeout procedures.
- B. Project Record Documents:
- C. Record actual routing of conduits larger than 2 inch trade size.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Division 1 – Materials and Equipment: Product storage and handling requirements.
- B. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

1.8 COORDINATION

- A. Division 1 - Coordination: Coordination and project conditions.
- B. Coordinate mounting heights, orientation and locations of new outlets mounted above counters, benches, and backsplashes with architectural elevations and casework shop drawings.
- C. Coordinate installation of outlet boxes for new or relocated equipment connected under Section 16150 as well as Division 15.

PART 2 - PRODUCTS

2.1 METAL CONDUIT

- A. PVC Coated Steel Conduit: ANSI C80.1
- B. Rigid Steel Conduit: ANSI C80.1.
- C. Intermediate Metal Conduit (IMC): Rigid steel.
- D. Fittings and Conduit Bodies: NEMA FB 1; material to match conduit.

2.2 FLEXIBLE METAL CONDUIT

- A. Product Description: Interlocked steel construction.

- B. Fittings: NEMA FB 1.

2.3 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- A. Product Description: Interlocked steel construction with PVC jacket.
- B. Fittings: NEMA FB 1.

2.4 ELECTRICAL METALLIC TUBING (EMT)

- A. Product Description: ANSI C80.3; galvanized tubing.
- B. Fittings and Conduit Bodies: NEMA FB 1; steel compression or set screw type.

2.5 NONMETALLIC CONDUIT (PVC)

- A. Product Description: NEMA TC 2; Schedule 40 PVC.
- B. Fittings and Conduit Bodies: NEMA TC 3.

2.6 SURFACE DEVICE RACEWAY

- A. Product Description: Two channel steel surface raceway with painted ivory finish, Wiremold series 4000 or approved equal.
- B. Fittings: Provide system with all necessary manufactures matching hardware, fitting, and device boxes of adequate depth for a complete and fully operable installation.

2.7 METAL CLAD CABLE

- A. Product Description: UL 83 Insulation, UL 4 Flexible interlocked galvanized steel armor, copper conductors.
- B. Fittings and Conduit Bodies: NEMA TC 3.
- C. Requirements as listed in Section 16123.

2.8 Outlet Boxes:

- A. Rated for application.
- B. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
 - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch male fixture studs where required.

- C.** Cast Boxes: NEMA FB 1, Type FD, aluminum or cast ferrous alloy. Provide gasketed cover by box manufacturer. Provide threaded hubs. Provide recessed boxes for exterior receptacles.
- D.** Wall Plates for Finished Areas: As specified in Section 16140.
- E.** Wall Plates for Unfinished Areas: Provide industrial style cover or device plate.

2.9 Pull AND JUNCTION Boxes:

- A.** Rated for application.
- B.** Sheet Metal Boxes: NEMA OS 1, galvanized steel.
- C.** Pull and Junction Enclosures: Steel, finished in manufacturer's standard enamel finish. Size as required for conduit and cable contained.

2.10 WIREWAY

- A.** Product Description: General purpose or Raintight type wireway.
- B.** Size: As required or as indicated on Drawings.
- C.** Cover: Hinged cover, with full gaskets for exterior locations.
- D.** Finish: Rust inhibiting primer coating with gray enamel finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A.** Division 1 - Coordination: Coordination and project conditions.
- B.** Verify outlet locations and routing and termination locations of raceway prior to rough-in.

3.2 INSTALLATION

- A.** Install raceway and boxes in accordance with NECA "Standard of Installation."
- B.** Ground and bond new raceway and boxes under provisions of Section 16060 and NEC. Provide ground lug bushings on ends of all new feeder conduits and bond to terminating enclosure equipment grounding point. Size bonding conductor per NEC table 250.122 relative to feeder overcurrent protective device rating.
- C.** Fasten new raceway and box supports to structure and finishes under provisions of Section 16070.

- D.** Identify circuits contained within junction boxes with adhesive labels per section 16075 or by neatly handwriting circuit identification with a permanent black marker on exposed side of box cover.
- E.** Arrange raceway and boxes to maintain headroom and present neat appearance.

3.3 INSTALLATION-RACEWAY

- A.** Raceway routing is shown in approximate locations unless dimensioned. Route as required to complete wiring system.
- B.** Arrange raceway supports to prevent misalignment during wiring installation.
- C.** Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- D.** Group related raceway; support using conduit rack. Construct rack using steel channel specified in Section 16070; provide space on each for 25 percent additional raceways.
- E.** Do not support raceway with wire or perforated pipe straps. Remove wire used for temporary supports.
- F.** Construct wireway supports from steel channel specified in Section 16070.
- G.** Do not attach raceway to ceiling support wires or other piping systems.
- H.** Route exposed raceway parallel and perpendicular to walls.
- I.** Route raceway installed above accessible ceilings parallel and perpendicular to walls.
- J.** Route conduit in and under slab from point-to-point.
- K.** Maintain adequate clearance between raceway and piping for maintenance purposes.
- L.** Maintain 12-inch clearance between raceway and surfaces with temperatures exceeding 100 degrees F.
- M.** Cut conduit square using saw or pipecutter; de-burr cut ends.
- N.** Bring conduit to shoulder of fittings; fasten securely.
- O.** Use conduit hubs to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.

- P.** Install no more than equivalent of three 90 degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one-shot bender to fabricate bends in metal conduit 2 inch and larger.
- Q.** Avoid moisture traps; install junction box with drain fitting at low points in conduit system.
- R.** Provide suitable fittings to accommodate expansion and deflection where raceway crosses seismic control and expansion joints.
- S.** Provide suitable pull string or cord in each empty raceway except sleeves and nipples.
- T.** Use suitable caps to protect installed conduit against entrance of dirt and moisture.
- U.** Paint all exposed conduits in finished areas to match surface to which it is attached.
- V.** Surface Raceway: Install flat-head screws, clips, and straps to fasten raceway channel to surfaces; mount plumb and level. Install insulating bushings and inserts at connections to outlets and corner fittings. Coordinate with casework shop drawings for exact installation height in work areas and classrooms.
- W.** Touch up paint damaged finish on surface raceway with manufacturer's matching paint.
- X.** Close ends and unused openings in wireway.

3.4 INSTALLATION-BOXES

- A.** Set wall mounted boxes at elevations to accommodate mounting as specified in Section 16140, as indicated on the Drawings, or as necessary to accommodate conditions.
- B.** Adjust box location up to 10 feet prior to rough-in to accommodate intended purpose.
- C.** Orient boxes to accommodate wiring devices oriented as specified in Section 16140 or as indicated on the Drawings.
- D.** Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- E.** In in-accessible Ceiling Areas: Install outlet and junction boxes no more than **6 inches** from ceiling access panel or from removable recessed luminaire.

- F.** Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- G.** Do not install flush mounting box back-to-back in walls; provide minimum 6 inches separation. Where possible, provide minimum 24 inches separation in acoustic rated walls.
- H.** Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- I.** Install stamped steel bridges to fasten flush mounting outlet box between studs.
- J.** Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- K.** Use adjustable steel channel fasteners for hung ceiling outlet box.
- L.** Do not fasten boxes to ceiling support wires or other piping systems.
- M.** Support boxes independently of conduit.
- N.** Use multi-gang box where more than one device is mounted together. Do not use sectional boxes.
- O.** Use double gang box with single device plaster ring for single device outlets.

3.5 INTERFACE WITH OTHER PRODUCTS

- A.** Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods under the provisions of Section 16070.
- B.** Align adjacent wall mounted outlet boxes for receptacles, data outlets, and similar devices.

3.6 ADJUSTING

- A.** Division 1 – Quality Control: Testing, adjusting, and balancing.
- B.** Adjust flush-mounting outlets to make front flush with finished wall material.
- C.** Install knockout closures in unused openings in boxes.

3.7 CLEANING

- A.** Division 1 – Contract Closeout: Final cleaning.
- B.** Clean interior of boxes to remove dust, debris, and other material.

- C.** Clean exposed surfaces and restore finish.

END OF SECTION

SECTION 16140

WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

- A.** Section includes switches, receptacles, surface device raceway and device plates.
- B.** Related Sections:
 - 1.** Section 16070 – Identification
 - 2.** Section 16130 - Raceway and Boxes: Outlet boxes for wiring devices.

1.2 REFERENCES

- A.** NEMA WD 1 (National Electrical Manufacturers Association) - General Requirements for Wiring Devices.
- B.** NEMA WD 5 (National Electrical Manufacturers Association) – Specific Requirements for Wiring Devices.
- C.** NEMA WD 6 (National Electrical Manufacturers Association) - Wiring Device - Dimensional Requirements.

1.3 SUBMITTALS

- A.** Division 1 - Submittals: Submittal procedures.
- B.** Product Data: Submit manufacturer's catalog information showing dimensions, materials, colors and configurations.

1.4 QUALIFICATIONS

- A.** Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

PART 2 - PRODUCTS

2.1 WALL SWITCHES

- A.** Manufacturers:

1. Hubbell.
 2. Cooper Wiring Devices.
 3. Leviton.
 4. Pass-Seymour.
 5. Substitutions: Division 1 - Substitutions.
- B.** Product Description: NEMA WD 1, Heavy-Duty, 120/277V, 20A, AC only general-use snap switch.
- C.** Body and Handle: Plastic with toggle handle, finish to match existing.
- D.** Pilot Light Switch: Lighted handle type switch; red color handle.
- E.** Keyed Switch: Provide keyed style switch where indicated on the drawings.
- F.** Ratings: Match branch circuit, load characteristics, and type (single pole, two pole, three way, four way) as shown on the drawings.

2.2 RECEPTACLES

- A.** Manufacturers:
1. Hubbell.
 2. Cooper Wiring Devices.
 3. Leviton.
 4. Pass-Seymour.
 5. Substitutions: Division 1 - Substitutions.
- B.** Product Description: NEMA WD 1, Heavy-duty general use receptacle.
1. Tamper resistant type to be used in locations open to the public and accessible by children.
 2. Weather-resistant type: where located in damp or wet locations.
- C.** Device Body: plastic face with finish to match existing.
- D.** Configuration: NEMA WD 6, type as specified and indicated.
- E.** Convenience Receptacle: Type 5-20.

- F.** GFCI Receptacle: Weather-resistant type convenience receptacle with integral Class A ground fault circuit interrupter to meet regulatory requirements. Tamper resistant type to be used in locations open to the public and accessible by children.
- G.** Specific Use Receptacle Configuration: NEMA WD1 or WD 5; Type as indicated on Drawings, with black phenolic face.

2.3 WALL PLATES

- A.** Manufacturers:
 - 1.** Hubbell.
 - 2.** Cooper Wiring Devices.
 - 3.** Leviton.
 - 4.** Pass-Seymour.
 - 5.** Substitutions: Division 1 - Substitutions.
- B.** Decorative Cover Plate: 430 brushed stainless steel, configuration to match devices installed.
- C.** Weatherproof Cover Plate: Gasketed Stainless steel plate with hinged and gasketed device cover.
- D.** "Wet While In-Use" Cover Plate: Weatherproof metallic "extra duty" with hinged and gasketed cover.

2.4 OCCUPANCY SENSORS

- A.** Product Description: Ceiling or Wall mounted occupant sensing device as described below operated at line voltage, wirelessly, or with 24V power supply & relay modules, etc as required to switch lighting in zones of detection. Coverage capabilities of devices shall match the physical characteristics of the location installed. The coverage area shall be restricted in accordance with the manufacturer's recommendations to avoid detection in adjacent areas or corridors. It is anticipated that the wireless sensors in conjunction with remote modules will be used in the locker rooms and other areas where existing hard-lid ceilings remain.
- B.** Occupancy Sensors:
 - 1.** Ceiling Mount Applications - Wireless
 - a.** Wireless operation in conjunction with remote modules.

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PART 3 - EXECUTION

3.1 EXAMINATION

- A.** Division 1 - Coordination: Coordination and project conditions.
- B.** Verify with Architectural elevations and casework shop drawings that outlet boxes are installed at proper height.
- C.** Verify that wall openings are neatly cut and will be completely covered by wall plates.
- D.** Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

3.2 PREPARATION

- A.** Clean debris from outlet boxes.

3.3 EXISTING WORK

- A.** Disconnect and remove abandoned wiring devices.
- B.** Modify installation to maintain access to existing wiring devices to remain active.
- C.** Clean and repair existing wiring devices to remain or to be reinstalled.

3.4 INSTALLATION

- A.** Install in accordance with NECA "Standard of Installation."
- B.** Install devices plumb and level.
- C.** Install receptacles with grounding pole on bottom.

- D.** Connect wiring device grounding terminal to outlet box with bonding jumper or other approved means, and branch circuit equipment grounding conductor.
- E.** Install switches with OFF position down.
- F.** Install decorative plates on switch, receptacle, and blank outlets in finished areas.
- G.** Connect wiring devices by wrapping solid conductor around screw terminal. Termination of stranded conductors shall be with compression or clamp type terminals. Do not place bare stranded conductors directly under device screws.
- H.** Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.
- I.** Identify all devices in compliance with the provisions of Section 16075.
- J.** Provide black coverplates on all unused existing openings, where wall repair is not provided.

3.5 INTERFACE WITH OTHER PRODUCTS

- A.** Coordinate locations of outlet boxes provided under Section 16130 to obtain mounting heights required.
- B.** Where casework is installed, locate switches, receptacles and data outlets at counters 4 inches above back splash of counter, unless otherwise noted.
- C.** Where possible, install switches and other control devices 48 inches (to center) above finished floor, unless otherwise noted.
- D.** Where possible, install convenience receptacles and data outlets 18 inches (to center) above finished floor, unless otherwise noted.
- E.** Where devices are installed in concrete walls, device mounting height may be adjusted so that cutting of only one block may be required.
- F.** Coordinate with Owner's on site representative for exact placement where conflict may exist with equipment or furnishings.

3.6 FIELD QUALITY CONTROL

- A.** Division 1 – Contract Closeout.
- B.** Inspect each wiring device for defects and proper secure mounting.
- C.** Operate each wall switch with circuit energized and verify proper operation.

- D.** Verify that each receptacle device is energized.
- E.** Test each receptacle device for proper polarity.
- F.** Test each GFCI receptacle device for proper operation.

3.7 ADJUSTING

- A.** Division 1– Contract Closeout: Testing, adjusting, and balancing.
- B.** Adjust devices and wall plates to be flush and level.

3.8 CLEANING

- A.** Division 1 - Contract Closeout: Final cleaning.
- B.** Clean exposed surfaces to remove splatters and restore finish.

END OF SECTION

SECTION 16150
WIRING CONNECTIONS

PART 1 - GENERAL

1.1 SUMMARY

- A.** Section includes electrical connections to equipment.
- B.** Related Sections:
 - 1.** Section 16123 - Building Wire and Cable.
 - 2.** Section 16130 - Raceway and Boxes.

1.2 REFERENCES

- A.** NEMA WD 1 (National Electrical Protection Association) - General Purpose Wiring Devices.
- B.** NEMA WD 6 (National Electrical Protection Association) - Wiring Devices - Dimensional Requirements.

1.3 SUBMITTALS

- A.** Division 1 - Submittals: Submittal procedures.
- B.** Product Data: Submit wiring device manufacturer's catalog information showing dimensions, configurations, and construction.
- C.** Manufacturer's installation instructions.

1.4 CLOSEOUT SUBMITTALS

- A.** Division 1 – Contract Closeout: Submittal procedures.
- B.** Project Record Documents: Record actual locations, sizes, and configurations of equipment connections.

1.5 COORDINATION

- A.** Division 1 - Coordination: Coordination and project conditions.
- B.** Obtain and review shop drawings, product data, manufacturer's wiring diagrams and manufacturer's instructions for equipment furnished under other sections,

including but not limited to pool equipment, mechanical equipment, sauna equipment and other systems.

- C. Determine connection locations and requirements.
- D. Sequence rough-in of electrical connections to coordinate with installation of equipment.
- E. Sequence electrical connections to coordinate with start-up of equipment.

PART 2 - PRODUCTS

2.1 CORD AND PLUGS

- A. Attachment Plug Construction: Conform to NEMA WD 1.
- B. Configuration: NEMA WD 6; match receptacle configuration at outlet provided for equipment.
- C. Cord Construction: Type SO heavy duty multi-conductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations. Provide suitable cord caps with strain relief connectors.
- D. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection or rating of supply receptacle, whichever is greater.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Division 1 - Administrative Requirements: Coordination and project conditions.
- B. Verify equipment is ready for electrical connection, wiring, and energization.

3.2 INSTALLATION

- A. Make electrical connections.
- B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors and drip loop in damp or wet locations and connections to pumps.
- C. Connect heat-producing equipment using wire and cable with insulation suitable for temperatures encountered.
- D. Provide receptacle outlet to accommodate connection with attachment plug.

- E.** Provide cord and cap where field-supplied attachment plug is required.
- F.** Install suitable strain-relief clamps and fittings for cord connections at outlet boxes, equipment connection boxes, and at connections to equipment and machinery.
- G.** Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
- H.** Install terminal block jumpers to complete equipment wiring requirements.
- I.** Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

3.3 ADJUSTING

- A.** Division 1 – Contract Closeout: Testing, adjusting, and balancing.
- B.** Cooperate with utilization equipment installers and field service personnel during checkout and starting of equipment to allow testing and balancing and other startup operations. Provide personnel to operate electrical system and checkout wiring connection components and configurations.

END OF SECTION

SECTION 16411
ENCLOSED SWITCHES

PART 1 - GENERAL

1.1 SUMMARY

- A.** Section includes fusible and non-fusible switches.

1.2 REFERENCES

- A.** NEMA FU1 (National Electrical Contractors Association). - Low Voltage Cartridge Fuses.
- B.** NEMA KS 1 (National Electrical Contractors Association) - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).
- C.** NETA ATS (International Electrical Testing Association) - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems (International Electrical Testing Association).

1.3 SUBMITTALS

- A.** Division 1 - Submittals: Submittal procedures.
- B.** Product Data: Submit switch ratings and enclosure dimensions.

1.4 CLOSEOUT SUBMITTALS

- A.** Division 1 – Contract Closeout: Closeout procedures.
- B.** Project Record Documents: Record actual locations of enclosed switches and ratings of installed fuses.

1.5 QUALIFICATIONS

- A.** Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

PART 2 - PRODUCTS

2.1 FUSIBLE SWITCH ASSEMBLIES

- A.** Manufacturers:

1. Square D
 2. GE Electrical
 3. Eaton Cutler-Hammer
 4. Substitutions: Division 1 - Substitutions.
- B.** Product Description: NEMA KS 1, Type HD with externally operable handle interlocked to prevent opening front cover with switch in ON position, enclosed load interrupter knife switch. Handle lockable in OFF position.
- C.** Fuse clips: Designed to accommodate NEMA FU 1, Class R fuses.
- D.** Enclosure: NEMA KS 1, as required to meet conditions. Fabricate enclosure from steel finished with manufacturer's standard gray enamel.
1. Interior Dry Locations: Type 1.
 2. Interior damp locations: Type 3R.
 3. Exterior Locations: Type 3R.
- E.** Furnish switches with entirely copper current carrying parts.

2.2 NON-FUSIBLE SWITCH ASSEMBLIES

- A.** Manufacturers:
1. Square D
 2. GE Electrical
 3. Eaton Cutler-Hammer
 4. Substitutions: Division 1 - Substitutions.
- B.** Product Description: NEMA KS 1, Type HD with externally operable handle interlocked to prevent opening front cover with switch in ON position, enclosed load interrupter knife switch. Handle lockable in OFF position.
- C.** Enclosure: NEMA KS 1, as required to meet conditions. Fabricate enclosure from steel finished with manufacturer's standard gray enamel.
1. Interior Dry Locations: Type 1.
 2. Interior damp locations: Type 3R.

3. Exterior Locations: Type 3R.

D. Switches shall have all copper current carrying parts.

2.3 SWITCH RATINGS

A. Switch Rating: Horsepower or ampere rated for load as indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install enclosed switches plumb. Provide supports in accordance with Section 16070.

B. Height: 5 ft to operating handle.

C. Locate and install engraved plastic nameplates under the provisions of Section 16075.

D. Provide properly sized fuses in all fused switches.

E. Apply adhesive tag on inside door of each fused switch indicating NEMA fuse class and size installed.

F. Spare parts: Provide three spare of each size and rating of fuse installed on this project.

3.2 FIELD QUALITY CONTROL

A. Division 1 – Quality Control, Contract Closeout.

END OF SECTION

SECTION 16421
ENCLOSED CONTROLLERS

PART 1 - GENERAL

1.1 SUMMARY

- A.** Section includes manual and magnetic motor controllers in individual enclosures.

1.2 REFERENCES

- A.** NECA (National Electrical contractors Association) – Standard of Installation
- B.** NEMA AB 1 (National Electrical Manufacturers Association) - Molded Case Circuit Breakers.
- C.** NEMA ICS 2 (National Electrical Manufacturers Association) - Industrial Control and Systems: Controllers, Contactors, and Overload Relays Rated Not More Than 2000 Volts AC or 750 Volts DC.
- D.** NEMA ICS 5 (National Electrical Manufacturers Association) - Industrial Control and Systems: Control Circuit and Pilot Devices.
- E.** NEMA ICS 6 (National Electrical Manufacturers Association) - Industrial Control and Systems: Enclosures.
- F.** NEMA KS 1 (National Electrical Manufacturers Association) - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).
- G.** NETA ATS (International Electrical Testing Association) - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems

1.3 SUBMITTALS

- A.** Division 1 - Submittal Procedures: Submittal procedures.
- B.** Product Data: Submit catalog sheets showing voltage, controller size, ratings and size of switching and overcurrent protective devices, short circuit ratings, dimensions, and enclosure details.
- C.** Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of Product.

- D. Test Reports: Indicate field test and inspection procedures and test results.

1.4 CLOSEOUT SUBMITTALS

- A. Division 1 - Execution Requirements: Closeout procedures.
- B. Project Record Documents: Record actual locations and ratings of enclosed controllers.
- C. Operation and Maintenance Data: Submit Replacement parts list for controllers.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

PART 2 - PRODUCTS

2.1 FRACTIONAL-HORSEPOWER MANUAL CONTROLLER

- A. Manufacturers:
 - 1. Square D
 - 2. GE Electrical
 - 3. Eaton Cutler-Hammer
 - 4. Substitutions: Division 1 - Substitutions.
- B. Product Description: NEMA ICS 2, AC general-purpose Class A manually operated, full-voltage controller for fractional horsepower induction motors, with thermal overload unit, red pilot light and toggle operator.
- C. Enclosure: NEMA ICS 6, Type as required to meet conditions of installation.

2.2 FULL-VOLTAGE NON-REVERSING CONTROLLERS

- A. Manufacturers:
 - 1. Square D
 - 2. Cutler Hammer (Eaton)
 - 3. General Electric
 - 4. Substitutions: Division 1 - Substitutions.

- B.** Product Description: NEMA ICS 2, AC general-purpose Class A magnetic controller for induction motors rated in horsepower.
- C.** Control Voltage: 120 volts, 60 Hertz.
- D.** Overload Relay: NEMA ICS.
 - 1.** Solid State: Trip current rating will be established by selection of overload relay and shall be adjustable (3 to 1 current range). The overload shall be self-powered, provide phase loss and phase unbalance protection, have a permanent tamper guard, and be ambient insensitive. It will also be available in Trip Class 10 or 20 and have a mechanical test function.
 - 2.** Outputs: Unit will be designed for addition of either a normally open or normally closed auxiliary contact and be field convertible.
 - 3.** Reset: Unit shall offer both manual reset and automatic reset.
- E.** Product Features:
 - 1.** Auxiliary Contacts: NEMA ICS 2, 2 each field convertible contacts in addition to seal-in contact.
 - 2.** Cover Mounted Pilot Devices: NEMA ICS 5, standard duty type.
 - 3.** Pilot Device Contacts: NEMA ICS 5, Form Z, rated A150.
 - 4.** Pushbuttons: Recessed or Shrouded type.
 - 5.** Indicating Lights: Provide with red LED 'run' light in enclosure cover.
 - 6.** Selector Switches: Hand-Off-Auto Rotary type.
 - 7.** Relays: NEMA ICS 2,
 - 8.** Control Power Transformers: 120 volt secondary, 50 VA minimum, in each motor starter. Provide fused primary and secondary, and bond unfused leg of secondary to enclosure.
- F.** Combination Controllers: Combine motor controllers with disconnect in common enclosure, using motor circuit protector or thermal magnetic circuit breaker conforming to NEMA AB 1.
- G.** Enclosure: NEMA ICS 6, as required to meet conditions. Fabricate enclosure from steel finished with manufacturer's standard gray enamel.
 - 1.** Interior Dry Locations: Type 1.

2. Interior Wet and Damp locations: Type 3R
3. Exterior Locations: Type 3R.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install enclosed controllers where indicated, in accordance with NECA "Standard of Installation."
- B. Install enclosed controllers plumb. Provide supports in accordance with Section 16070.
- C. Height: 5 ft to operating handle.
- D. Adjust overload units in motor controllers to match installed motor characteristics.
- E. Provide engraved plastic nameplates; refer to Section 16075 for product requirements and location.
- F. Neatly type label and place inside each new motor controller door identifying motor served, supply branch circuit identification, nameplate horsepower, full load amperes, code letter, service factor, and voltage/phase rating. Place label in clear plastic holder.

3.2 FIELD QUALITY CONTROL

- A. Division 1 - Quality Control, – Contract Closeout.
- B. Perform inspections and tests listed in NETA ATS, Section 7.16.1 and as follows:
 1. Visual and Mechanical Inspection
 - a. Compare equipment nameplate data with drawings and specifications.
 - b. Inspect physical and mechanical condition.
 - c. Inspect and adjust contact gap, wipe, alignment, and pressure in accordance with manufacturer's published data.
 - d. Motor-Running Protection: Compare overload element rating with motor full-load current rating to verify correct sizing.

- e. Inspect all bolted electrical connections for high resistance by verifying tightness of accessible bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data.

END OF SECTION

SECTION 16442

PANELBOARDS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes distribution and branch circuit panelboards.
- B. Related Sections:
 - 1. Section 16050 - Basic Electrical Materials and Methods.
 - 2. Section 16075 – Identification.
 - 3. Section 16475 – Overcurrent Protective Devices.

1.02 REFERENCES

- A. UL 67 – Panelboards.
- B. UL 50 - Cabinets and boxes.
- C. NECA (National Electrical Contractors Association) -Standard of Installation.
- D. NEMA AB 1 (National Electrical Manufacturers Association) - Molded Case Circuit Breakers.
- E. NEMA PB 1 (National Electrical Manufacturers Association) - Panelboards.
- F. NEMA PB 1.1 (National Electrical Manufacturers Association) - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
- G. NETA ATS (International Electrical Testing Association) - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

1.03 SUBMITTALS

- A. Division 1 - Submittals: Requirements for submittals.
- B. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker arrangement and sizes.
- C. Typical Wiring Diagrams: Submit typical connection diagrams for all lighting control panelboard components including, but not limited to, panelboard, switches, photo controllers, occupancy sensors, and other specified communications devices.
- D. Product Data: Submit catalog data showing specified features of standard products.

1.04 CLOSEOUT SUBMITTALS

- A. Division 1 – Contract Closeout: Requirements for submittals.
- B. Project Record Documents: Record actual locations of panelboards and record actual circuiting arrangements.
- C. Operation and Maintenance Data: Submit spare parts listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

1.05 QUALIFICATIONS

- A. The manufacturer of the panelboard shall be the manufacturer of the major components within the assembly, including circuit breakers and fusible switches.

1.06 MAINTENANCE MATERIALS

- A. Division 1 – Contract Closeout - Operation and Maintenance Data: Requirements for maintenance products.
- B. Provide two of each panelboard key. All panelboards shall be keyed alike.

PART 2 PRODUCTS

2.01 BRANCH CIRCUIT PANELBOARDS

- A. Manufacturers:
 - 1. Square D
 - 2. Cutler-Hammer
 - 3. General Electric
 - 4. Substitutions: Division 1 - Substitutions.
- B. Product Description: NEMA PB1, circuit breaker type, lighting and appliance branch circuit panelboard, with integral TVSS where indicated by the drawings.
- C. Main bus bars shall be copper sized in accordance with UL standards to limit temperature rise on any current carrying part to a maximum of 65 degrees C above an ambient of 40 degrees C maximum.
- D. A bolted ground bus shall be included in all panels.
- E. Bus bar taps for panels with single-pole branches shall be arranged for sequence phasing of the branch circuit devices. Neutral busing shall have a suitable lug for each outgoing feeder requiring a neutral connection.
- F. Minimum Integrated Short Circuit Rating: As indicated.
- G. Molded Case Circuit Breakers: NEMA AB 1, bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles, listed as Type SWD for lighting circuits, type HID breakers for high intensity discharge lighting circuits, and type HACR for air conditioning equipment circuits, Arc-fault type breakers for dwelling unit areas, and Class A ground fault interrupter circuit breakers where scheduled. Do not use tandem circuit breakers. Provide multi-pole breakers or other approved means of simultaneously disconnecting all ungrounded conductors for each multi-wire branch circuit.
- H. Enclosure: NEMA PB 1, Type 1
- I. Cabinet Box: 6 inches deep, 20 inches wide (nominal).
- J. Cabinet Front: Surface or flush doors. Provide with concealed trim clamps, concealed hinge, metal directory frame, and flush lock all keyed alike. Finish in manufacturer's standard gray enamel.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install panelboards in accordance with NEMA PB 1.1 and the NECA "Standard of Installation".
- B. Install panelboards plumb.
- C. Height: 6 feet to top of panelboard; install panelboards taller than 6 feet with bottom no more than 4 inches above floor.
- D. Provide filler plates for unused spaces in panelboards.
- E. Provide typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes required to balance phase loads. Circuit directories shall reflect actual room

numbers in the building. Submit copy of final panelboard directories in both hardcopy and electronic format.

- F. Provide engraved plastic nameplates under the provisions of Section 16075.
- G. Provide spare conduits out of each panelboard to an accessible location above local accessible above ceiling space. Minimum spare conduits: 1 empty 3/4 inch conduit for each three spare circuit breakers and/or spaces in panelboard.
- H. Mark required NEC/UFC working clearance (typical 30" wide by 36 to 42" deep) on the floor in front of each new panelboard with 2" wide yellow adhesive tape with black diagonal stripping. Provide a "KEEP AREA CLEAR" adhesive label on floor within this area.
- I. Provide field accurate one-line drawings and panel location maps mounted on or adjacent to main distribution panel. Mount drawing under Plexiglas or other clear polycarbonate protective lens with suitable frame.
- J. Provide flash hazard warning labels in compliance with NEC Article 110.16.

3.02 FIELD QUALITY CONTROL

- A. Division 1 – Quality Control, Division 1– Contract Closeout.
- B. Perform circuit breaker inspections and tests as follows:
 - 1. Visual and Mechanical Inspection
 - a) Compare nameplate data with drawings and specifications.
 - b) Inspect circuit breaker for correct mounting.
 - c) Operate circuit breaker to insure smooth operation.
 - d) Inspect case for cracks or other defects.
 - e) Inspect all bolted electrical connections for high resistance by verifying tightness of accessible bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data.

3.03 ADJUSTING

- A. Division 1– Contract Closeout.
- B. Measure steady state load currents at each panelboard feeder; rearrange circuits in the panelboard to balance the phase loads to within 20 percent of each other. Maintain proper phasing for multi-wire branch circuits.

END OF SECTION

SECTION 16475

OVERCURRENT PROTECTIVE DEVICES

PART 1 - GENERAL

1.1 SUMMARY

- A.** Section includes Thermal Magnetic Molded Case Circuit Breakers - Furnish as specified herein and where shown on the associated drawing.

1.2 REFERENCES: The circuit breakers referenced herein shall be designed and manufactured according to the latest revision of the following standards.

- A.** NEMA AB 1 1993 - (National Electrical Manufacturers Association) Molded Case Circuit Breakers and Molded Case Switches
- B.** UL 489 - (Underwriters Laboratories Inc.) Molded Case Circuit Breakers and Circuit Breaker Enclosures
- C.** Federal Specification W-C-375B/GEN - Circuit Breakers, Molded Case; Branch Circuit and Service
- D.** National Fire Protection Association NFPA - 70 (National Electrical Code)

1.3 SUBMITTALS

- A.** Provide outline drawings with dimensions, and ratings for voltage, amperage and maximum interruption. Include instructions for identification and receiving inspection, circuit breaker mounting, trip unit functions and adjustments, trouble shooting, accessories and wiring diagrams.

1.4 QUALIFICATIONS

- A.** Manufacturer shall furnish products listed by Underwriters Laboratories Incorporated (UL), or testing firm acceptable to the authority having jurisdiction as suitable for application specified. The overcurrent protection device manufacturing facility shall be Registered by Underwriters Laboratories Inc. to the International Organization for Standardization ISO 9000 Series Standards for quality.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A.** Shall be by same manufacturer as Switchboards and Panelboards.

2.2 MOLDED CASE CIRCUIT BREAKERS

A. Molded Case Circuit Breaker Characteristics – General

1. Circuit breakers shall be constructed using glass reinforced insulating material. Current carrying components shall be completely isolated from the handle and the accessory mounting area.
2. Circuit breakers shall have an over center, trip free, toggle operating mechanism which will provide quick-make, quick-break contact action. The circuit breaker shall have common tripping of all poles.
3. The circuit breaker handle shall reside in a tripped position between ON and OFF to provide local trip indication. Circuit breaker escutcheon shall be clearly marked ON and OFF in addition to providing International I/O markings.
4. The maximum ampere rating and UL, IEC, or other certification standards with applicable voltage systems and corresponding interrupting ratings shall be clearly marked on face of circuit breaker.
5. Circuit breakers shall be factory sealed and shall have date code on face of circuit breaker.
6. Circuit breaker shall be fully rated for fault currents indicated
7. Circuit breakers shall be equipped with UL Listed electrical accessories as noted on the associated drawings. Where indicated, circuit breaker handle accessories shall provide provisions for locking handle in the ON and OFF position.
8. All circuit breakers shall be UL Listed for reverse connection without restrictive line and load markings and be suitable for mounting in any position.
9. All lugs shall be UL Listed to accept solid (not larger than #8 AWG) and/or stranded copper conductors. Lugs shall be suitable for 75° C rated wire or 90° C rated wire, sized according to the 75° C temperature rating in the National Electrical Code.

B. Thermal-Magnetic Circuit Breakers

1. Circuit breakers shall have a permanent trip unit containing individual thermal and magnetic trip elements in each pole.
2. Thermal trip elements shall be factory preset and sealed. Circuit breakers shall be true rms sensing and thermally responsive to protect circuit conductor(s) in a 40° C ambient temperature.

OVERCURRENT PROTECTIVE DEVICES

3. Circuit breaker frame sizes above 100 amperes shall have a single magnetic trip adjustment located on the front of the circuit breaker.
 4. Standard two- and three-pole circuit breakers up to 250 amperes shall be UL Listed as HACR where shown to supply motor loads.
- C. Electronic Trip Standard Function Trip System**
1. Product Description: NEMA AB 1, electronic trip, 100 percent rated, full function enclosed, insulated-case circuit breaker. Thermal magnetic backup protection. Amps Interrupting Capacity as indicated on the drawings.
 2. Trip Unit: Self powered, discrete independent adjustable control of true RMS electronic sensing, timing, and tripping circuits for:
 - a. Long Time Pickup.
 - b. Long Time Delay.
 - c. Short Time Pickup.
 - d. Short Time Delay.
 - e. Instantaneous Pickup.
 - f. A means to seal the trip unit adjustments in accordance with NEC Section 240-6(b) shall be provided.
- D. Shunt Trip System for Electronic Trip Molded Case Circuit Breakers**
1. Where indicated on the Drawings, circuit breakers shall be provided with integral shunt trip to provide a means to open the circuit breaker from a remote location.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install circuit breakers in accordance with manufacturer's instructions, the National Electrical Code and applicable local codes.
- B. Install multi-pole circuit breakers or other approved means of simultaneously disconnecting all ungrounded conductors where the branch circuit originates for each multi-wire branch circuit.
- C. Circuit breaker pick-up level and time delay settings shall be adjusted to values as recommended by the manufacturer's coordination study.

END OF SECTION

SECTION 16510
INTERIOR LUMINAIRES

PART 1 - GENERAL

1.1 SUMMARY

- A.** Section includes interior luminaires, lamps, ballasts, and accessories.
- B.** Related Sections:
 - 1.** Section 16530 - Emergency lighting.

1.2 REFERENCES

- A.** ANSI C82.1 - Ballasts for Fluorescent Lamps - Specifications.
- B.** ANSI C82.4 - Ballasts for High-Intensity Discharge Lamps (Multiple Supply Type).

1.3 SUBMITTALS

- A.** Division 1 - Submittals: Submittal procedures.
- B.** Shop Drawings: Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
- C.** Product Data: Submit dimensions, ratings, and performance data. Provide manufacture and model number for each different type of fixture ballasts.

1.4 QUALIFICATIONS

- A.** Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.5 FIELD MEASUREMENTS

- A.** Verify field measurements prior to fabrication.

1.6 MAINTENANCE MATERIALS

- A.** Division 1 - Spare Parts and Maintenance Materials.
- B.** Furnish two of each plastic lens type.

- C. Furnish one replacement lamp for each lamp installed.
- D. Furnish two of each ballast type.

PART 2 - PRODUCTS

2.1 INTERIOR LUMINAIRES

- A. Product Description: Complete interior luminaire assemblies, with features, options, and accessories as scheduled and required for complete installation and proper operation.

2.2 FLUORESCENT BALLASTS

- A. Manufacturers:
 - 1. General Electric Co.
 - 2. Advance
 - 3. Osram Sylvania
 - 4. Substitutions: Division 1 Substitution. Substitution submittals shall include a direct comparison of construction and operational specifications to that of the manufacturers listed above. Acceptance of manufacturer other than those listed above may be disapproved by the owner without comment.
- B. Product Description: Constant wattage, instant start, electronic ballast with less than 10% THD, High-power-factor, with voltage to match luminaire voltage. Ballasts shall be sound rated "A", and so labeled. Ballasts shall meet the requirements of FCC Rules and Regulations, Part 15, Class A.
- C. Ballasts shall have a full three year replacement warranty.
- D. Ballasts shall have a frequency of operation of 38 kHz or higher. Ballasts shall withstand transients as defined in IEEE 587, Categories A and B.

2.3 FLUORESCENT LAMPS

- A. Manufacturers:
 - 1. General Electric Co.
 - 2. Philips
 - 3. Sylvania

- 4.** Substitutions: Division 1. Substitution submittals shall include a direct comparison of construction and operational specifications to that of the manufacturers listed above.
- B.** Unless otherwise indicated, fluorescent lamps shall be triphosphor type, 32 watt, T-8 or 54 watt T-5 high output, 4100 degrees K., CRI 82 or greater, RE841, with 2950 initial lumen output. Four foot fluorescent lamps shall be low mercury type and shall meet the requirements for classifications as non-hazardous waste.
- C.** Unless otherwise indicated, compact fluorescent lamps shall be amalgam type, 4 pin base, 4100 degree K., CRI 82 or greater, RE841.

2.4 LED LAMPS

- A.** All LEDs used in the LED fixture shall be high brightness and of proven quality from established and reputable LED manufacture's.
- B.** Manufacturer shall utilize an advanced production LED binning process such as Optibin consistency from fixture to fixture and project to project over time, while ensuring a reliable supply of LEDs from the supplier.
- C.** LED fixtures shall meet lumen maintenance standards as defined in IESNA LM-80-08.

2.5 INCANDESCENT LAMPS

- A.** General use incandescent lamps shall be 130 volt rated extended life lamps with minimum life of 4000 hours when operated at 120 volts.

PART 3 - EXECUTION

3.1 INSTALLATION

- A.** Unless specified otherwise, install suspended luminaries using steel conduit pendants supported from swivel hangers. Provide pendant length required to suspend luminaire at indicated height. Provide seismic restraint where necessary.
- B.** Locate recessed ceiling luminaires as indicated on reflected ceiling plan.
- C.** Support luminaires larger than 2 x 4 foot size independent of ceiling framing.
- D.** Install surface mounted luminaires plumb and adjust to align with building lines and with each other. Secure to prevent movement.
- E.** Install recessed luminaires to permit removal from below.

- F.** Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating.
- G.** Install clips to secure recessed grid-supported luminaires in place. Provide auxiliary support from fixtures installed in grid ceilings to structure above, to completely suspend fixture upon grid failure in compliance with local requirements.
- H.** Install wall-mounted luminaires at height indicated.
- I.** Coordinate installation of cove lighting, under cabinet, and display case lighting with casework shop drawings with architectural drawings and elevations.
- J.** Install accessories furnished with each luminaire.
- K.** Connect luminaires to branch circuit outlets provided under Section 16130. Wiring to each fixture shall originate at a junction box; fixture to fixture wiring will not be acceptable.
- L.** Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.
- M.** Install specified lamps in each luminaire.
- N.** Ground and bond interior luminaires under the provisions of Section 16060.

3.2 FIELD QUALITY CONTROL

- A.** Division 1 - Quality Controls – Contract Closeout.
- B.** Operate each luminaire after installation and connection. Inspect for proper connection and operation.

3.3 ADJUSTING

- A.** Division 1 – Contract Closeout: Testing, adjusting, and balancing.
- B.** Aim and adjust luminaires as directed.

3.4 CLEANING

- A.** Division 1 – Contract Closeout: Final cleaning.
- B.** Remove dirt and debris from enclosures.
- C.** Clean photometric control surfaces as recommended by manufacturer.
- D.** Clean finishes and touch up damage.

3.5 PROTECTION OF FINISHED WORK

- A.** Division 1 – Contract Closeout: Protecting finished work.
- B.** Relamp all fixtures used for construction illumination prior to final acceptance.
Replace any lamps that have failed at time of final acceptance.

END OF SECTION

SECTION 16530
EMERGENCY LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes emergency lighting units and exit signs.

1.2 REFERENCES

- A. NFPA 101 – Life Safety Code
- B. NEMA WD 6 (National Electrical Manufacturers Association) - Wiring Devices-Dimensional Requirements.

1.3 SYSTEM DESCRIPTION

- A. Emergency lighting to comply with IBC, NFPA, and NEC requirements.

1.4 SUBMITTALS

- A. Division 1 - Submittal: Submittal procedures.
- B. Product Data: Submit dimensions, ratings, and performance data.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.6 MAINTENANCE MATERIALS

- A. Division 1 – Spare Parts and Maintenance Materials.
- B. Furnish one replacement lamps for each lamp installed.
- C. Furnish one replacement battery for each battery type and size.

PART 2 - PRODUCTS

2.1 EXIT SIGNS – ELECTRICALLY POWERED

- A. Manufacturers:
 - 1. As Scheduled on Drawings

- B.** Product Description: LED illuminated exit sign with integral battery and charger as scheduled on the Drawings. Suitable for universal mounting position.

2.2 EMERGENCY LIGHTING UNITS

- A.** Manufacturers:
 - 1.** As Scheduled on Drawings
- B.** Product Description: Self-contained incandescent emergency lighting unit with integral battery and charger as scheduled on the drawings.
- C.** Lamps: As scheduled.

2.3 EMERGENCY FLUORESCENT BATTERY BALLASTS

- A.** Product Description: Emergency battery power supply suitable for installation in ballast compartment of fluorescent luminaire.
- B.** Output: Minimum of 1100 Lumens provided to two 48" 32 watt T8 or two 48" T5-HO Fluorescent lamps, a minimum of 700 Lumens provided to one 32 watt TRT compact fluorescent lamps.
- C.** Battery Type: Sealed, maintenance free, high-temperature nickel cadmium.
- D.** Automatic battery recharge after 90 minute discharge.
- E.** Integral or remote pilot light and test switch to provide visual and manual means of monitoring system operation.
- F.** UL listed. Meets UL 924, NFPA 101 (current Life Safety Code), NEC and OSHA illumination standards.
- G.** Three-year total customer satisfaction warranty.

3.2 EMERGENCY LED BATTERY DRIVER

- A.** Product Description: Emergency battery power supply suitable for installation within the LED luminaire.
- B.** Output: The emergency driver shall be capable of operating the fixtures LED load at maximum rated current for a minimum of 90 minutes.
- C.** Battery Type: Sealed, maintenance free, high-temperature nickel cadmium.
- D.** Automatic battery recharge after 90 minute discharge.

- E.** Integral or remote pilot light and test switch to provide visual and manual means of monitoring system operation.
- F.** UL recognized. Meets UL 924, NFPA 101 (current Life Safety Code), NEC and OSHA illumination standards.
- G.** Minimum Three-year total customer satisfaction warranty.

PART 3 - EXECUTION

3.1 INSTALLATION

- A.** Install surface-mounted emergency lighting units and exit signs plumb and adjust to align with building lines and with each other. Fasten securely to prevent movement.
- B.** Provide wall mounting instead of ceiling mounting where ever possible. Install wall-mounted exit signs at height as scheduled. Coordinate exact mounting height of exit signs directly above doorways.
- C.** Install accessories furnished with each emergency lighting unit and exit sign.
- D.** Install all accessories necessary for a complete and proper installation of each emergency lighting unit and exit signs.
- E.** Connect emergency lighting units to branch circuits as indicated.
- F.** Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within unit.
- G.** Install specified lamps in each emergency lighting unit.

3.2 FIELD QUALITY CONTROL

- A.** Division 1 - Quality Controls and Contract Closeout.
- B.** Operate each unit after installation and connection. Inspect for proper connection and operation.

3.3 ADJUSTING

- A.** Division 1 – Contract Closeout: Testing, adjusting, and balancing.
- B.** Aim and adjust lamp fixtures to maximize uniform illumination of exit pathways.
- C.** Position exit sign directional arrows as indicated.

3.4 PROTECTION OF FINISHED WORK

- A.** Division 1 – Contract Closeout: Protecting finished work.
- B.** Relamp emergency lighting units that have failed prior to final acceptance.

END OF SECTION

SECTION 16710

TELECOMMUNICATION DISTRIBUTION

PART 1 - GENERAL

1.1 SUMMARY

- A.** The intent of this Specification is to place in working order a complete, fully tested and documented telecommunication cabling system in the area of remodel, consisting of Category 5e copper cabling complying with the Codes and Standards referenced herein.
- B.** Section includes communication system cabling and equipment.
- C.** Related Sections:
 - 1.** Section 16060 - Grounding and Bonding.
 - 2.** Section 16070 - Electrical Hangars and Supports.
 - 3.** Section 16075 - Electrical Identification.
 - 4.** Section 16123 - Building Wire and Cable.
 - 5.** Section 16130 - Raceway and Boxes.

1.2 REFERENCE CODES AND STANDARDS

- A.** Design, manufacture, test, and install telecommunications cabling networks per manufacturer's requirements and in accordance with NFPA-70 (National Electrical Code), state codes, local codes, requirements of authorities having jurisdiction, and particularly the following standards:
 - 1.** ANSI/TIA/EIA-568-B – Addendum 1, Draft 10
 - 2.** ANSI/TIA/EIA-568-B.1 - General Cabling System Requirements
 - 3.** ANSI/TIA/EIA-568-B.2 - Balanced Twisted-Pair Cabling Components
 - 4.** ANSI/TIA/EIA-568-B.3 - Optical Fiber Cabling Components Standard
 - 5.** ANSI/TIA/EIA-569-B - Commercial Building Standard for Telecommunications Pathways and spaces
 - 6.** ANSI/TIA/EIA-606 - Administration Standard for the Telecommunications Infrastructure of Commercial Buildings.

7. ANSI/TIA/EIA-607 - Commercial Building Grounding and Bonding Requirements for Telecommunications
8. Install cabling in accordance with the most recent edition of BICSI publications:
 - a. BICSI - Telecommunications Distribution Methods Manual.
 - b. BICSI - Cabling Installation Manual.

1.3 SYSTEM DESCRIPTION

- A. Provide the equipment, materials, and labor to install the systems shown on the drawings and specified herein. This shall include (but not be limited to) provision of all raceways, sleeves, boxes, cable, patch cords, pull ropes (in unused conduits), outlets, jacks, splices, connections, labeling, testing and all other material, equipment, and labor required to make the systems fully operational.
- B. Horizontal Pathway: Conform to EIA/TIA requirements, using raceway, continuous pathway support, J-hooks and conduit sleeves.
- C. Horizontal Cabling: Complete structured cabling system star topology from patch panels to station outlets using unshielded twisted pair (UTP) horizontal cables.

1.4 SUBMITTALS

- A. Division 1 - Submittals: Submittal procedures.
 1. Manufacturer's Catalog Data shall be submitted for the following items. Data shall include a complete list of parts, special tools, and supplies with current unit prices and source of supply.
 - a. UTP Copper Cable.
 - b. UTP Telecommunications Jacks and Faceplates.
 - c. UTP Patch Cables.
- B. Labeling System: Coordinate with Contracting Agency for Owner's labeling conventions. Submit Project labeling system for approval. Where room numbers are employed in identification scheme, use room numbers as listed in final room sign schedule.
- C. Quality Assurance Plan: Contractor shall prepare a quality assurance plan which provides a detailed outline of all testing to be accomplished. Quality assurance plan shall include, as a minimum, a schedule of when tests will be performed relative to installation milestones, specific test procedures that will be used, a list

of test equipment that will be used including manufacturer, model number, calibration certification, range and resolution accuracy. Test plan shall be submitted to the Owner for approval at least 30 days prior to the start of testing.

- D. Shop Drawings shall include dimensioned layout of major pathways, including j-hooks, sleeves, cable trays, conduits 2" and larger and location of fire wall penetrations.
- E. Shop drawings shall include riser style diagram of new typical horizontal wiring and termination for owner review and approval.
- F. Shop drawings shall include labeling documentation.

1.5 CLOSEOUT SUBMITTALS

- A. Division 1 – Contract Closeout: Closeout procedures.
- B. Project Record Documents: Record actual locations and sizes of pathways and outlets. Include all test report. Provide floor plan with identification of all new outlets. Provide 1/16" scale (minimum) floor plan with accurate identification of all new outlets served by respective closet in each closet, including a single line representation of the network system.

1.6 WORKMANSHIP

- A. Components of the system shall be installed in a neat, workmanlike manner. Wiring color codes shall be strictly observed and terminations shall be uniform throughout the system. Identification markings and systems shall be uniform. TIA/EIA 568B wiring codes as shown on the drawings shall standardize all wiring.
- B. Install materials and equipment in accordance with applicable standards, codes, requirements, and recommendations of national, state, and local authorities having jurisdiction, and National Electrical Code® (NEC) and with manufacturer's printed instructions.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Installer: Specialty telecommunication system contractor primarily engaged in installing products specified in this section with minimum three years documented experience. Installer shall be certified by manufacturer of cabling and termination equipment to be installed. Contractor shall include listing of at least three projects of equivalent scope and size, including date of project completion, location of project, and point of contact or reference for each specific project.

- C. Testing Agency: Specialty telecommunication system contractor specializing in testing products specified in this section with minimum three years documented experience.

1.8 COORDINATION

- A. The necessity to coordinate this work with the Owner and the Contracting Agency is emphasized. The Contractor shall be responsible for any omissions, delays and additional cost due to lack of coordination or approval from the same.
- B. Coordinate all work with lighting, power, ventilation, sprinklers and other systems to avoid interferences.

1.9 TERMINOLOGY

- A. Backbone Cables - Copper or optical fiber cables connecting main cross-connect facilities or intermediate cross-connect facilities.
- B. Cable Management – Troughs, gutters, management panels, etc., mounted in conjunction with telecommunications distribution equipment and terminal blocks, for the routing of cables and patch cords in a neat and workmanlike manner.
- C. Data – Generic term for Structured Telecommunication Distribution System cabling and hardware infrastructure internal and external to a building or buildings used to transmit voice and data, etc.
- D. Horizontal Cables –Cables connecting patch panels or terminal blocks in the Telecommunications Rooms to the outlet jacks.
- E. Jacks or Ports - Female mechanical termination device for horizontal cables.
- F. LEC - Local Exchange Carrier Serving Utility.
- G. Outlets - Device plate that contains jacks or ports.
- H. Patch Panels – Rack mounted connecting hardware to connect horizontal or backbone cables to an arrangement of fixed connectors using patch cords or to form cross or interconnections.
- I. Pathways-refers to conduits, sleeves, cabletrays, distribution rings, etc., which are employed to route backbone and horizontal cables between telecommunication rooms, outlets, etc. for placement, support, and protection of the telecommunication cables.
- J. Rack – Mounting frame to support telecommunication equipment, patch panels, etc.

- K.** Telecommunications Rooms (TR) – Space for housing telecommunications equipment, cable terminations and cross-connect wiring.
- L.** Terminal Blocks - Multiple punch down cable terminations.

PART 2 - PRODUCTS

2.1 GENERAL

- A.** The Basis of Design for copper cabling, connecting hardware, and related hardware in this section is Ortronics and Berk-Tek to establish the standards for quality and performance. Manufacturers meeting all the system quality, performance and warranty requirements of this specification may also be acceptable. It shall be the responsibility of the Contractor to demonstrate that all performance and warranty requirements are met.
 - 1.** Provide color coding of all systems equipment in compliance with the Standards outlined in ANSI/EIA/TIA 606.
 - 2.** Any item of equipment or material not specifically addressed on the drawings or in this document and required to provide a complete installation shall be provided in a level of quality consistent with other specified items.

2.2 PATCH CORDS

- A.** Category 5e patch cable shall be included in the project. The quantity shall be equal to the number of new terminated patch panel ports. Length shall be as required for connections.

2.3 TELECOMMUNICATION OUTLETS

- A.** Faceplates
 - 1.** All Faceplates shall be modular in design, with the capacity to hold up to four jacks with labeling positions. Stainless finish
- B.** Outlets for Voice and Data:
 - 1.** Communications outlets shall consist of one, 4"x4"x2 1/8" deep minimum size outlet box with appropriate depth device cover and plates equipped with 8-pin modular (8P8C) jacks. All jack cabling shall be terminated at the respective closet.
 - 2.** Unless otherwise noted on the floor plans or within this document, all wall outlets shall be provided with blank module inserts for all unused module locations. Jack module arrangement is shown on the drawings. Provide color-coding at each outlet and patch panels.

C. Category 5e Jacks

1. Electrical Specifications: Jacks shall meet or exceed performance specifications for the Channel as defined by ANSI/TIA/EIA-568-A-5.
2. Enhanced Category 5 jacks shall be manufactured by the same manufacturer as the existing modular patch panels.
3. ISO 9001 Certified Manufacturer.
4. Ivory finish.

D. Wall Outlets shall be a single or double gang faceplate as required.

2.4 UNSHIELDED HORIZONTAL CABLE

- A.** Data cables shall be extended between the outlet location and the associated rack and shall consist of 4 pair, 24 gauge, UTP, and shall be terminated on the 8 pin modular jacks provided at each outlet. Cable jacket shall comply with Article 800 of the NEC for use as a plenum cable. The 4 pair UTP cable shall be UL Listed Type CMP (plenum).
- B.** All 4 pair Category 5e cables shall conform to the proposed ANSI/TIA/EIA 568-A- 5 Commercial Building Telecommunications Cabling Standard, Horizontal Cable Section, and be part of the UL LAN Certification and Follow-up Program.

2.5 EXTRA MATERIALS:

- A.** Furnish to the Owner the following spares.
1. One of each type of UTP telecommunications jacks.
 2. One of each type of telecommunications faceplates.
 3. If number icons are utilized provide one of each identification icon for each number designation (1 thru 4) on the faceplate.

PART 3 - EXECUTION

3.1 INSTALLATION

- A.** Install pathways in accordance with EIA/TIA 569.
- B.** Install wire and cable in accordance with EIA/TIA 568.
- C.** Provide color coding of all systems equipment in compliance with the Standards outlined in ANSI/EIA/TIA 606.

- D.** Install polyethylene pulling string in each empty conduit over 10 feet in length or containing a bend.
- E.** Provide engraved plastic nameplates under the provisions of Section 16075. Identify all new backboards and cabinets.
- F.** Ground and bond pathways, cable shields, cable tray and equipment under all the provisions of Section 16060.
- G.** Provide patch cord connections between all termination hardware to provide a complete and functional system.
- H.** All cables shall be routed in such a way as to minimize EMI and RFI interference. Cables shall be routed to maintain the following minimum distances from disturbance sources as indicated below:
 - 1.** Unshielded power lines or electrical equipment in proximity to open telecommunication systems: 5 inches.
 - 2.** Unshielded power lines or electrical equipment in proximity to enclosed telecommunication systems: 2.5 inches.
 - 3.** Enclosed power lines or electrical equipment rated at 2.5kVA or greater in proximity to open telecommunication systems: 24 inches.
 - 4.** Enclosed power lines or electrical equipment rated at 2.5kVA or greater in proximity to enclosed telecommunication systems: 6 inches.
 - 5.** Distance from fluorescent or HID lighting fixtures: 6 inches
- I.** All open wiring shall be plenum rated. Plenum rated cables may be run exposed in cable tray or above accessible ceilings supported by suitable cable rings or fasteners. Concealed cabling, such as in walls, above hard ceilings, and through soffits shall be installed in conduit.

3.2 FIELD QUALITY CONTROL

- A.** Division 1 - Quality Controls and Contract Closeout.
- B.** Inspect and test copper cables and terminations in accordance with EIA/TIA 568-A-5, Category 5e.
- C.** Submit test reports for approval. All equipment not meeting the requirements of these testing standards shall be brought into compliance and retested prior to final acceptance.

END OF SECTION

SECTION 16721

FIRE ALARM

PART 1 - GENERAL

1.1 SUMMARY

- A.** The work covered by this Section of the Specification shall include all labor, equipment, materials and services to design, furnish, install, and all other services necessary to modify the existing fire alarm system as required for complete operation as intended, noted on the drawings, in these specifications, and as required to comply with governing codes. The system shall consist of, but not be limited to, the following:
 - 1. Addressable fire alarm stations.
 - 2. Addressable analog and area smoke detectors.
 - 3. Addressable analog heat detectors.
 - 4. Audible notification appliances; bells, horns, chimes.
 - 5. Visual notification appliances; strobes.
 - 6. Battery standby.
- B.** Related Sections:
 - 1. Section 16123 - Building Wire and Cable.
 - 2. Section 16130 – Raceway and Boxes

1.2 RELATED WORK

- A.** The Contractor shall coordinate work in this Section with all related trades. Work and/or equipment provided in other Sections and related to the fire alarm system.

1.3 REFERENCES: THE DESIGN, EQUIPMENT, INSTALLATION AND OPERATION SHALL COMPLY WITH THE CURRENT PROVISIONS OF THE FOLLOWING CODES AND STANDARDS.

- A.** NFPA 72 (National Fire Protection Association) – National Fire Alarm Code
- B.** NFPA 101 (National Fire Protection Association) – Life Safety Code.
- C.** Americans with Disabilities Act (ADA)

- D. Local and State Codes, as well as the Local Authority Having Jurisdiction
- E. Underwriters Laboratories, Inc.

1.4 SUBMITTALS

- A. Division 1 - Submittals: Submittal procedures.
- B. Shop Drawings: Prepared by authorized factory representative. Indicate system wiring diagram showing each new device and wiring connection; provide battery and voltage drop calculations.
- C. Product Data: Submit manufacturer's catalog data and descriptive information on each new piece of equipment to be used, showing electrical characteristics and connection requirements.
- D. Test Reports: Indicate procedures and results for specified field testing and inspection.
- E. Manufacturer's Field Reports: Indicate activities on site, adverse findings, and recommendations.
- F. Quality Assurance / Control: Certificate of completion, from Manufacturer's Representative, in accordance with NFPA 72 requirements.

1.5 CLOSEOUT SUBMITTALS

- A. Division 1 – Contract Closeout: Closeout procedures.
- B. Project Record Documents: Provide field accurate as-built drawings.
- C. Operation and Maintenance Data:
 - 1. Submit manufacturer's standard operating and maintenance instructions for each item of equipment submitted under Product Data.
 - 2. Provide instruction manual from Manufacturer that explains what is to be done in event of various indications.
 - 3. Include copy of approved shop drawings.

1.6 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. System shall meet approval of authority having jurisdiction (AHJ). NEC and local ordinances and regulations shall govern unless more stringent requirements are specified.

- 2. New equipment, devices, and cable shall be UL or Factory Mutual listed for use in fire alarm systems and shall be factory certified as compatible with existing system and equipment.
- B. Design fire alarm under direct supervision of a NICET level III (or higher) Certified system designer, experienced in design of this type of work, hereafter referred to as the "Delegated Engineer". The Delegated Engineer shall be specifically identified in the submittals and shall be directly responsible for the design of the specific system supplied and installed.

PART 2 - PRODUCTS

2.1 EXISTING SYSTEM

- A. The existing fire alarm system is a GE/EST IO 500 fire alarm control panel. All new devices as indicated on the Drawings shall be U.L. listed as compatible and fully functional with the existing system control panel and equipment. Where sufficient capacity is determined to be available, existing system zones and/or circuits may be re-used for the remodeled areas. Provide new zone equipment, circuits, and required power supply and control devices as appropriate and/or as required for the new equipment and devices to be added. Unless specifically noted otherwise, all devices and wiring in remodeled area shall be new and shall be appropriate and suitable for the specific location, ie. Lockers, showers, sauna, pool area, etc.
- B. All required fire alarm equipment and devices in the area of remodel may not be shown on the drawings. The contractor shall be responsible for providing design and installation for the modifications to the fire alarm system as a result of the remodel in the existing facility for a complete and fully operational fire alarm system in accordance with the owner's requirements, these specifications, IFC, NFPA 72, and all other applicable codes.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. The additions and modifications to the system shall be installed in a workmanlike manner, in accordance with approved manufacturer's wiring diagram and complying with applicable portions of the NEC, NFPA, and NECA's 'Standard of Installation'. The contractor shall furnish all conduit, wiring, outlet boxes, junction boxes, cabinets and similar devices necessary for the complete installation. All wiring shall be of the type recommended by the manufacturer, approved by the local Fire Department, and shall be installed in conduit throughout.
- B. All penetration of floor slabs and fire walls shall be fire stopped in accordance with all local fire codes and these specifications.

- C.** All wiring shall be color coded throughout, to National Electrical Code and NFPA standards.
- D.** Coordinate with Divisions 8, 13, and 15 for all interconnection requirements specified and/or required.
- E.** Coordinate exact mounting locations with the reflected ceiling plans. Coordinate mounting heights with architectural elevations.
 - 1.** Where field conductors (such as conflicts with other features, obstructions that violate the placement rules of the applicable Fire Code, and the like) make necessary the relocation of detectors or sensors from the positions shown on the plans, such relocations shall be made in strictly accordance with the applicable Fire Codes, and shall be made at no additional cost to the owner.
- F.** Provide appropriate Identification and labeling for all new detection and notification devices and appliances.
 - 1.** Post copy of wire identification list and new device locations inside fire alarm panel door or other area accessible to fire alarm service personnel.

3.2 FIELD QUALITY CONTROL

- A.** The addition to the existing system shall be installed and fully tested under the supervision of a trained manufacturer's representative. The system shall be demonstrated to perform all of the functions as specified. All modifications and additions to the system shall be proven to be completely operational and in compliance with all requirements of the local authority having jurisdiction. Reports of any field testing during installation shall be forwarded to the Owner.

3.3 PROTECTION

- A.** Provide dust protection for installed smoke detectors until finish work is completed and building is ready for occupancy.
- B.** Protect conductors from cuts, abrasion and other damage during construction.

END OF SECTION